



Chapter 2

Financial Statement Analysis



Chapter Outline

2.1 Firms' Disclosure of Financial Information

2.2 The Balance Sheet

2.3 **The Income Statement**

2.4 The Statement of Cash Flows

2.5 Other Financial Statement Information

2.6 Financial Statement Analysis

2.7 **Financial Reporting in Practice**



Introduction

- Although the corporate organizational structure greatly facilitates the firm's access to investment capital, it also means that stock ownership is most investors' sole tie to the company.
- How, then, do investors learn enough about a company to know whether or not they should invest in it?
- How can financial managers assess the success of their own firm and compare it to the performance of competitors?
- One way firms evaluate their performance and communicate this information to investors is through their financial statements.
- Firms **issue financial statements regularly** to communicate financial information to the investment community.



2.1 Firms' Disclosure of Financial Information

- Financial statements are accounting reports with past performance information that a firm issues periodically (usually quarterly and annually).
- U.S. public companies are required to file their financial statements with the U.S. Securities and Exchange Commission (SEC) on a quarterly basis on form 10-Q and annually on form 10-K.
- They must also send an annual report with their financial statements to their shareholders each year.
- Private companies often prepare financial statements as well, but they usually do not have to disclose these reports to the public.



2.1 Firms' Disclosure of Financial Information

- Reports about a company's performance must be understandable and accurate.
- **Generally Accepted Accounting Principles (GAAP)** provide a common set of rules and a standard format for public companies to use when they prepare their reports.
- This standardization also makes it easier to compare the financial results of different firms. Investors also need some assurance that the financial statements are prepared accurately.
- Corporations are required to hire a neutral third party, known as an auditor, to check the annual financial statements, to ensure that the annual financial statements are reliable and prepared according to GAAP.



2.1 Firms' Disclosure of Financial Information

- Analysis, however, shows that more than 25,000 of the approximately 48,000 domestic listed companies on the 85 major securities exchanges in the world use IFRS (international financial reporting standards)
- Many countries and multinational companies would like the differences between GAAP and IFRS eliminated. Blending the two would help comparisons between businesses based in different regions. Advocates believe the merger would simplify management, investment, transparency and accountant training.
- The **main difference between the standards** is that IFRS is principles-based and GAAP relies on rules and guidelines.



2.1 Firms' Disclosure of Financial Information

- 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

- 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

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

Assets

→ **Long-Term Assets** (e.g. Net Property, Plant, & Equipment)

Depreciation (and Accumulated Depreciation): The firm reduces the value of fixed assets (other than land) over time according to a depreciation schedule that depends on the asset's life span. Depreciation is not an actual cash expense that the firm pays; it is a way of recognizing that buildings and equipment wear out and thus become less valuable the older they get.

Book Value = Acquisition cost – Accumulated depreciation

→ **Goodwill and intangible assets**

Amortization: If the firm assesses that the value of these intangible assets declined over time, it will reduce the amount listed on the balance sheet by an amortization or impairment charge that captures the change in value of the acquired assets. Like depreciation, amortization is not an actual cash expense.

→ **Other Long-Term Assets** (e.g. Investments in Long-term Securities)

Table 2.1

Global Conglomerate Corporation Balance Sheet for 2012 and 2011

GLOBAL CONGLOMERATE CORPORATION		
Consolidated Balance Sheet		
Year Ended December 31 (in \$ million)		
Assets	2012	2011
Current Assets		
Cash	21.2	19.5
Accounts receivable	18.5	13.2
Inventories	15.3	14.3
Other current assets	2.0	1.0
Total current assets	57.0	48.0
Long-Term Assets		
Land	22.2	20.7
Buildings	36.5	30.5
Equipment	39.7	33.2
Less accumulated depreciation	(18.7)	(17.5)
Net property, plant, and equipment	79.7	66.9
Goodwill and intangible assets	20.0	20.0
Other long-term assets	21.0	14.0
Total long-term assets	120.7	100.9
Total Assets	177.7	148.9



2.2 Balance Sheet

- Goodwill and intangible assets:
- For example, Global paid \$25 million in 2010 for a firm whose tangible assets had a book value of \$5 million.
- The remaining \$20 million appears as goodwill and intangible assets in Table 2.1.



2.2 Balance Sheet

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

- Net Working Capital
 - Current Assets – Current Liabilities



2.2 Balance Sheet

Liabilities

- Long-Term Liabilities
 - Long-Term Debt
 - Capital Leases
 - Deferred Taxes
 - Deferred taxes are taxes that are owed but have not yet been paid. Firms generally keep two sets of financial statements: one for financial reporting and one for tax purposes. Because deferred taxes will eventually be paid, they appear as a liability on the balance sheet

Table 2.1 (cont'd) Global Conglomerate Corporation Balance Sheet for 2012 and 2011

Liabilities and Stockholders' Equity	2012	2011
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

- 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

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



2.2 Balance Sheet

- 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

- A firm's market capitalization measures the market value of the firm's equity, or the value that remains after the firm has paid its debts.
- But what is the value of the business itself?
- The enterprise value of a firm (also called the total enterprise value or TEV) assesses the value of the underlying business assets, unencumbered by debt and separate from any cash and marketable securities.
- Enterprise Value, Total Enterprise Value (TEV)

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



2.2 Balance Sheet

- From Example 2.1, Global's market capitalization in 2012 is \$50.4 million.
- Its debt is \$116.7 million (\$3.5 million of notes payable, \$13.3 million of current maturities of long term debt, and remaining long-term debt of \$99.9 million).
- Therefore, given its cash balance of \$21.2 million, Global's enterprise value is $50.4 + 116.7 - 21.2 = \$145.9$ million.
- **The enterprise value can be interpreted as the cost to take over the business.**
- That is, it would cost $50.4 + 116.7 = \$167.1$ million to buy all of Global's equity and pay off its debts, but because we would acquire Global's \$21.2 million in cash, the net cost of the business is only $167.1 - 21.2 = \$145.9$ million.



2.2 Balance Sheet

- Ideally, the balance sheet would provide us with an accurate assessment of the true value of the firm's equity.
- Unfortunately, this is unlikely to be the case.
- First, many of the assets listed on the balance sheet are valued based on their historical cost rather than their true value today.
- A second, and probably more important, problem is that many of the firm's valuable assets are not captured on the balance sheet. Consider, for example, the expertise of the firm's employees, the firm's reputation in the marketplace, the relationships with customers and suppliers, the value of future research and development innovations, and the quality of the management team. These are all assets that add to the value of the firm that do not appear on the balance sheet.



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?



Textbook Example 2.1 (cont'd)

Solution

Global's market capitalization is $(3.6 \text{ million shares}) \times (\$14/\text{share}) = \$50.4 \text{ million}$. 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 \$22.
- The firm's book value of equity is \$50 million.
- **What is Rylan's market capitalization?**
- **How does the market capitalization compare to Rylan's book value of equity?**



Alternative Example 2.1

- **Solution**

- Rylan's market capitalization is \$110 million
 - 5 million shares $\times$ \$22 share = \$110 million.
 - The market capitalization is significantly higher than Rylan's book value of equity of \$50 million.



2.3 Income Statement

- When you want somebody to get to the point, you might ask him or her for the “bottom line.” This expression comes from the **income statement**. The income statement or statement of financial performance lists the firm’s revenues and expenses over a period of time.
- The last or “bottom” line of the income statement shows the firm’s net income, which is a measure of its profitability during the period.
- The income statement is sometimes called a profit and loss, or “P&L” statement, and the net income is also referred to as the firm’s earnings.
- Whereas the balance sheet shows the firm’s assets and liabilities at a given point in time, the income statement shows the flow of revenues and expenses generated by those assets and liabilities between two dates.



2.3 Income Statement

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



2.3 Income Statement

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



2.3 Income Statement

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



2.3 Income Statement

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



2.3 Income Statement

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



Table 2.2 Global Conglomerate Corporation Income Statement Sheet for 2012 and 2011

GLOBAL CONGLOMERATE CORPORATION		
Income Statement		
Year Ended December 31 (in \$ million)		
	2012	2011
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

- **Gross Profit.**
- The first two lines of the income statement list the revenues from sales of products and the costs incurred to make and sell the products.
- Cost of sales shows costs directly related to producing the goods or services being sold, such as manufacturing costs.
- Other costs such as administrative expenses, research and development, and interest expenses are not included in the cost of sales. The third line is gross profit, which is the difference between sales revenues and the costs.



2.3 Income Statement

- **Operating Expenses.**
- The next group of items is operating expenses, i.e. expenses from the ordinary course of running the business that are not directly related to producing the goods or services being sold.
- They include administrative expenses and overhead, salaries, marketing costs, and research and development expenses.
- The third type of operating expense, depreciation and amortization, is not an actual cash expense but represents an estimate of the costs that arise from wear and tear or obsolescence of the firm's assets.
- The firm's gross profit net of operating expenses is called **operating income.**



2.3 Income Statement

- **Earnings before Interest and Taxes.**
- We next include other sources of income or expenses that arise from activities that are not the central part of a company's business.
- Income from the firm's financial investments is one example of other income that would be listed here.
- After we have adjusted for other sources of income or expenses, we have the firm's earnings before interest and taxes, or EBIT.



2.3 Income Statement

- **Pretax and Net Income.**
- From EBIT, we deduct the interest expense related to outstanding debt to compute Global's pretax income, and then we deduct corporate taxes to determine the firm's net income.
- Net income represents the total earnings of the firm's equity holders.
- **It is often reported on a per-share basis** as the firm's earnings per share (EPS), which we compute by dividing net income by the total number of shares outstanding:
 - $\text{EPS} = \frac{\text{Net Income}}{\text{Shares Outstanding}}$
 - = \$2.0 Million / 3.6 Million Shares
 - = \$0.556 per Share



2.3 Income Statement

- 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

- The income statement provides a measure of the firm's profit over a given time period.
- However, **it does not indicate** the amount of cash the firm has generated.
- There are two reasons that net income does not correspond to cash earned.
- First, there are non-cash entries on the income statement, such as depreciation and amortization.
- Second, certain uses of cash, such as the purchase of a building or expenditures on inventory, are not reported on the income statement.



2.4 Statement of Cash Flows

- The firm's statement of cash flows utilizes the information from the income statement and balance sheet to determine how much cash the firm has generated, and how that cash has been allocated, during a set period.
- As we will see, from the perspective of an investor attempting to value the firm, the statement of cash flows provides what may be the most important information of the four financial statements.
- The statement of cash flows is divided into three sections: operating activities, investment activities, and financing activities.
-



2.4 Statement of Cash Flows

- Three Sections
 - **Operating Activities** (net income from the income statement. It then adjusts this number by adding back all non-cash entries related to the firm's operating activities)
 - **Investment Activities** (lists the cash used for investment)
 - **Financing Activities** (shows the flow of cash between the firm and its investors)



2.4 Statement of Cash Flows

- **Operating Activities**

- Adjusts net income by all non-cash items related to operating activities and changes in net working capital
 - Accounts Receivable – deduct the increases
 - Accounts Payable – add the increases
 - Inventories – deduct the increases
 - For instance, depreciation is deducted when computing net income, but it is not an actual cash outflow. Thus, we add it back to net income when determining the amount of cash the firm has generated. Similarly, we add back any other non-cash expenses (for example, deferred taxes or expenses related to stock-based compensation).



2.4 Statement of Cash Flows

- Next, we adjust for changes to net working capital that arise from changes to accounts receivable, accounts payable, or inventory.
- When a firm sells a product, it records the revenue as income even though it may not receive the cash from that sale immediately.
- Instead, it may grant the customer credit and let the customer pay in the future. The customer's obligation adds to the firm's accounts receivable.
- We use the following guidelines to adjust for changes in working capital:



2.4 Statement of Cash Flows

- 1. *Accounts Receivable* : When a sale is recorded as part of net income, but the cash has not yet been received from the customer, we must adjust the cash flows by deducting the increases in accounts receivable. This increase represents additional lending by the firm to its customers, and it reduces the cash available to the firm.
- 2. *Accounts Payable* : Conversely, we add increases in accounts payable. Accounts payable represents borrowing by the firm from its suppliers. This borrowing increases the cash available to the firm.
- 3. *Inventory* : Finally, we deduct increases to inventory. Increases to inventory are not recorded as an expense and do not contribute to net income (the cost of the goods are only included in net income when the goods are actually sold). However, the cost of increasing inventory is a cash expense for the firm and must be deducted.



2.4 Statement of Cash Flows

- **Investing Activities**

- *E.g. Capital Expenditures or Buying or Selling Marketable Securities*
- Purchases of new property, plant, and equipment are referred to as capital expenditures.
- Recall that capital expenditures do not appear immediately as expenses on the income statement.
- Instead, firms recognize these expenditures over time as depreciation expenses.
- To determine the firm's cash flow, we already added back depreciation because it is not an actual cash outflow.
- Now, we subtract the actual capital expenditure that the firm made.



2.4 Statement of Cash Flows

- **Financing Activities**

- E.g. Payment of Dividends, Changes in Borrowings
- The last section of the statement of cash flows shows the cash flows from financing activities.
- Dividends paid to shareholders are a cash outflow. Global paid \$1 million to its shareholders as dividends in 2012.
- The difference between a firm's net income and the amount it spends on dividends is referred to as the firm's retained earnings for that year:
- $\text{Retained Earnings} = \text{Net Income} - \text{Dividends}$

Table 2.3 Global Conglomerate Corporation Statement of Cash Flows for 2012 and 2011

GLOBAL CONGLOMERATE CORPORATION		
Statement of Cash Flows		
Year Ended December 31 (in \$ million)		
	2012	2011
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 2012. 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 $26\% \times \$1 \text{ million} = \$0.26 \text{ million}$. Therefore, net income would fall by $1 - 0.26 = \$0.74 \text{ million}$.

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 $-0.74 + 1 = \$0.26 \text{ million}$. 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.



2.5 Other Financial Statement Information

- **The statement of stockholders' equity** breaks down the stockholders' equity computed on the balance sheet into the amount that came from issuing shares (par value plus paid-in capital) versus retained earnings.
- Because the book value of stockholders' equity is not a useful assessment of value for financial purposes, financial managers use the statement of stockholders' equity infrequently (so we will skip the computational details here).



2.5 Other Financial Statement Information

- Statement of Stockholders' Equity

$$\begin{aligned}\text{Change in Stockholders' Equity} &= \text{Retained Earnings} \\ &\quad + \text{Net sales of stock} \\ &= \text{Net Income} \\ &\quad - \text{Dividends} \\ &\quad + \text{Sales of stock} \\ &\quad - \text{Repurchase of Stock}\end{aligned}$$



2.5 Other Financial Statement Information

- **The management discussion and analysis (MD&A)** is a preface to the financial statements in which the company's management discusses the recent year (or quarter), providing a background on the company and any significant events that may have occurred.
- Management may also discuss the coming year, and outline goals, new projects, and future plans.
- Management should also discuss any important risks that the firm faces or issues that may affect the firm's liquidity or resources.
- Management is also required to disclose any off-balance sheet transactions, which are transactions or arrangements that can have a material impact on the firm's future performance yet do not appear on the balance sheet.



2.5 Other Financial Statement Information

- **Notes to the Financial Statements**
- In addition to the four financial statements, companies provide extensive notes with further details on the information provided in the statements.
- For example, the notes document important accounting assumptions that were used in preparing the statements.
- They often provide information specific to a firm's subsidiaries or its separate product lines.
- They show the details of the firm's stock-based compensation plans for employees and the different types of debt the firm has outstanding.
- Details of acquisitions, spin-offs, leases, taxes, debt repayment schedules, and risk management activities are also given.
- The information provided in the notes is often very important to interpret fully the firm's financial statements.

Textbook Example 2.3

Sales by Product Category

Problem

In the MD&A section of its financial statements, H. J. Heinz (HNZ) reported the following sales revenues by product category (\$ million):

	2012	2011
Ketchup and sauces	\$5,233	\$4,608
Meals and snacks	4,480	4,282
Infant/Nutritional foods	1,232	1,175
Other	705	641

Which category showed the highest percentage growth? If Heinz has the same percentage growth by category from 2012 to 2013, what will its total revenues be in 2013?



Textbook Example 2.3 (cont'd)

Solution

The percentage growth in the sales of ketchup and sauces was $5233/4608 - 1 = 13.6\%$. Similarly, growth in meals and snacks was 4.6%, infant/nutritional foods was 4.9%, and other categories were 10.0%. Thus, ketchup and sauces showed the highest growth.

If these growth rates continue for another year, sales of ketchup and sauces will be $5233 \times 1.136 = \$5945$ million, and the other categories will be \$4686 million, \$1292 million, and \$776 million, respectively, for total revenues of \$12.7 billion.

Alternative Example 2.3

- **Problem**

- HJ Heinz Company reported the following sales revenues by category:

	2012	2011
Ketchup and Sauces	\$ 5,233	\$ 4,608
Meals and Snacks	\$ 4,480	\$ 4,282
Infant/Nutrition	\$ 1,232	\$ 1,175
Other Processed Foods	\$ 705	\$ 641
Total	\$ 11,650	\$ 10,706

- **What was the percentage growth for each category?**
- **If Heinz has the same percentage growth from 2012 to 2013, what will its total revenues be in 2013?**



Alternative Example 2.3

- **Solution**

- Ketchup and Sauces
 - $(\$5,233 \div \$4,608) - 1 = 13.56\%$
- Meals and Snacks
 - $(\$4,480 \div \$4,282) - 1 = 4.62\%$
- Infant/Nutrition
 - $(\$1,232 \div \$1,175) - 1 = 4.85\%$
- Other
 - $(\$705 \div \$641) - 1 = 9.98\%$
- Total
 - $(\$11,650 \div \$10,706) - 1 = 8.82\%$



Alternative Example 2.3

- **Solution** (continued)
 - Estimated 2013 Total Revenue
 - $\$11,650 \times (1 + 8.82\%)$
 - $\$11,650 \times 1.0882 = \$12,677$



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

- 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

- **A firm's gross margin reflects its ability to sell a product for more than the cost of producing it.** For example, in 2012, Global had gross margin of $33.3/186.7 = 17.8\%$.
- Because there are additional expenses of operating a business beyond the direct costs of goods sold, another important profitability ratio is the **operating margin**, the ratio of operating income to revenues. **It reveals how much a company earns before interest and taxes from each dollar of sales.**
- In 2012, Global's operating margin was $10.4/186.7 = 5.57\%$, an increase from its 2011 operating margin of $7.1/176.1 = 4.03\%$.



2.6 Financial Statement Analysis

- Profitability Ratios
 - EBIT Margin

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

- Net Profit Margin

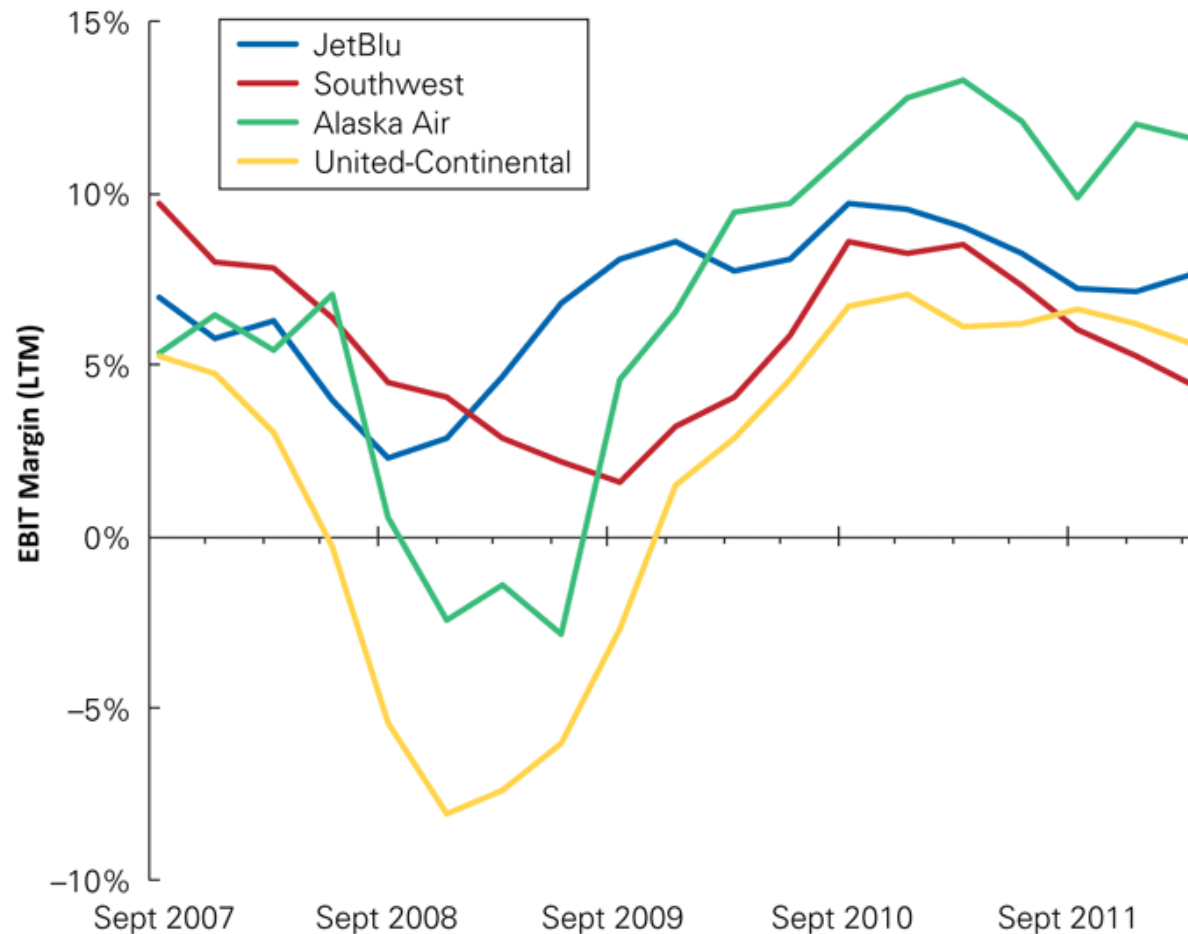
$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Total Sales}}$$



2.6 Financial Statement Analysis

- We can similarly compute a firm's EBIT margin = $(\text{EBIT}/\text{Sales})$.
- By comparing operating or EBIT margins across firms within an industry, we can assess the relative efficiency of the firms' operations.
- For example, Figure 2.1 compares the EBIT margins of four major U.S. airlines from 2007 to 2012.
- Notice the impact on profitability from the financial crisis during 2008–2009, as well as the consistently low profits of the largest and oldest of the carriers, United-Continental (UAL), relative to its competitors.

Figure 2.1 EBIT Margins for Four U.S. Airlines



Source: Capital
IQ



2.6 Financial Statement Analysis

- Liquidity Ratios
 - Current Ratio
 - Current Assets / Current Liabilities
 - Quick Ratio
 - $(\text{Cash} + \text{Short-Term Investments} + \text{A/R}) /$
Current Liabilities
 - Cash Ratio
 - Cash / Current Liabilities



2.6 Financial Statement Analysis

- Financial analysts often use the information in the firm's balance sheet to assess its financial solvency or liquidity.
- Specifically, creditors often compare a firm's current assets and current liabilities **to assess whether the firm has sufficient working capital to meet its short-term needs.**
- This comparison can be summarized in the firm's **current ratio**
- Notice that Global's current ratio increased from $48/44 = 1.09$ in 2011 to $57/48 = 1.19$ in 2012.



2.6 Financial Statement Analysis

- **A more stringent test of the firm's liquidity is the quick ratio,** which compares only cash and “near cash” assets, such as short-term investments and accounts receivable, to current liabilities.
- In 2012, Global's quick ratio was $(21.2 + 18.5)/48 = 0.83$.
- A higher current or quick ratio implies less risk of the firm experiencing a cash shortfall in the near future.
- A reason to exclude inventory is that it may not be that liquid; indeed an increase in the current ratio that results from an unusual increase in inventory could be an indicator that the firm is having difficulty selling its products.



2.6 Financial Statement Analysis

- Ultimately, firms need cash to pay employees and meet other obligations.
- Running out of cash can be very costly for a firm, so firms often gauge their cash position by calculating **the cash ratio, which is the most stringent liquidity ratio**
- Of course, all of these liquidity ratios are limited in that they only consider the firm's current assets.
- If the firm is able to generate significant cash quickly from its ongoing activities, it might be highly liquid even if these ratios are poor.



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 2011 and 2012?



Textbook Example 2.4

Solution

In 2011, Global's quick ratio was $(19.5 + 13.2)/44 = 0.74$ and its cash ratio was $19.5/44 = 0.44$. In 2012, 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 2011 and 2012?**

Alternative Example 2.4

- **Problem**

Balance Sheet		
Assets	2012	2011
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	Current Year	Prior Year
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

- **Solution**

- Quick Ratio

- 2012: $(\$2,000,000 + \$7,000,000 + \$20,000,000) / \$35,000,000 = 0.83$
 - 2011: $(\$4,000,000 + \$6,000,000 + \$15,000,000) / \$27,000,000 = 0.93$

- Cash Ratio

- 2012: $\$2,000,000 / \$35,000,000 = 0.06$
 - 2011: $\$4,000,000 / \$27,000,000 = 0.15$

- Using either measure, Rylan's liquidity has deteriorated.



2.6 Financial Statement Analysis

- We can use the combined information in the firm's income statement and balance sheet to gauge how efficiently the firm is utilizing its net working capital.
- To evaluate the speed at which a company turns sales into cash, firms often compute the number of accounts receivable days
- That is, the number of days' worth of sales accounts receivable represents

2.6 Financial Statement Analysis

- 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

- Given average daily sales of \$186.7 million/365 = \$0.51 million in 2012, Global's receivables of \$18.5 million represent $18.5/0.51 = 36$ days' worth of sales.
- In other words, on average, Global takes a little over one month to collect payment from its customers.
- In 2011, Global's accounts receivable represented only 27 days' worth of sales.



2.6 Financial Statement Analysis

- 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

- **Turnover ratios are an alternative way to measure working capital.**
- We compute turnover ratios by expressing annual revenues or costs as a multiple of the corresponding working capital account.
- Global's inventory turnover in 2012 is $153.4/15.3 = 10.0^*$, indicating that Global sold roughly 10 times its current stock of inventory during the year.
- Note that higher turnover corresponds to shorter days, and thus a more efficient use of working capital.



2.6 Financial Statement Analysis

- While working capital ratios can be meaningfully compared over time or within an industry, there are wide differences across industries.
- While the average large U.S. firm had about 45 days' worth of receivables and 65 days' worth of inventory in 2012, airlines tend to have minimal accounts receivable or inventory, as their customers pay in advance and they sell a transportation service as opposed to a physical commodity.
- On the other hand, distillers and wine producers tend to have very large inventory (over 300 days on average), as their products are often aged prior to sale.



2.6 Financial Statement Analysis

- Lenders often assess a firm's ability to meet its interest obligations by comparing its earnings with its interest expenses using an interest coverage ratio.
- One common ratio to consider is the firm's EBIT as a multiple of its interest expenses.
- A high ratio indicates that the firm is earning much more than is necessary to meet its required interest payments
- As a benchmark, creditors often look for an EBIT/Interest coverage ratio in excess of 5* for high-quality borrowers.
- When EBIT/Interest falls below 1.5, lenders may begin to question a company's ability to repay its debts.



2.6 Financial Statement Analysis

- Interest Coverage Ratios
 - EBIT/Interest
 - EBITDA/Interest
 - $\text{EBITDA} = \text{EBIT} + \text{Depreciation and Amortization}$



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 2011 and 2012, Global had the following interest coverage ratios:

$$2011: \frac{\text{EBIT}}{\text{Interest}} = \frac{7.1}{4.6} = 1.54 \quad \text{and} \quad \frac{\text{EBITDA}}{\text{Interest}} = \frac{7.1 + 1.1}{4.6} = 1.78$$

$$2012: \frac{\text{EBIT}}{\text{Interest}} = \frac{10.4}{7.7} = 1.35 \quad \text{and} \quad \frac{\text{EBITDA}}{\text{Interest}} = \frac{10.4 + 1.2}{7.7} = 1.51$$

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		
	2012	2011
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

- 2012: $\$100,000,000 / \$10,000,000 = 10.0$
 - 2011: $\$87,500,000 / \$9,000,000 = 9.72$

- EBITDA/Interest

- 2012: $\$125,000,000 / \$10,000,000 = 12.5$
 - 2011: $\$110,000,000 / \$9,000,000 = 12.2$

- Using either measure, Rylan's ability to meet its is very good and improving.



2.6 Financial Statement Analysis

- An important piece of information that we can learn from a firm's balance sheet is the firm's leverage, or the extent to which it relies on debt as a source of financing. The debt to equity ratio is a common ratio used to assess a firm's leverage.
- 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

- Because of the difficulty interpreting the book value of equity, the book debt-equity ratio is not especially useful.
- Indeed, the book value of equity might even be negative, making the ratio meaningless.
- For example, Domino's Pizza (DPZ) has, based on the strength of its cash flow, consistently borrowed in excess of the book value of its assets.
- In 2012, it had debt of \$1.6 billion, with a total book value of assets of only \$600 million and an equity book value of -\$1.4 billion!
- It is therefore most informative to compare the firm's debt to the market value of its equity.



2.6 Financial Statement Analysis

- 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

- 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

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

- Enterprise Value to Sales

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



2.6 Financial Statement Analysis

- The P/E ratio is a simple measure that is used to assess whether a stock is over- or undervalued based on the idea that the value of a stock should be proportional to the level of earnings it can generate for its shareholders.
- P/E ratios can vary widely across industries
- For example, in January 2012, the average large U.S. firm had a P/E ratio of about 17.
- But software firms, which tend to have above-average growth rates, had an average P/E ratio of 32, while automotive firms, which were still feeling the effects of the recession, had an average P/E ratio of 9.
- The risk of the firm will also affect this ratio—all else equal, riskier firms have lower P/E ratios.



2.6 Financial Statement Analysis

- Because the P/E ratio considers the value of the firm's equity, it is sensitive to the firm's choice of leverage.
- The P/E ratio is therefore of limited usefulness when comparing firms with markedly different leverage. We can avoid this limitation by instead assessing the market value of the underlying business using valuation ratios based on the firm's enterprise value.
- Common ratios include the ratio of enterprise value to revenue, or enterprise value to operating income, EBIT, or EBITDA.
- These ratios compare the value of the business to its sales, operating profits, or cash flow.
- Like the P/E ratio, these ratios are used to make intra-industry comparisons of how firms are priced in the market.

Textbook Example 2.6

Computing Profitability and Valuation Ratios

Problem

Consider the following data as of May 2012 for Wal-Mart Stores and Target Corporation (in \$ billion):

	Wal-Mart Stores (WMT)	Target Corporation (TGT)
Sales	446.9	69.9
EBIT	26.6	5.3
Depreciation and Amortization	8.1	2.1
Net Income	15.7	2.9
Market Capitalization	200.9	38.4
Cash	6.6	0.8
Debt	58.4	17.5

Compare Wal-Mart'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

Wal-Mart had an EBIT margin of $26.6/446.9 = 6.0\%$, a net profit margin of $15.7/446.9 = 3.5\%$, and a P/E ratio of $200.9/15.7 = 12.8$. Its enterprise value was $200.9 + 58.4 - 6.6 = \$252.7$ billion, which has a ratio of $252.7/446.9 = 0.57$ to sales, $252.7/26.6 = 9.5$ to EBIT, and $252.7/(26.6 + 8.1) = 7.3$ to EBITDA.

Target had an EBIT margin of $5.3/69.9 = 7.6\%$, a net profit margin of $2.9/69.9 = 4.1\%$, and a P/E ratio of $38.4/2.9 = 13.2$. Its enterprise value was $38.4 + 17.5 - 0.8 = \$55.1$ billion, which has a ratio of $55.1/69.9 = 0.79$ to sales, $55.1/5.3 = 10.4$ to EBIT, and $55.1/(5.3 + 2.1) = 7.4$ to EBITDA.

Note that while Target trades for a significantly higher multiple of sales than Wal-Mart (not surprising given its higher profit margins), the other valuation multiples are quite close, despite the large difference in the size of the two firms.

Alternative Example 2.6

Problem:

Consider the following data for the FY 2011 for Yahoo! and Google (in millions):

	Yahoo!	Google
Sales	\$4,984	\$37,905
EBIT	\$825	\$11,742
Depreciation & Amortization	\$648	\$1,851
Net Income	\$1,049	\$9,737
Market Capitalization	\$19,195	\$209,850
Cash	\$1,562	\$9,983
Debt	\$994	\$14,429



Alternative Example 2.6 (cont'd)

Problem: (cont'd)

Compare Yahoo! and Google's operating margin, net profit margin, P/E ratio, and the ratio of enterprise value to operating income and sales.



Alternative Example 2.6 (cont'd)

Solution:

Yahoo:

$$\text{EBIT Margin} = \$825 / \$4,984 = 16.55\%$$

$$\text{Net Profit Margin} = \$1,049 / \$4,984 = 21.04\%$$

$$\text{P/E Ratio} = \$19,195 / \$1,049 = 18.30$$



Alternative Example 2.6 (cont'd)

Solution:

Yahoo:

$$\text{Enterprise Value} = \$19,195 + \$994 - \$1,562 = \$18,627$$

$$\text{Enterprise Value/Sales} = \$18,627 / \$4,984 = 3.73$$

$$\text{Enterprise Value/EBIT} = \$18,627 / \$825 = 22.58$$

$$\text{Enterprise Value/EBITDA} = \$18,627 / (\$825 + \$648) = 12.65$$



Alternative Example 2.6 (cont'd)

Solution:

Google:

$$\text{EBIT Margin} = \$11,742 / \$37,905 = 30.98\%$$

$$\text{Net Profit Margin} = \$9,737 / \$37,905 = 25.69\%$$

$$\text{P/E Ratio} = \$209,850 / \$9,737 = 21.55$$



Alternative Example 2.6 (cont'd)

Solution:

Google:

$$\text{Enterprise Value} = \$209,850 + \$14,429 - \$9,983 = \$214,296$$

$$\text{Enterprise Value/Sales} = \$214,296 / \$37,905 = 5.65$$

$$\text{Enterprise Value/EBIT} = \$214,296 / \$11,742 = 18.25$$

$$\text{Enterprise Value/EBITDA} = \$214,296 / (\$11,742 + \$1,851) =$$

15.77



Alternative Example 2.6 (cont'd)

- To summarize:

Ratio	Yahoo!	Google
EBIT Margin	16.55%	30.98%
Net Profit Margin	21.04%	25.69%
P/E Ratio	18.30	21.55
Enterprise Value to Sales	3.73	5.65
Enterprise Value to EBIT	22.58	18.25
Enterprise Value to EBITDA	12.65	15.77



Alternative Example 2.6 (cont'd)

Solution (cont'd):

Even though Yahoo! And Google are competitors, their ratios look much different. Yahoo! has a lower profit margin and lower P/E ratio than Google. Their enterprise value to sales ratio is also lower than that of Google. The difference is consistent with Yahoo!'s lower margins.

2.6 Financial Statement Analysis

- Operating Returns
 - Return on Equity

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

- Return on Assets

$$\text{Return on Assets} = \frac{\text{Net Income} + \text{Interest Expense}}{\text{Total Assets}}$$

- Return on Invested Capital

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



2.6 Financial Statement Analysis

- As a performance measure, ROA has the benefit that it is less sensitive to leverage than ROE.
- However, it is sensitive to working capital—for example, an equal increase in the firm's receivables and payables will increase total assets and thus lower ROA.
- To avoid this problem, we can consider the firm's return on invested capital (ROIC)



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 2012, Global's ROA was $(2.0 + 7.7)/177.7 = 5.5\%$, compared to an ROA in 2011 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 $\text{Net income} = \text{Pretax income} \times (1 - \text{tax rate})$, we can estimate $(1 - \text{tax rate}) = \text{Net income}/\text{Pretax income}$. Thus, $\text{EBIT} \times (1 - \text{tax rate}) = 10.4 \times (2.0/2.7) = 7.7$ in 2012, and $7.1 \times (1.9/2.5) = 5.4$ in 2011.

To compute invested capital, note first that Global's net debt was $3.2 + 12.3 + 76.3 - 19.5 = 72.3$ in 2011 and $3.5 + 13.3 + 99.9 - 21.2 = 95.5$ in 2012. Thus, ROIC in 2012 was $7.7/(22.2 + 95.5) = 6.5\%$, compared with $5.4/(21.2 + 72.3) = 5.8\%$ in 2011.

The improvement in Global's ROA and ROIC from 2011 to 2012 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 the change in its return on assets and return on invested capital.

Alternative Example 2.7 (cont'd)

- **Solution**

- Return on Assets

$$\text{Return on Assets}_{2011} = \frac{\$47,100,000 + \$9,000,000}{\$102,000,000} = 55.0\%$$

$$\text{Return on Assets}_{2012} = \frac{\$54,000,000 + \$10,000,000}{\$115,000,000} = 55.7\%$$

Alternative Example 2.7 (cont'd)

- **Solution**

- Return on Invested Capital

$$\text{Return on Invested Capital}_{2011} = \frac{\$87,500,000 (1 - .40)}{\$45,000,000 + (\$20,000,000 + \$30,000,000) - \$4,000,000} = 57.69\%$$

$$\text{Return on Invested Capital}_{2012} = \frac{\$100,000,000 (1 - .40)}{\$50,000,000 + (\$25,000,000 + \$30,000,000) - \$2,000,000} = 58.25\%$$

- Both ROA and ROIC improved slightly, indicating a more efficient use of its assets.



2.6 Financial Statement Analysis

- We can gain further insight into a firm's ROE using a tool called the DuPont Identity (named for the company that popularized its use), which expresses the ROE in terms of the firm's profitability, asset efficiency, and leverage

2.6 Financial Statement Analysis

- 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 2012, Wal-Mart Stores had sales of \$446.9 billion, net income of \$15.7 billion, assets of \$193.4 billion, and a book value of equity of \$71.3 billion. For the same period, Target (TGT) had sales of \$69.9 billion, net income of \$2.9 billion, total assets of \$46.6 billion, and a book value of equity of \$15.8 billion. Compare these firms' profitability, asset turnover, equity multipliers, and return on equity during this period. If Target had been able to match Wal-Mart's asset turnover during this period, what would its ROE have been?

Textbook Example 2.8 (cont'd)

Solution

Wal-Mart's net profit margin (from Example 2.6) was $15.7/446.9 = 3.51\%$, which was below Target's net profit margin of $2.9/69.9 = 4.15\%$. On the other hand, Wal-Mart used its assets more efficiently, with an asset turnover of $446.9/193.4 = 2.31$, compared to only $69.9/46.6 = 1.50$ for Target. Finally, Target had greater leverage (in terms of book value), with an equity multiplier of $46.6/15.8 = 2.95$, relative to Wal-Mart's equity multiplier of $193.4/71.3 = 2.71$. Next, let's compute the ROE of each firm directly, and using the DuPont Identity:

$$\text{Wal-Mart ROE} = \frac{15.7}{71.3} = 22.0\% = 3.51\% \times 2.31 \times 2.71$$

$$\text{Target ROE} = \frac{2.9}{15.8} = 18.4\% = 4.15\% \times 1.50 \times 2.95$$

Note that due to its lower asset turnover, Target had a lower ROE than Wal-Mart despite its higher net profit margin and leverage. If Target had been able to match Wal-Mart's asset turnover, its ROE would have been significantly higher: $4.15\% \times 2.31 \times 2.95 = 28.3\%$.

Alternative Example 2.8

- **Problem**

- The following data is for FY 2011

	Yahoo!	Google
Sales	\$4,984	\$37,905
Total Assets	\$14,783	\$72,574
Book Value of Equity	\$12,581	\$58,145
Net Income	\$1,049	\$9,737

- Compare these firms' profitability, asset turnover, equity multipliers, and return on equity during this period.



Alternative Example 2.8 (cont'd)

- **Problem**

- If Yahoo! had been able to match Google's asset turnover during this period, what would its ROE have been?



Alternative Example 2.8 (cont'd)

- **Solution**

- Yahoo!

- Net Profit Margin = $\$1,049 / \$4,984 = 21.04\%$
 - Total Asset Turnover = $\$4,984 / \$14,783 = 0.337$
 - Equity Multiplier = $\$14,783 / \$12,581 = 1.18$
 - ROE = $\$1,049 / \$12,581 = 8.34\%$

- Google

- Net Profit Margin = $\$9,737 / \$37,905 = 25.69\%$
 - Total Asset Turnover = $\$37,905 / \$72,574 = 0.522$
 - Equity Multiplier = $\$72,574 / \$58,145 = 1.25$
 - ROE = $\$9,737 / \$58,145 = 16.75\%$



Alternative Example 2.8 (cont'd)

- **Solution**

- Google had a higher Profit Margin, Total Asset Turnover, and Equity Multiplier. Thus, it is not surprising that Google had a superior ROE.
- If Yahoo! had been able to match Google's asset turnover during this period, its ROE would have been: $ROE = 21.04\% \times 0.522 \times 1.18 = 12.97\%$, or over 50% higher.



2.8 Financial Reporting in Practice

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

Table 2.4

A Summary of Key Financial Ratios

Profitability Ratios

Gross Margin	$\frac{\text{Gross Profit}}{\text{Sales}}$
Operating Margin	$\frac{\text{Operating Income}}{\text{Sales}}$
EBIT Margin	$\frac{\text{EBIT}}{\text{Sales}}$
Net Profit Margin	$\frac{\text{Net Income}}{\text{Sales}}$

Liquidity Ratios

Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
Quick Ratio	$\frac{\text{Cash \& Short-term Investments} + \text{Accounts Receivable}}{\text{Current Liabilities}}$
Cash Ratio	$\frac{\text{Cash}}{\text{Current Liabilities}}$

Working Capital Ratios

Accounts Receivable Days	$\frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$
Accounts Payable Days	$\frac{\text{Accounts Payable}}{\text{Average Daily Cost of Sales}}$
Inventory Days	$\frac{\text{Inventory}}{\text{Average Daily Cost of Sales}}$
Accounts Receivable Turnover	$\frac{\text{Annual Sales}}{\text{Accounts Receivable}}$
Accounts Payable Turnover	$\frac{\text{Annual Cost of Sales}}{\text{Accounts Payable}}$
Inventory Turnover	$\frac{\text{Annual Cost of Sales}}{\text{Inventory}}$

Interest Coverage Ratios

EBIT/Interest Coverage	$\frac{\text{EBIT}}{\text{Interest Expense}}$
EBITDA/Interest Coverage	$\frac{\text{EBITDA}}{\text{Interest Expense}}$

Leverage Ratios

Debt-Equity Ratio	$\frac{\text{Total Debt}}{\text{Book (or Market) Value of Equity}}$
Debt-to-Capital Ratio	$\frac{\text{Total Debt}}{\text{Total Equity} + \text{Total Debt}}$
Debt-to-Enterprise Value Ratio	$\frac{\text{Net Debt}}{\text{Enterprise Value}}$
Equity Multiplier (book)	$\frac{\text{Total Assets}}{\text{Book Value of Equity}}$
Equity Multiplier (market)	$\frac{\text{Enterprise Value}}{\text{Market Value of Equity}}$

Valuation Ratios

Market-to-Book Ratio	$\frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$
Price-Earnings Ratio	$\frac{\text{Share Price}}{\text{Earnings per Share}}$
Enterprise Value Ratios	$\frac{\text{Enterprise Value}}{\text{EBIT or EBITDA or Sales}}$

Operating Returns

Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$
Return on Equity (ROE)	$\frac{\text{Net Income}}{\text{Book Value of Equity}}$
Return on Assets (ROA)	$\frac{\text{Net Income} + \text{Interest Expense}}{\text{Book Value of Assets}}$
Return on Invested Capital (ROIC)	$\frac{\text{EBIT} (1 - \text{Tax Rate})}{\text{Book Value of Equity} + \text{Net Debt}}$

Table 2.5

2009–2013

Financial Statement Data and Stock Price Data for Mydeco Corp.

Mydeco Corp. 2009–2013		(All data as of fiscal year end; in \$ million)				
Income Statement		2009	2010	2011	2012	2013
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		2009	2010	2011	2012	2013
<i>Assets</i>						
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	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
<i>Liabilities & Stockholders' Equity</i>						
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		2009	2010	2011	2012	2013
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