

# 6

# Analyzing Financial Reports

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## Learning Objectives

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After reading this chapter, you should be able to:

1. Explain how financial ratios are used.
2. Describe the limitations of financial ratios.
3. Describe the various types of financial ratios.
4. Explain how internal reports are used to make decisions.

## Pre-Test

1. Who uses financial reports to determine whether or not to extend credit?
  - a. investors
  - b. creditors
  - c. suppliers
  - d. both (b) and (c)
2. What factors can affect the accuracy of financial ratios?
  - a. seasonality
  - b. inflation
  - c. accounting methods
  - d. all of the above
3. Which of the following is a common type of financial report ratio?
  - a. liquidity
  - b. economic
  - c. revenue
  - d. all of the above
4. Which financial ratio(s) do lenders commonly use to make a quick decision about a company's ability to repay a loan in the next 12 months?
  - a. quick ratio
  - b. current ratio
  - c. turnover ratios
  - d. both (a) and (b)
5. How do external financial reports differ from internal financial reports?
  - a. Internal financial reports do not need to meet the rigid standards of GAAP rules.
  - b. Internal managers don't read external financial reports.
  - c. External financial reports can be more flexible in how they are prepared.
  - d. There is no difference between internal and external reports.

*Answers can be found at the end of the chapter.*

## Introduction

After the budget committee of Best General Company reviews each of the company's financial statements, it can use basic **financial ratio analysis** tools to recognize trends within the company's financial results. These tools enable a comparison of the company's results quarter to quarter or year to year. The committee can also compare the company's results to competitors using these tools, and these comparisons will help them formulate recommendations for key executives.

Using financial ratio analysis, the budget committee can measure the relationships between line items to:

- test the company's liquidity (ability to convert an asset to cash quickly so the company can make debt payments),
- discover the level of activity for various key aspects of the company (such as the time it takes for customers to pay their bills),
- determine the company's leverage (the amount of debt the company uses to fund its operations), and
- measure the company's profitability (how much money the company makes in comparison to various activities or assets).

As we will see in this chapter, financial ratios are a key tool in the analysis done by many managers and investors.

In "World of Business," we introduce one of the world's most famous investors and executives, Warren Buffett, and how he learned about using financial ratios.

## World of Business

### The Success of the Oracle of Omaha

Warren Buffett, one of today's premier investors and executives, is known as the "Oracle of Omaha" because of his tremendous success. His multibillion dollar company, Berkshire Hathaway, has helped many of its shareholders to become millionaires. Shares of the company that sold for \$5,900 in November 1990 were worth \$171,432 as of December 15, 2013.



Nati Harnik/Associated Press

**Warren Buffett is one of the most successful investors and businesspeople in the world.**

and competitive advantages. Further, fundamental analysts also review current economic and political conditions to determine their impact on the company's current or past results, and to make projections about future results.

Buffet uses *fundamental analysis*, a technique that was championed by his mentor, Benjamin Graham (1894–1976), at Columbia Business School, to make his investment decisions. (Graham is widely considered the father of financial ratio analysis, and wrote or co-wrote two books that are still considered classics: *Security Analysis* [2008], written with David Dodd and originally published in 1934, and *The Intelligent Investor* [2006], first published in 1949.)

Fundamental analysis uses financial ratios, among other tools, to analyze a company's results. The ratios analyze not only the financial health of a company, but also its management

(continued)

### World of Business (*continued*)

One of Buffet's strategies was to not just buy a few shares of stock, but instead buy entire companies and then serve on their Boards of Directors. Among the more than 50 entities currently owned by Berkshire Hathaway are GEICO Auto Insurance, Benjamin Moore & Co., and Fruit of the Loom.

The insurance provider GEICO has been one of Buffet's most lucrative investments. His first purchase of GEICO was in the 1970s, and he continued buying shares through 1981. At that point, he had stock valued at \$45.7 million, which represented a 30% stake. He bought the rest of the company for \$2.3 billion in 1995. Buffett reported in Berkshire's 2009 report that GEICO's market share had increased from 2.5% to 8.1% since the deal.

Buffett is well known for two quotes that explain his stock buying approaches. He explains his primary strategy: "Most people get interested in stocks when everyone else is. The time to get interested is when no one else is. You can't buy what is popular and do well." He also says, "Only buy something that you'd be perfectly happy to hold if the market shut down for 10 years." Buffet has also famously advised investors to only buy into companies whose businesses they understand.

#### Consider This:

1. Why do you think Buffet's buy and hold strategy has been so successful? Do you think his actions help or harm the companies he buys?
2. Based on what you've learned about his investing strategy, what types of information would you expect Buffet to look for when reviewing a company's financial reports?

## 6.1 How Financial Ratios Are Used

As discussed in Chapter 1, various stakeholders, both internal and external to a company, will use financial ratios in different ways:

- **Executives and managers** use financial ratios to make key business decisions. For example, the Best General Company budget committee can use these ratios to determine the company's liquidity and profitability. By reviewing these trends, the committee will know where improvement is needed and can make budget recommendations for the next year.
- **Creditors** use financial ratios to determine whether a company is a good risk before lending the company money.
- **Vendors and suppliers** use financial ratios to determine whether to offer the company credit terms.
- **Financial analysts** use financial ratios to evaluate a company and prepare reports for investors and creditors.
- **Financial reporters** use financial ratios to develop stories about companies.
- **Competitors** use financial ratios to compare the results of their companies to those of others in the same industry.

All stakeholders use these ratios as a tool to compare results. However, a financial ratio on its own does not reveal much about a company. It is critical to *compare* the financial ratio

calculation either to similar calculations for prior accounting periods (to determine trends for the company), or to similar companies or to the industry as a whole (to determine how well the company performed compared to others). In “World of Business,” we introduce sources for finding information about industry trends.

As we explore ratios in this chapter, we will discuss what they are and how to use the results from these ratios to make informed managerial decisions. We will continue to use the financial statements of Best General Company to calculate each ratio.

## World of Business

### Sources for Industry Statistics

One way managers determine how well their company is performing compared to similar companies is to use industry financial ratios as a benchmark for their company. For example, if profitability ratios show their company is earning less profit than those of competitors, managers must investigate why the company is not as profitable.

Where do managers get their information? Table 6.1 lists sources for industry data that can be found in most business libraries.

**Table 6.1: Sources for industry data**

| Source   | Information provided   |
|--|--|
| <i>Almanac of Business and Industrial Financial Ratios</i> . Englewood Cliffs, NJ: Prentice Hall. Annual publication.  | Information about 180 different types of businesses are collected using the tax returns of almost five million U.S. and international companies. Readers can find calculations for 50 operating and financial ratios in 199 industries. It also provides performance indicators for the past 10 years. |
| <i>Industry Norms and Key Business Ratios</i> . Murray Hill, NJ: Dun & Bradstreet Credit Services. Annual publication. | Managers can find coverage for over 800 lines of businesses. The data includes 14 key business ratios, balance sheets and income statements, and common-sized financial figures.   |
| <i>IRS Corporate Financial Ratios</i> . Evanston, IL: Schonfeld and Associates. Annual publication.                    | Managers can find 76 key financial ratios calculated from the latest income statement and balance sheet data available from IRS corporate tax returns.   |
| <i>RMA Annual Statement Studies</i> . Philadelphia, PA: Risk Management Association. Annual publication.               | Managers can find information about more than 500 business lines. Common-sized financial statements for each industry are included with 16 commonly used financial ratios.   |

### Consider This:

1. What type of information would you be likely to seek when using one of these sources?
2. Think of a project you have done for your boss. What types of information did you need to gather, and would any of these sources have been helpful? If so, which, and why?

## 6.2 The Limitations of Financial Ratios

Before we explore financial ratios in detail, it is important to note a few of the factors that limit their usefulness. Sometimes the way the company is structured can make it difficult to analyze a particular type of business. Inflation can impact the analysis of business trends. Seasonality and accounting methods can also limit the usefulness of these ratios. We take a closer look at these and other limitations below.

### Conglomerates

Some companies operate divisions in multiple, sometimes widely different, industries. For example, General Electric (GE) has divisions in aviation, power and water, electrical technologies, wind energy, fiber optics, imaging, appliances, and lighting. Samsung makes everything from mobile phones to computers and cameras to home appliances.

When analyzing a company that operates in many different industries, deciding which industry ratios to use may be difficult. It may also be difficult to determine which competitors to include for useful comparisons.



*Gene J. Puskar/Associated Press*

**When analyzing a company like GE that operates in many different industries, it can be difficult to choose competitors for comparison.**

### Inflation

When making comparisons over a number of years, inflation can distort the results. This can impact profits (for example, if cost of goods sold go up, profits go down) and ultimately affect the ratio analysis when comparing month to month, quarter to quarter, or year to year.

### Seasonality

Some industries have drastically different results during certain seasons. For example, it can be a challenge to analyze the financial results from quarter to quarter for any manufacturing or retail company that sells most of its product during the holiday season. Likewise, landscapers and landscape suppliers have busy seasons and extremely slow seasons.

Since seasonality factors can influence financial results, managers must be aware of any seasonal factors that affect an industry before deciding which financial ratios to use and

how to use them to determine trends and compare results. For example, the 2008 recession in the United States impacted financial results for several seasons. As we climb out of this recession it's important to note that a major growth spurt for a particular company may primarily be a product of economic recovery, not necessarily a seasonal improvement. The company may not necessarily be gaining market share, and the growth may not be sustainable. For example, the growth a company saw from the holiday season of 2012 to 2013 may be more related to coming out of a recession than a permanent increase in holiday season growth.

## Accounting Methods

As discussed in earlier chapters, companies in the same industry may use different accounting methods. This can impact how and when a company recognizes revenue. For example, a company that sells computers and offers installation and training services would recognize some of the revenue at the time the equipment is purchased, but would need to wait until installation is complete to recognize another portion of that revenue. The final portion for training would be recognized when training is completed.

A company with mixed revenue streams would state its accounting methodology for recognizing revenue in the notes to the financial statements.

Another variable might be the way that a company manages its equipment. For example, one company might buy its equipment while another might primarily depend on leases. This will likely create a difference for some asset values as well.

How a company values inventory—some companies may use LIFO method, whereas others may use FIFO—can also result in a crucial difference in asset values. Whether a company uses a fiscal or calendar year can create difficulties when comparing financial results.

Also note that a change in accounting method will make comparing year to year results more difficult. For example, suppose a company switched from using LIFO to FIFO for inventory valuation. Prior years' results would not be comparable until adjusting for the accounting method change.

In sum, before starting to calculate financial ratios, review the accounting methods used to determine whether there could be significant differences among the companies being compared.

## Fixed Assets at Cost

Assets are valued at cost and may not reflect the current market value of assets. This can distort ratios that use asset values, especially when comparing a company with primarily older assets to a company just starting up. The company with older assets will likely have many of those assets fully depreciated or near full depreciation, while the newer company may just have purchased many similar types of assets.

## Projections About Future Trends

Financial ratios are based on historical financial results and may not be predictive of a future financial trend. Some ratios may provide a positive picture of a company's financial results, while others give a negative outlook.

Whether positive or negative, managers, vendors, or creditors will consider the ratios most relevant to the decision they are trying to make. For example, a creditor trying to make a decision about whether to lend a company money may put more weight on liquidity ratios—that is, how much cash a company will have available to pay its bills—than profitability ratios. As we explore each ratio, we will discuss the types of decisions that might be predicated on each one.

## 6.3 Types of Financial Ratios

Hundreds of different financial ratios exist on the Internet and in financial analysis textbooks. As noted above, in this chapter, we will focus on the most commonly used ratios in four key areas:

1. **Liquidity ratios:** These ratios measure the availability of cash to fund operations and pay short-term or current debt.
2. **Activity ratios:** These ratios measure how efficiently and effectively an organization uses its resources.
3. **Leverage ratios:** These ratios measure whether a company can repay its long-term debt.
4. **Profitability ratios:** These measure the company's rates of return from various perspectives.

As we explore each of these types of ratios, we will use Best General Company as our example. We will calculate the ratios from Chapter 2's balance sheet, Chapter 3's income statement, and Chapter 4's statement of cash flows. We repeat these figures here as Figures 6.1, 6.2, and 6.3.



**Figure 6.1: Best General Company balance sheet**

The values of assets and liabilities on the balance sheet are critical to calculating many of the financial ratios.

| <b>Best General Company<br/>Balance Sheet<br/>At December 31, 2013 and 2012</b> |                          |                          |
|---|--------------------------|--------------------------|
|   | <b>2013</b>              | <b>2012</b>              |
| <b>Assets</b>   |                          |                          |
| Current Assets:   |                          |                          |
| Cash  | \$ 8,400                 | \$ 9,500                 |
| Accounts Receivable   | 7,800                    | 7,200                    |
| Inventories   | 40,000                   | 38,000                   |
| Other Current Assets  | 6,000                    | 6,000                    |
| Total Current Assets  | <u>62,200</u>            | <u>60,700</u>            |
| Long-Term Assets:   |                          |                          |
| Property, Plant, & Equipment  | 99,600                   | 99,600                   |
| Less: Accumulated Depreciation  | (9,600)                  | (7,200)                  |
| Other Non-Current Assets  | 45,000                   | 45,000                   |
| <b>Total Assets</b>   | <b><u>\$ 197,200</u></b> | <b><u>\$ 198,100</u></b> |
| <b>Liabilities</b>  |                          |                          |
| Current Liabilities:  |                          |                          |
| Accounts Payable  | \$ 8,900                 | \$ 9,400                 |
| Short-Term Debt   | 26,000                   | 26,000                   |
| Other Current Liabilities   | 20,400                   | 19,800                   |
| Total Current Liabilities   | <u>55,300</u>            | <u>55,200</u>            |
| Long-Term Liabilities:  |                          |                          |
| Long-Term Debt  | 62,450                   | 65,000                   |
| Other Non-Current Liabilities   | 52,000                   | 54,000                   |
| <b>Total Liabilities</b>  | <b>\$ 169,750</b>        | <b>\$ 174,200</b>        |
| <b>Shareholders' Equity</b>   |                          |                          |
| Common Stock  | 20,000                   | 20,000                   |
| Retained Earnings   | 7,450                    | 3,900                    |
| <b>Total Shareholders' Equity</b>   | <b><u>\$ 27,450</u></b>  | <b><u>\$ 23,900</u></b>  |
| <b>Total Liabilities and Shareholders' Equity</b>                               | <b><u>\$ 197,200</u></b> | <b><u>\$ 198,100</u></b> |

**Figure 6.2: Best General Company income statement**

Many line items on the income statement are used for financial ratio calculations.

| <b>Best General Company<br/>Income Statement<br/>For the Years Ended December 31, 2013, 2012, and 2011</b> |                        |                        |                         |
|--|------------------------|------------------------|-------------------------|
|  | <b>2013</b>            | <b>2012</b>            | <b>2011</b>             |
| Revenue  | \$ 100,000             | \$ 110,000             | \$ 120,000              |
| Costs of Goods Sold  | 73,000                 | 78,000                 | 84,000                  |
| Gross Profit   | <u>\$ 27,000</u>       | <u>\$ 32,000</u>       | <u>\$ 36,000</u>        |
| Operating Expenses:  |                        |                        |                         |
| Selling, General, and Administrative Expense   | \$ 22,000              | \$ 21,000              | \$ 20,000               |
| Research and Development Expense   | 500                    | 500                    | 500                     |
| Total Operating Expenses   | <u>22,500</u>          | <u>21,500</u>          | <u>20,500</u>           |
| Operating Profit   | \$ 4,500               | \$ 10,500              | \$ 15,500               |
| Other Income   | \$ 2,500               | \$ 2,500               | \$ 2,500                |
| Other Expenses   | (900)                  | (900)                  | (900)                   |
| Depreciation Expense   | (2,400)                | (2,400)                | (2,400)                 |
| Income Tax Expense   | (150)                  | (1,500)                | (1,700)                 |
| <b>Net Profit</b>  | <u><u>\$ 3,550</u></u> | <u><u>\$ 8,200</u></u> | <u><u>\$ 13,000</u></u> |

**Figure 6.3: Best General Company statement of cash flows**

Many line items on the statement of cash flows are used for financial ratio calculations.

| <b>Best General Company<br/>Statement of Cash Flows<br/>For the Year Ended December 31, 2013</b> |          |                   |
|--|----------|-------------------|
| <b>Cash Flows from Operating Activities:</b>   |          |                   |
| Net Income   |          | \$ 3,550          |
| Adjustments to reconcile net income to<br>net cash provided by (used in) operating activities:   |          |                   |
| Depreciation and Amortization  | \$ 2,400 |                   |
| Increase in Accounts Receivable  | (600)    |                   |
| Increase in Inventories  | (2,000)  |                   |
| Decrease in Accounts Payable   | (500)    |                   |
| Increase in Accrued Liabilities  | 600      | (100)             |
| <b>Net cash provided by (used in) operating activities</b>                                       |          | <b>\$ 3,450</b>   |
| <b>Cash Flows from Investing Activities:</b>   |          |                   |
| Additions to Property, Plant, and Equipment  | \$ 0     |                   |
| Sales of Property, Plant, and Equipment  | 0        |                   |
| Other Non-Current Assets   | 0        |                   |
| <b>Net cash provided by (used in) investing activities</b>                                       |          | <b>\$ 0</b>       |
| <b>Cash Flows from Financing Activities:</b>   |          |                   |
| Issuance of Common Stock   | \$ 0     |                   |
| Increase (decrease) in short-term borrowings   | 0        |                   |
| Additions to long-term borrowings  | 0        |                   |
| Reductions in Long-Term Debt   | (2,550)  |                   |
| Reductions in Other Non-Current Liabilities  | (2,000)  |                   |
| Dividends paid   | 0        |                   |
| <b>Net cash provided by (used in) financing activities</b>                                       |          | <b>\$ (4,550)</b> |
| <b>Net increase (decrease) in Cash and cash equivalents</b>                                      |          | <b>\$ (1,100)</b> |
| <b>Cash and cash equivalents, beginning balance at December 31, 2012</b>                         |          | <b>9,500</b>      |
| <b>Cash and cash equivalents, ending balance at December 31, 2013</b>                            |          | <b>\$ 8,400</b>   |
| Supplemental cash flows information:   |          |                   |
| Cash paid for interest   |          | \$ 800            |
| Cash paid for taxes  |          | 150               |

## Liquidity Ratios and How to Calculate Them

**Liquidity ratios** measure the quality of current assets and whether these assets are sufficient to meet current obligations as they become due. Essentially, these help determine whether a company has enough current assets to quickly turn into cash to meet its current liabilities—its short-term (less than 12 months) bills.

Liquidity ratios may be more critical for companies whose cash inflows are erratic, such as retail companies, airline companies, and manufacturing companies. For example, retail and manufacturing companies are dependent on consumer purchases, which often are driven by seasonal celebrations, such as Christmas, or periodic needs, such as back-to-school purchases. Airlines, also, are busiest during seasonal periods.

All these industries can experience great fluctuations in sales volume and resultant cash flow problems. This is because the more erratic cash flow is for a company, the more critical it is that the company have a financial cushion to be able to pay its bills in times where sales are slow. Liquidity ratios may therefore be less critical for companies with a stable cash flow, such as utility companies, or companies that provide the basics of daily life, including food, fuel, and healthcare.

The liquidity ratios we will explore include the *current ratio*, the *quick ratio* (also known as the *acid test ratio*), and the *current cash debt coverage ratio*.

### Current Ratio

The **current ratio** seeks to determine whether the company has the ability to pay its current obligations. Generally, the higher the current ratio, the better the company will appear to creditors.

The current ratio is calculated by dividing total current assets by total current liabilities. These numbers can be found on the balance sheet. Here is what the formula looks like:

$$\text{Current Ratio} = \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$$

We practice using this formula by calculating the current ratio for Best General Company, using the balance sheet in Figure 6.1.

$$\text{Current Ratio} = \frac{\$62,000}{\$55,300} = 1.12$$

Any number higher than 1.0 means that the company has more than enough current assets to pay its current bills. Creditors prefer to see a number of at least 1.2 to 1.5 to be sure there is some cushion in case of an economic downturn.

Managers and investors may question the way the company is using its current assets when the number is higher than 2.0, because that may mean the company is not taking

full advantage of the assets on hand. For example, if a company holds so much cash that it can pay its bills twice, managers and investors may wonder if there is a better use for the cash, such as investing it to grow the company.

As the numbers above indicate, Best General Company maintains a current ratio that is a bit lower than creditors like to see, but still above 1.0. To reach the more desirable level of 1.2 to 1.5, the budget committee needs to recommend actions that could either increase current assets, such as generating more cash by developing a new target market, or reducing current liabilities by reducing short-term debt.

### *Quick Ratio*

The **quick ratio**, also called the **acid test ratio**, is a stricter, more conservative measure of whether the company has the money to pay its bills. This ratio includes only the most liquid assets—cash, cash equivalents (such as certificates of deposit, money market funds, and marketable securities), and accounts receivable. All these assets can be quickly converted to cash if needed.

The primary current asset left out of this calculation is inventory, because inventory may or may not be liquid, depending on the industry and the economic environment.

The quick ratio is calculated by dividing the sum of cash, cash equivalents, and accounts receivable by total current liabilities. These numbers can all be found on the balance sheet. Here is what the formula looks like:

$$\text{Quick Ratio} = \frac{\text{Cash} + \text{Cash Equivalents} + \text{Accounts Receivable}}{\text{Total Current Liabilities}}$$

We practice using this formula by calculating the quick ratio for Best General Company.

$$\text{Best General Company Quick Ratio} = \frac{\$8,400 + \$7,800}{\$55,300} = 0.29$$

Generally, creditors prefer to see a value of at least 1.0 for this ratio. If the number is lower than 1.0, it means that the company may be too dependent on the sales of inventory. If the economy slows down and inventory cannot be sold, the company may need to take on short-term debt to meet its obligations.

As the numbers indicate above, Best General Company's quick ratio is significantly below 1.0. If the managers of Best General Company find they need to borrow money, they will probably not be offered the best interest rates. Mai, the purchasing manager, would assist the budget committee with developing recommendations to reduce inventory on hand to generate the needed cash to improve the company's creditworthiness.

Some industries do traditionally have lower quick ratios, so the Best General Company budget committee should find out what quick ratio is common for its industry and develop recommendations to attain that level.

### *Current Cash Debt Coverage Ratio*

Creditors and investors also need to look at whether cash from operating activities is enough to pay the short-term obligations of a company. The **current cash debt coverage ratio** uses information from both the balance sheet (Figure 6.1) and the statement of cash flows (Figure 6.3). Using this ratio, a manager or analyst can better determine whether the actual operations of the company are sufficient to pay its bills.

The current cash debt coverage ratio is calculated by dividing net cash provided by operating activities by average current liabilities. Net cash provided by operating activities can be found on the statement of cash flows. The average current liabilities will need to be calculated by adding the current year balance and prior year balance and then dividing by 2. Here is what the formula looks like:

$$\text{Current Cash Debt Coverage Ratio} = \frac{\text{Net Cash Provided by Operating Activities}}{\text{Average Current Liabilities}}$$

We practice using this formula by calculating the current cash debt coverage ratio for Best General Company.

First we calculate the average current liabilities for the company:

$$\begin{array}{l} \text{Best General Company} \\ \text{Average Current Liabilities} \end{array} = \frac{\$55,200 + \$55,300}{2} = \$55,250$$

Then we calculate the current cash debt coverage ratio for the company:

$$\begin{array}{l} \text{Best General Company Current} \\ \text{Cash Debt Coverage Ratio} \end{array} = \frac{\$3,450}{\$55,250} = 0.06$$

As with the current ratio and quick ratio, the higher the current cash debt coverage ratio, the better. If the company has a negative cash flow from operations, this may be a warning sign that the company is headed for financial difficulties, if not bankruptcy.

Bob, the financial analyst leading the Best General Company budget committee, would certainly need to recommend significant changes to improve the cash flow from operating activities. A company in this position would likely need to find new sources of revenue, as well as develop plans to cut operating costs, to improve its financial picture.

Table 6.2 summarizes the liquidity ratios we have discussed.

**Table 6.2: Summary of liquidity ratios**

| Ratio                            | Purpose   | Calculation  |
|----------------------------------|---|--|
| Current ratio                    | Determines whether the company has the ability to pay its current bills                     | $\frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$   |
| Quick (acid test) ratio          | More conservative measure of the company's ability to pay its current bills                 | $\frac{\text{Cash} + \text{Cash Equivalents} + \text{Accounts Receivables}}{\text{Total Current Liabilities}}$ |
| Current cash debt coverage ratio | Measures the company's ability to pay its current bills with cash from operating activities | $\frac{\text{Net Cash Provided by Operating Activities}}{\text{Average Current Liabilities}}$                  |

### Task Box 6.1: Calculating Liquidity Ratios

#### Analyzing Industry Competitors, Part K

Practice calculating liquidity ratios using the financial statements of the two companies that you have chosen to compare and analyze (see Task Box 2.9).

Do the companies have the ability to pay their current liabilities? If so, why? If not, why not?

Will the bank loan them money? If so, will the loans be made at prevailing interest rates or will the company likely need to pay higher interest rates? Why do you reach that conclusion?

## Activity Ratios and How to Calculate Them

**Activity ratios** measure how effectively a company uses its resources by comparing financial results for certain key activities. These ratios, also called **turnover ratios**, help gauge how well a company is managing its assets and liabilities.

We will explore four turnover ratios that measure the turnover of accounts receivable, inventory, total assets, and accounts payable. The turnover ratios measure how many days it takes to collect assets, sell inventory, or pay liabilities.

### *Accounts Receivable Turnover Ratio*

The **accounts receivable turnover ratio** measures how many times receivables turn over during the year. The higher the number, the shorter the time between sales of products and collection of cash from customers.

The ratio can indicate whether the company may experience a liquidity problem if cash collections from customers slow down. If cash inflow slows, the company could have a problem paying its bills. Some companies solve the problem by selling their accounts receivable at a discount. They get less total cash for the receivables, but they can get a needed cash influx more quickly.

The limitation of this ratio is that it looks at a 12-month period and does not track fluctuations in companies whose cash inflow may be seasonally driven. One way to adjust for this is to calculate the turnover on a quarter-to-quarter or month-to-month basis.

Seasonal companies will need to stock their shelves to different levels depending on the time of year. For example, a toy store sells toys throughout the year but may sell as much as 50% of its inventory during the holiday rush in November and December. A ratio that tries to smooth this out over 12 months will not accurately reflect this company's ability to move, or turn over, its inventory at the most crucial time of the year. If managers want to test this company's turnover, the most crucial time to test would be the fourth quarter of the current year compared to the fourth quarter of the previous year, to see how well the company did during its most important quarter from year to year.

The number can also be distorted if the company sells primarily to customers who pay cash rather than buy using store credit. An employee attempting to calculate the accounts receivable turnover for his own company should use the number for net sales on store credit rather than the net sales number from the income statement. For example, suppose a company sells \$1 million in product and 50% of the sales are on store credit. Those sales on store credit would be added to the accounts receivable account. When calculating this ratio, \$500,000 would be used as the net credit sales number to measure the accounts receivable turnover.

The accounts receivable turnover ratio is calculated by dividing net credit sales (or the net sales number from the income statement in Figure 6.2, if net credit sales are not known) by average accounts receivable. Here is what the formula looks like:

$$\text{Accounts Receivable Turnover Ratio} = \frac{\text{Net Credit Sales (or Net Sales)}}{\text{Average Accounts Receivable}}$$

Average accounts receivable is calculated by adding the prior year's accounts receivable balance found on the balance sheet (Figure 6.1) plus the current year's accounts receivable balance and then dividing by 2.

In addition to calculating the turnover ratio, a manager can pinpoint the number of days unpaid customer balances remain in accounts receivable by dividing 365 by the accounts receivable turnover ratio just calculated. Calculating this number for three to five years can help determine whether collections from customers are slowing down, which can be an indication of cash flow problems ahead.

Here is what the formula for days unpaid customer accounts in receivables looks like:

$$\text{Days Unpaid Customer Accounts in Receivables} = \frac{365}{\text{Accounts Receivable Turnover Ratio}}$$



We practice calculating the accounts receivable turnover ratio and the days unpaid customer accounts in receivables number for Best General Company.

First we need to calculate average accounts receivable:

$$\text{Best General Company Average Accounts Receivable} = \frac{\$7,200 + \$7,800}{2} = \$7,500$$

Next we calculate the accounts receivable turnover ratio:

$$\text{Best General Company Accounts Receivable Turnover Ratio} = \frac{\$100,000}{\$7,500} = 13.33$$

Finally we calculate the number of days it takes for customers to pay their accounts in receivables:

$$\text{Best General Company Days Unpaid Customer Accounts in Receivables} = \frac{365}{13.33} = 27.4 \text{ days}$$

Best General Company is taking 27.4 days to collect from the customers who buy using store credit rather than pay with cash or a third-party credit card. Since this is less than 30 days, the ratio shows an acceptable collection policy. Most customers are paying quickly, and the company is generating a reasonable cash flow from customers who pay using credit. The quicker a company gets paid, the better the cash flow.

The budget committee could review industry statistics to find out what is normal for companies similar to Best General Company, but usually collecting from customers in under 30 days is considered good. Whether the turnover is good or bad will be based on what the normal collection rate is for the industry.

### *Inventory Turnover Ratio*

The **inventory turnover ratio** measures the liquidity of inventory. Using this ratio, analysts can determine how many times the company sold and replaced its inventory during an accounting period.

To calculate the ratio, use the cost of goods sold number from the income statement (Figure 6.2). Then calculate the average inventory on hand by adding the beginning inventory (inventory as of the first of the year, which will be the same as the ending inventory for the prior year and can be found on the balance sheet) and ending inventory (ending inventory for the current year, which can also be found on the balance sheet) and then divide the total by 2. Here is what the formula looks like:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Once the turnover ratio is found, use the next formula to determine the number of days inventory is held by the company before being sold. Here is what the formula looks like:

$$\text{Days Sales in Inventory} = \frac{365}{\text{Inventory Turnover Ratio}}$$

There are some limitations to this calculation because some inventory may move quickly and other inventory may sit on the shelves for months. An external financial report reader has no way to distinguish among the different types of inventory. However, executives and managers in the company will likely get reports that show inventory turnover numbers for each product line, so they can track inventory turnover by product.

We practice using the inventory turnover by calculating ratios for the Best General Company.

First we need to calculate average inventory for Best General Company:

$$\text{Best General Company Average Inventory} = \frac{\$38,000 + \$40,000}{2} = \$39,000$$

Next we calculate the inventory turnover ratio:

$$\text{Best General Company Inventory Turnover Ratio} = \frac{\$73,000}{\$39,000} = 1.87$$

Finally we calculate the number of days sales in inventory:

$$\text{Best General Company Days Sales in Inventory} = \frac{365}{1.87} = 195.2 \text{ days}$$

This ratio shows it is taking, on average, 195 days for Best General Company to sell each piece of inventory. Some types of inventory may sell faster and some types may sell slower. However, taking over three months to sell inventory would make it hard for any company to maintain its cash flow.

The Best General Company budget committee members would need to investigate further which inventory is selling slowly and which inventory is selling more quickly. Mai, as the purchasing manager, would likely be tasked with this project. The committee would then need to make recommendations for changes in its inventory purchasing or manufacturing processes, in addition to changes in marketing and sales. We know from reviewing the balance sheet that inventory on hand increased from 2012 to 2013, so that, too, shows a trend in the wrong direction.

### ***Total Asset Turnover Ratio***

The **total asset turnover ratio** measures how efficiently a company is using its assets to generate sales. The turnover number equals the amount generated in sales for every dollar invested. The ratio is calculated by dividing net sales found on the income statement by the average of total assets found on the balance sheet. (The average of total assets is

calculated by adding the total assets from the prior year to the total assets of the current year and then dividing by 2.) Here is what the formula looks like:

$$\text{Total Asset Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

Let's practice using this formula by calculating the total asset turnover ratio for Best General Company.

First, we need to calculate average of total assets for the current year:

$$\text{Best General Company Total Average Assets} = \frac{197,200 + 198,100}{2} = 197,650$$

Next, let's practice using this formula by calculating the total asset turnover ratio for Best General Company:

$$\text{Best General Company Total Asset Turnover Ratio} = \frac{\$100,000}{\$197,650} = 0.51$$

Best General Company is generating \$0.51 in revenue for every \$1.00 spent on assets. Whether this is a reasonable number depends on what is common for other companies in this field. Manufacturing companies, which must maintain factories, generally have a lower asset turnover ratio because their fixed asset costs (such as factories) are much higher than a company that purchases, rather than produces, its inventory.

### *Accounts Payable Turnover Ratio*

The **accounts payable turnover ratio**, also known as the **creditors turnover ratio**, measures the number of times the accounts payables are paid during an accounting period. Once that turnover ratio is known, we can use it to calculate the number of days it takes for a company to pay its bills.

Ideally, to calculate this ratio, we use the net credit purchases number, but external financial report readers will not have access to that information. If the net credit purchases number is not available, use the Cost of Goods Sold number found on the income statement (which will reflect the total purchases).

The accounts payable turnover ratio is calculated by dividing net credit purchases (or Cost of Goods Sold) by the Average Accounts Payable. (Average Accounts Payable can be calculated by adding the prior year's Accounts Payable on the balance sheet to the current year's Accounts Payable and dividing by 2.) Here is what the formula looks like:

$$\text{Accounts Payable Turnover Ratio} = \frac{\text{Net Credit Purchases (or Costs of Goods Sold)}}{\text{Average Accounts Payable}}$$

Then the days in payables is calculated.

$$\text{Days in Payables} = \frac{365}{\text{Accounts Payable Turnover Ratio}}$$

We practice using this ratio by calculating the ratio for Best General Company.

First we need to calculate average accounts payable for Best General Company:

$$\text{Best General Company Average Accounts Payable} = \frac{\$9,400 + \$8,900}{2} = \$9,150$$

Next we calculate the accounts payable turnover ratio:

$$\text{Best General Company Accounts Payable Turnover Ratio} = \frac{\$73,000}{\$9,150} = 7.98$$

Finally we calculate the number of days in payables:

$$\text{Best General Company Days in Payables} = \frac{365}{7.98} = 45.7 \text{ days}$$

Best General Company takes an average of 45.7 days to pay its bills. Vendors and suppliers look carefully at this number when negotiating contracts. The number of days it will take them to get paid can be a big factor in the costs of supplying goods or services to a company.

Accounting managers also keep a close eye on this number to be sure the turnover ratio meets the goals set for the department. Higher-level executives and managers also watch this number because it can impact their ability to do business with others, including creditors, suppliers, and vendors.

Table 6.3 summarizes the activity ratios we have discussed.

**Table 6.3: Activity ratios**

| Ratio                              | Purpose   | Calculation   |
|------------------------------------|---|---|
| Accounts receivable turnover ratio | Determines how long it takes for customers to pay their bills                 | $\frac{\text{Net Credit Sales (or Net Sales)}}{\text{Average Accounts Receivable}^*}$           |
| Inventory turnover ratio           | Determines how long it takes for the company to sell its products or services | $\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}^*}$                                  |
| Total assets turnover ratio        | Determines the efficiency of the company's use of its assets                  | $\frac{\text{Net Sales}}{\text{Average Total Assets}}$  |
| Accounts payable turnover ratio    | Determines how long it takes for the company to pay its current bills         | $\frac{\text{Net Credit Purchases (or Cost of Goods Sold)}}{\text{Average Accounts Payable}^*}$ |

\*Divide 365 by turnover ratio to find number of days in accounts receivable, inventory, and accounts payable

## Task Box 6.2: Practicing Activity Ratios

### Analyzing Industry Competitors, Part I

Practice using the activity ratios by calculating them for the two companies you have chosen to compare. How do the companies compare in terms of collecting from customers, selling inventory, efficiently using their assets to generate sales, and paying their bills? Explain why you've reached those conclusions.

## Leverage Ratios and How to Calculate Them

**Leverage ratios** measure how much total debt a company owes to its creditors and whether it can pay its long-term debt obligations. **Leverage** is the degree to which the business borrows money. By using leverage, a company's cash can go a lot further.

For example, when a company buys a building using leverage (a mortgage) and cash, it will likely only use a small portion of its cash as a down payment and borrow the rest. Suppose the building cost \$4 million and the company must put down 20%, or \$800,000. It then finances the rest with a mortgage. While it may be easy for a large company with billions of dollars in cash to buy the building using cash, most companies do not have \$4 million sitting around for the purchase of a building. Even if a company does have that much cash on hand, it will likely ask whether that is a good use of it. Leverage ratios can help determine that answer.

Businesses with a lot of debt (or leverage) in relation to their equity can be more vulnerable to an economic downturn than those with lower levels of debt. Debt will need to be paid regardless of whether a company is generating revenue to pay that debt. So a higher level of debt makes a company more vulnerable in a downturn when revenues tend to decrease. Banks will see this higher level of debt as risk, so companies carrying high levels of debt will likely pay higher interest rates as well. This can make leverage more expensive for them.

The levels of debt carried by companies will vary by industry. When looking at debt measures, an analyst can draw a conclusion about the financial health of a company only by comparing its debt levels to those of other companies in the same industry. For example, manufacturing companies that must buy significant amounts of plant and equipment to operate will carry higher levels of debt than service companies that do not have the same fixed-cost obligations.

We explore five leverage ratios in this section: the *debt to equity ratio*, the *interest coverage ratio*, the *debt to capital ratio*, the *cash debt coverage ratio*, and the *cash flow coverage ratio*.

### *Debt to Equity Ratio*

When a company decides to take on a major project that will require an infusion of cash that the company does not have on hand, executives must decide whether to raise that cash by (1) taking on more debt or (2) selling shares of stock (equity). If company management chooses to use debt, it may sell bonds or take a long-term loan, such as a mortgage on a new plant or other building. When a company uses such leverage, it must pay back both the principal and interest. However, when a company chooses to sell stock (equity), it does not have to pay back the investors or make interest payments.

Therefore, companies need to find the right mix of debt and equity financing. Too much debt can be risky—it could mean that during a downturn the company might not be able to pay the interest on the debt. It can also be costly—ongoing interest payments must be made regardless of whether the company is earning enough money to pay. In addition to the interest payments, the company will likely need to pay down part of the principal each year.

The **debt to equity ratio** indicates how much a company allocates each year to debt versus equity. It is calculated by dividing Total Liabilities by Total Shareholders' Equity (two line items on the balance sheet). Here is what the formula looks like:

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Shareholders' Equity}}$$

We practice calculating this ratio using the balance sheet of Best General Company.

$$\text{Best General Company's Debt to Equity Ratio} = \frac{\$169,750}{\$27,450} = 6.18$$

Generally, lenders and creditors look for a number close to 1.0 for this ratio, which would be an equal split between debt and equity. Best General Company is heavily laden with debt and a very small proportion of shareholders' equity. Few companies with this debt to equity ratio would be able to seek additional debt for future cash needs. Best General Company should consider recommendations to either lower the company's debt burden or increase cash investments in the company.

### *Interest Coverage Ratio*

The **interest coverage ratio** measures whether the company can pay its interest on both short-term and long-term debt using its earnings. The ratio is calculated by dividing Earnings Before Interest and Taxes (EBIT) (found on the income statement) by Interest Expense (found on the income statement). Here is what the formula looks like:

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Interest Expense}}$$

The higher the ratio, the better. An interest coverage ratio of less than 1.5 could mean the company may have difficulty meeting its debt obligations. If the number is below 1.0, the company is not generating enough revenues to pay its interest expenses and could be near bankruptcy.

We practice calculating the interest coverage ratio for the Best General Company. Best General Company does not show this number on the income statement, so we must first calculate the EBIT before calculating the ratio. We see at the bottom of the statement of cash flows that the company paid \$800 in interest and \$150 in taxes. To calculate EBIT, we would add \$2,500 in Other Income to the operating profit of \$4,500 to find earnings before interest and taxes. We will assume that the \$800 in Other Expenses were for interest, so we only need to subtract \$100 from the Other Expenses of \$900. So EBIT would be  $\$4,500 + \$2,500 - \$100 = \$6,900$ :

$$\text{Best General Company's Interest Coverage Ratio} = \frac{\$6,900}{\$800} = 8.63$$

We can see from calculating this ratio that the company earns 8.63 times the interest, which is more than enough to pay its interest expenses. Looking only at this ratio, the budget committee can see the company is generating more than enough cash to avoid defaulting on debt.

### *Debt to Capital Ratio*

The **debt to capital ratio** measures what portion of a company's capital comes from debt financing. Lenders monitor this number closely and often place debt to capital ratio requirements in the terms of credit agreements for a company. If a company's debt builds above what lenders allow, the lender can call the loan, which means the company must repay the loan immediately. If a loan is called, the company must then seek other financing to pay it off, which likely will have less favorable terms with a higher interest rate. Managers must keep a close watch on these lenders' terms to avoid a problem with their lenders and their company borrowings.

The debt to capital ratio is calculated by dividing total debt by total capital. We divide total liabilities by the sum of total liabilities plus shareholders' equity on the balance sheet. Some analysts break this down in a more complex way, but most believe the information gathered from the simpler form of the ratio is sufficient. Here is what the formula looks like:

$$\text{Debt to Capital Ratio} = \frac{\text{Total Liabilities}}{\text{Total Liabilities} + \text{Shareholders' Equity}}$$

Generally, lenders look for a debt to capital ratio of 0.35 or less. If a debt to capital ratio falls above 0.50, lenders consider the company to be a much higher credit risk, which means the company could have a harder time getting a loan or have to pay much higher interest rates. Again, this is dependent on industries. Some industries do have much higher debt to capital ratios than others, so it is important to know what is common in the industry the financial report reader is analyzing.

We practice calculating the debt to capital ratio using the balance sheet of the Best General Company.

$$\text{Best General Company's Debt to Capital Ratio} = \frac{\$169,750}{\$197,200} = 0.86$$

Clearly, Best General Company carries a higher level of debt than is preferred by lenders. The company would likely be considered a high credit risk and may have difficulty getting new financing.

### *Cash Debt Coverage Ratio*

The **cash debt coverage ratio** measures whether a company can pay its debt over the long term. Long-term liabilities include all debt that will need to be paid beyond the current 12-month period. If long-term debt is too high, the company will eventually have trouble paying off its debt and meeting its interest obligations.

The cash debt coverage ratio is calculated by dividing Net Cash Provided by Operating Activities (found on the statement of cash flows) by Average Total Liabilities (based on information on the balance sheet). Average Total Liabilities is calculated by adding the current total liabilities to the prior year's total liabilities and dividing by 2. The formula looks like this:

$$\text{Cash Debt Coverage Ratio} = \frac{\text{Net Cash Provided by Operating Activities}}{\text{Average Total Liabilities}}$$

This number shows what percentage of a company's cash from operations is needed to meet its debt obligations. If operations do not provide enough cash, the company would need to either borrow money or issue shares of stock to raise cash. Therefore, the higher the ratio, the better.

If the Net Cash Provided by Operating Activities is a negative number, the company likely is going to have a hard time paying its liabilities. Some startup companies or companies in the early growth phase may have cash to use from investors until their product is developed and ready for sale on the market. If this is the case, a negative cash flow would not be as critical.

We practice calculating this ratio using the numbers for the Best General Company.

First we calculate the average total liabilities:

$$\text{Best General Company's Average Total Liabilities} = \frac{\$174,200 + \$169,750}{2} = \$171,975$$

Then we calculate the cash debt coverage ratio:

$$\text{Best General Company's Cash Debt Coverage Ratio} = \frac{\$3,450}{\$171,975} = 0.02$$

As we have seen with other ratios, the company is not generating enough cash to pay its debts. The Best General Company budget committee must develop recommendations for generating cash through new revenues and reducing operating expenses. However, as is true for all ratios, the committee must know what is common for the industry to know



how well the company is actually doing. Remember, no company needs to pay all its debt obligations in one year. This ratio does include long-term debt.

### *Cash Flow Coverage Ratio*

Businesses need cash to do more than just pay their debt obligations. They must also use cash for expansion to grow the business, including building new plants and buying tools and equipment. The **cash flow coverage ratio** shows what percentage of a company's cash requirements are paid from its operating activities. It measures the company's ability to pay its bills and grow the company. If the company pays dividends, that too will be taken into consideration when calculating this ratio.

To calculate this ratio, collect information from the statement of cash flows, the balance sheet, and the income statement. To calculate the company's cash requirements, add the following accounts:

| Accounts/item                       | Location  |
|-------------------------------------|---|
| Capital Expenditures                | Investing Activities section of the Statement of Cash Flows |
| + Cash Dividends                    | Financing Activities section of the Statement of Cash Flows |
| + Interest Expense                  | Income Statement  |
| + Current Portion of Long-Term Debt | Balance Sheet   |
| + Short-Term Borrowing              | Balance Sheet   |
| = Cash Requirements                 |   |

Then divide Cash Provided by Operating Activities by the Cash Requirements. The formula looks like this:

$$\text{Cash Flow Coverage Ratio} = \frac{\text{Net Cash Provided by Operating Activities}}{\text{Cash Requirements}}$$

We practice calculating this ratio using the financial statements of Best General Company.

First, we must calculate the cash requirements:

$$\begin{aligned} \text{Best General Company Cash Requirements} &= \$800 \text{ (Interest Expense)} \\ &+ \$26,000 \text{ (Short-Term Debt)} = \$26,800 \end{aligned}$$

Then we can calculate the cash flow coverage ratio:

$$\text{Best General Company's Cash Flow Coverage Ratio} = \frac{\$3,450}{\$26,800} = 0.13$$

The budget committee needs to compare these numbers to what is common in Best General Company's industry to know how well the company is doing. One thing that is clear is that the company is not generating enough cash from its operating activities to pay all its cash needs in a 12-month period. This is a critical issue for the committee to address.

Table 6.4 summarizes the leverage ratios we have discussed.

**Table 6.4: Leverage ratios**

| Ratio                    | Purpose  | Calculation   |
|--------------------------|--|---|
| Debt to equity ratio     | Measure how much debt a company carries versus its equity for debt                                 | $\frac{\text{Total Liabilities}}{\text{Total Shareholders' Equity}}$                            |
| Interest coverage ratio  | Measures whether a company can pay its interest expenses   | $\frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Interest Expense}}$              |
| Debt to capital ratio    | Measures what portion of the company's capital comes from debt                                     | $\frac{\text{Total Liabilities}}{\text{Total Liabilities} + \text{Total Shareholders' Equity}}$ |
| Cash debt coverage ratio | Measures a company's ability to pay all debt obligations by the cash generated from its operations | $\frac{\text{Net Cash Provided by Operating Activities}}{\text{Average Total Liabilities}}$     |
| Cash flow coverage ratio | Measures a company's ability to meet all cash requirements from its operations                     | $\frac{\text{Net Cash Provided by Operating Activities}}{\text{Cash Requirements}}$             |

### Task Box 6.3: Calculating Leverage Ratios

#### Analyzing Industry Competitors, Part M

Practice calculating leverage ratios using the financial statements for the two companies you have chosen to analyze. Compare their debt levels and their ability to pay those debts. Which company is in a better position? Why?

## Profitability Ratios and How to Calculate Them

Now we will look at **profitability ratios**, which are commonly used to determine whether a company is profitable. Managers use these ratios to be certain goals have been met and to measure their company's success in the industry.

Managers also have an obligation to manage profitability to benefit investors, for whom knowing whether a company is profitable is critical in making a decision about whether they want to invest in a company or sell the investment they already have. Investors not only include those who buy the stock on the open market, but also private investors.

Creditors may also look at profitability ratios, but for them the more critical ratios are those related to whether the company will be able to pay its debt obligations.

The profitability ratios we explore include the *price/earnings ratio*, the *net profit ratio*, *cash flow margin*, the *dividend yield ratio*, *return on assets ratio*, and *return on equity ratio*.

### ***Price/Earnings Ratio***

When it comes to the financial press, the ratio probably discussed most often is the **price/earnings (P/E) ratio**, which measures the price of a company's stock versus its earnings. Two numbers are used in this calculation: the earnings per share and the current price of the stock.

The earnings per share shows how much profit the company earned per share of stock held by investors. Investors include those who bought stock on the public market, as well as those who started the company, employees of the company, and anyone else who owns stock.

This ratio is very important to managers who want to attract investors to the company, especially if managers are considering issuing new stock. The higher the price of the stock, the more money can be raised if new stock is to be issued or shares held by the company are to be sold.

The number of shares on the market for a 12-month period can vary greatly because shares can be issued throughout the year to employees or outside investors. Shares can also be bought back from the public. The company will include a weighted average number of shares on the market at the bottom of its income statement along with an earnings per share number. We discussed this in Chapter 3.

The second number needed is the current price of the stock. This price is listed on financial websites that quote stock prices, such as Yahoo Finance or Google Finance. The basic calculation for the price/earnings ratio is simple. Divide the price of the stock by the earnings per share. Here is what the formula looks like:

$$\text{Price/Earnings (P/E) Ratio} = \frac{\text{Market Price per Share}}{\text{Earnings per Share}}$$

Often, the price/earnings ratio for companies is published online.

Let's practice calculating the price/earnings ratio for IBM and 3M. (Best General Company is not sold on the public markets, so there would be no way to calculate its price/earnings ratio.) The calculations in this chapter will use the price from December 31, 2012. An analyst can use the price per share from any date that enables him to make the decision he needs to make.

$$\text{IBM's Price/Earnings Ratio} = \frac{\$191.55}{\$14.37} = 13.33$$

$$\text{3M's Price/Earnings Ratio} = \frac{\$92.85}{\$6.32} = 14.69$$

Investors were willing to pay 13.33 times the earnings per share to buy IBM's stock on that date and 14.69 times the earnings per share to buy 3M's stock. Generally, investors consider a stock with a P/E ratio over 15 to be riskier, but in some industries, a P/E of 20 to 25 is considered acceptable.

Note: In addition to the basic price/earnings ratio, an investor may also want to look at the *trailing price/earnings ratio*, which is calculated using information from the previous four quarters or 12 months of earnings. This ratio looks at the numbers from an historical perspective. Another important ratio is the *leading* or projected price/earnings ratio, which is based on analysts' expectations for the future of earnings of the company. Of course, it is important to note that any price/earnings ratio based on future projections is only as good as the analyst making the projection.

### ***Net Profit Ratio***

The **net profit ratio** measures the percentage of sales that resulted in a profit for the owners of the company. Essentially, this number measures the cushion a company has to continue operating in bad times. The ratio provides managers with a way to quickly assess whether a company will be able to meet a downturn in the economy, fight off strong competition, or continue to operate in a time of slowing sales.

To calculate net profit ratio, divide the Net Profit (Net Income) at the bottom of the income statement by the Net Sales at the top of the income statement. The formula looks like this:

$$\text{Net Profit Ratio} = \frac{\text{Net Profit (Net Income)}}{\text{Net Sales}}$$

We practice calculating the net profit ratio for Best General Company.

$$\text{Best General Company's Net Profit Ratio} = \frac{\$3,550}{\$100,000} = 0.04$$

The company earns in net profits \$0.04 of every \$1.00 it sells. The company has very little cushion to maintain profitability in a downturn. The budget committee will certainly want to recommend ways to improve the net profit ratio with strategies for increasing revenue, as well as cutting costs and expenses. To determine what the appropriate net profit ratio is for any business, managers need to research the industry benchmarks and compare results to similar businesses.

### ***Dividend Yield Ratio***

Investors want to know how much they are earning from the dividends a company pays. The **dividend yield ratio** determines the effective return an investor gets from the dividends paid. The ratio is calculated by dividing the Dividends per Share (which can be found on the income statement) by the Price per Share (which can be found on a financial website). The formula looks like this:

$$\text{Dividend Yield Ratio} = \frac{\text{Dividend per Share}}{\text{Market Price per Share}}$$

Since Best General Company is not a public company, we practice calculating the dividend yield ratio using the income statements of IBM and 3M.

$$\text{IBM's Dividend Yield Ratio} = \frac{\$3.30}{\$191.55} = 0.017$$

$$\text{3M's Dividend Yield Ratio} = \frac{\$2.36}{\$92.85} = 0.025$$

IBM's dividend yield as of December 31, 2012 was 1.7%, and 3M's was 2.5%. Note that a company's dividend yield ratio changes almost daily as its stock price goes up and down. Investors who use their portfolios to generate cash, such as retirees who live on their cash flow from investments, watch dividend yield closely. The higher the ratio, the happier investors will be. Investors will compare the dividend yield ratio to investments in similar companies and likely choose the companies with the highest yields.

### *Cash Flow Margin*

Managers can test operating performance in relationship to cash generated from operations and sales. Remember, it is cash that a company needs to pay its debt and invest in new assets. **Cash flow margin** is calculated by dividing net cash flow from operating activities (found on the statement of cash flows) by the net sales (found on the income statement). The formula looks like this:

$$\text{Cash Flow Margin} = \frac{\text{Net Cash Provided by Operating Activities}}{\text{Net Sales}}$$

We practice calculating the cash flow margin for Best General Company:

$$\text{Best General Company's Cash Flow Margin} = \frac{\$3,450}{\$100,000} = 3.5\%$$

Best General Company cash flow from operations in 2013 was 3.5%. This is a narrow margin and a downturn in the economy could push this into negative territory. As we saw when calculating the quick ratio, Best General Company is having difficulty generating enough cash from operations to pay its debt or invest in new assets. The budget committee would need to develop recommendations to improve Best General Company's cash position.

### *Return on Assets Ratio*

Managers, investors, and creditors want to know whether the company is managing its assets well. The **return on assets (ROA) ratio** indicates how much a company earns from its assets or capital invested and how well the company uses its assets to generate a profit.

The return on assets ratio is calculated by dividing the Net Income from the bottom line of the income statement by the Total Assets on the balance sheet. Here is what the formula looks like:

$$\text{Return on Assets Ratio} = \frac{\text{Net Income (Net Profit)}}{\text{Total Assets}}$$

We practice calculating the return on assets ratio using the financial statements of Best General Company.

$$\text{Best General Company's Return on Assets Ratio} = \frac{\$3,550}{\$197,200} = 0.02$$

Best General Company generates a return of 2 cents on every \$1 of assets. To decide whether this is a good return, a manager or analyst compares the return on assets to other similar companies or to the industry. Note that the return on assets ratio can vary significantly by type of industry. Manufacturing companies tend to use their capital to maintain manufacturing operations with factories and high-priced equipment. They will tend to have a lower return on assets ratio than service companies that don't have to invest a lot of fixed assets.

### *Return on Equity Ratio*

The **return on equity (ROE) ratio** measures the return a company earns for its investors. The ratio is calculated by dividing the Net Income by the Shareholders' Equity on the balance sheet. Here is what the formula looks like:

$$\text{Return on Equity Ratio} = \frac{\text{Net Income (Net Profit)}}{\text{Total Shareholders' Equity}}$$

Note that this ratio has limits because it looks only at income and does not include the impact of debt on profitability or its future earnings potential. The return on assets ratio gives investors and creditors a better outlook for the company as a whole.

We practice calculating the return on equity ratio using the financial statements of Best General Company:

$$\text{Best General Company's Return on Equity Ratio} = \frac{\$3,550}{\$27,450} = 0.13$$

Best General Company earns just \$0.13 for every \$1.00 the owners of the company invested in the company. To determine if this is a reasonable return, an analyst needs to compare the return on equity to other similar companies.

Table 6.5 summarizes the profitability ratios we have discussed.

**Table 6.5: Profitability ratios**

| Ratio                      | Purpose  | Calculation   |
|----------------------------|--|---|
| Price/earnings (P/E) ratio | Compares the market value of the stock to the earnings per share                           | $\frac{\text{Market Price per Share}}{\text{Earnings per Share}}$                   |
| Net profit ratio           | Measures the percentage of profit the company earned from sales                            | $\frac{\text{Net Profit (Net Income)}}{\text{Net Sales}}$                           |
| Dividend yield ratio       | Measures the dividends paid to the shareholders versus the market value of the shares      | $\frac{\text{Dividend per Share of Stock}}{\text{Market Price per Share of stock}}$ |
| Cash flow margin           | Measures operating performance in relationship to cash generated from operations and sales | $\frac{\text{Net Cash Flow from Operating Activities}}{\text{Net Sales}}$           |
| Return on assets ratio     | Measures how well a company is using its assets  | $\frac{\text{Net Income}}{\text{Total Assets}}$                                     |
| Return on equity ratio     | Measures how well a company is earning revenue for its investors                           | $\frac{\text{Net Income}}{\text{Total Shareholders' Equity}}$                       |

### Task Box 6.4: Calculating Profitability Ratios

#### Analyzing Industry Competitors, Part N

Calculate the profitability ratios for the two companies you have chosen to analyze. Which company is doing a better job for its investors? Why do you reach that conclusion?

## 6.4 How Internal Reports Are Used to Make Decisions

Employees and managers will have access to more information and a greater variety of reports for their own company. In this section, we will discuss and review examples of some common internal reports that managers use. Since there are no government requirements for internal reporting, the reports shown here may be different from those managers see in their jobs. A manager should always meet with her accounting team to discuss the types of internal reports that will be useful for the departments she manages.

### Budget vs. Actual Reports

Most companies go through a yearly exercise to develop a budget for the next year. This one-year budget is based on the results of the prior year with an adjustment for inflation and the addition of any new projects.

Generally, the budgeting process starts with the marketing and sales team, who forecast what sales will be for the next year, which sets a maximum for the budget. Generally, a company does not plan to spend more than the income it expects to make, unless it is a growth company developing new products without much income. In that case, the company will likely develop a budget based on the money it expects to get from investors, lenders, or both.

Budgeting more than a company expects to earn is a recipe for financial suicide. Note that some companies even create a five-year budget projection. However, any long-term projection requires a lot of guesswork.

Smart companies then use these numbers throughout the year to gauge how well they are doing on a month-by-month basis. Some companies even compare their budgeted numbers to their actual numbers on a week-by-week basis if they are in an industry that changes that rapidly. For example, many major retailers, including Walmart, review their results week by week and adjust inventory ordering accordingly.

These companies prepare a **budget vs. actual report** for each of their managers based on the projected income statement. In doing so, they flag line items that do not match the budget. For example, line items over budget may print out in red ink, whereas line items under budget may print out in green ink. If the line item is within expected norms, it would print out in black ink. If color isn't possible, a company may use ↑ and ↓ arrows or another symbol that means something to its management team.

For example, suppose the line item for Sales is printed in red ink. The managers responsible for sales would need to find out why they are not meeting expectations and fix the problem as soon as possible. If they determine that the lower sales are based on external forces, such as a downturn in the economy, the company may need to readjust its budget forecast and lower spending to avoid a major loss at the end of the year.

If the Sales line item prints out in green ink, that too could be a sign of a possible problem that needs to be fixed. If the company planned for a certain activity level, it may need to adjust that level to meet unexpected demand. For example, a manufacturing company may need to expand its manufacturing hours to produce additional product. A retail company may need to hire more sales staff to serve the influx of customers.

Whether a line item prints out in red or green (or with other designations used to indicate a variance from the budget), decisions likely will need to be made for the actual use of assets and the company's activity levels. Flags also may alert managers to rising costs for goods or services to be sold or to any other line item that shows a difference from what was budgeted.

A company would need to decide when the flag should appear, such as when an item is a certain percentage higher or lower than budgeted, or it may decide that a dollar amount difference should be flagged, or a combination of both measurements may be used. Spreadsheet programs can be designed to automatically generate flags. Figures 6.4 and 6.5 show the Budget versus Actual reports for a company called the Everyday Foods Company. Figure 6.4 shows the year-to-date report. Figure 6.5 shows a monthly report.



**Figure 6.4: Everyday Foods Company year-to-date budgeted income statement**

This budgeted income statement is for the fictitious Everyday Foods Company. Comparing year-to-date budget to actual numbers helps managers determine where they may be off target. This exercise can also help them plan corrections to stay on budget or revise budget projections, if necessary.

| <b>Everyday Foods Company<br/>Year-to-Date Budgeted vs. Actual Income Statement<br/>January through September 2013</b> |                          |                          |                          |                     |
|--|--------------------------|--------------------------|--------------------------|---------------------|
|  | <b>Budget</b>            | <b>Actual</b>            |                          | <b>% of</b>         |
|  | <b>Jan–Sept 2013</b>     | <b>Jan–Sept 2013</b>     | <b>\$ Change</b>         | <b>Budget</b>       |
| <b>Sales</b>   | \$ 562,500               | \$ 530,000               | \$ (32,500)              | 94.2%               |
| <b>Cost of Goods Sold</b>  | 300,000                  | 280,000                  | (20,000)                 | 93.3%               |
| <b>Gross Profit</b>  | <u>\$ 262,500</u>        | <u>\$ 250,000</u>        | <u>\$ (12,500)</u>       | <u>95.2%</u>        |
| <b>Operating Expenses:</b>   |                          |                          |                          |                     |
| Advertising Expense  | \$ 7,875                 | \$ 4,500                 | \$ (3,375)               | 57.1%               |
| Car and Truck Expense  | 11,250                   | 9,750                    | (1,500)                  | 86.7%               |
| Commissions Expense  | 6,375                    | 6,175                    | (200)                    | 96.9%               |
| Insurance Expense  | 4,200                    | 4,200                    | 0                        | 100.0%              |
| Meals and Entertainment Expense  | 1,125                    | 1,300                    | 175                      | 115.6%              |
| Office Expense   | 4,875                    | 3,500                    | (1,375)                  | 71.8%               |
| Professional Service Expense   | 2,400                    | 2,400                    | 0                        | 100.0%              |
| Rent Expense   | 18,750                   | 18,750                   | 0                        | 100.0%              |
| Repairs Expense  | 2,250                    | 3,000                    | 750                      | 133.3%              |
| Salary/Wages Expense   | 30,000                   | 31,500                   | 1,500                    | 105.0%              |
| Travel Expense   | 3,375                    | 2,500                    | (875)                    | 74.1%               |
| Utilities Expense  | 7,500                    | 7,900                    | 400                      | 105.3%              |
| Other Expense  | 30,000                   | 25,000                   | (5,000)                  | 83.3%               |
| <b>Total Operating Expenses</b>  | <u>\$ 129,975</u>        | <u>\$ 120,475</u>        | <u>\$ (9,500)</u>        | <u>92.7%</u>        |
| <b>Operating Income</b>  | <u>\$ 132,525</u>        | <u>\$ 129,525</u>        | <u>\$ (3,000)</u>        | <u>97.7%</u>        |
| Interest Expenses  | 4,200                    | 4,200                    | 0                        | 100.0%              |
| Depreciation Expenses  | 5,625                    | 5,625                    | 0                        | 100.0%              |
| <b>Income Before Income Taxes</b>  | <u>\$ 122,700</u>        | <u>\$ 119,700</u>        | <u>\$ (3,000)</u>        | <u>97.6%</u>        |
| Income Tax Expense   | 5,726                    | 5,585                    | (141)                    | 97.5%               |
| <b>Net Profit</b>  | <u><u>\$ 116,974</u></u> | <u><u>\$ 114,115</u></u> | <u><u>\$ (2,859)</u></u> | <u><u>97.6%</u></u> |

**Figure 6.5: Everyday Foods Company monthly budgeted income statement**

Comparing budget to actual numbers on a monthly basis helps managers quickly find where they may be off target. By reviewing budgets versus actual on a monthly basis, managers can make necessary changes more quickly to stay on target.

| <b>Everyday Foods Company<br/>Monthly Budget vs. Actual Income Statement<br/>For the Month Ended April 30, 2013</b> |                  |                                |                  |                        |
|---|------------------|--------------------------------|------------------|------------------------|
|   | <b>Budget</b>    | <b>Apr 30, 2013<br/>Actual</b> | <b>\$ Change</b> | <b>% of<br/>Budget</b> |
| Sales   | \$ 62,500        | \$ 62,500                      | \$ 0             | 100.0%                 |
| Cost of Goods Sold  | 33,335           | 35,600                         | 2,265            | 106.8%                 |
| Gross Profit  | 29,165           | 26,900                         | (2,265)          | 92.2%                  |
| Operating Expenses:   |                  |                                |                  |                        |
| Advertising Expense   | \$ 875           | \$ 875                         | \$ 0             | 100.0%                 |
| Car and Truck Expense   | 1,250            | 1,250                          | 0                | 100.0%                 |
| Commissions Expense   | 710              | 850                            | 140              | 119.7%                 |
| Insurance Expense   | 475              | 475                            | 0                | 100.0%                 |
| Meals and Entertainment Expense   | 125              | 125                            | 0                | 100.0%                 |
| Office Expense  | 550              | 550                            | 0                | 100.0%                 |
| Professional Service Expense  | 270              | 0                              | (270)            | 0.0%                   |
| Rent Expense  | 2,075            | 2,000                          | (75)             | 96.4%                  |
| Repairs Expense   | 250              | 0                              | (250)            | 0.0%                   |
| Salary/Wages Expense  | 3,325            | 3,325                          | 0                | 100.0%                 |
| Travel Expense  | 375              | 0                              | (375)            | 0.0%                   |
| Utilities Expense   | 830              | 900                            | 70               | 108.4%                 |
| Other Expense   | 3,335            | 3,275                          | (60)             | 98.2%                  |
| Total Operating Expenses  | \$ 14,445        | \$ 13,625                      | \$ (820)         | 94.3%                  |
| Operating Income  | \$ 14,720        | \$ 13,275                      | \$ (1,445)       | 90.2%                  |
| Interest Expenses   | 475              | 475                            | 0                | 100.0%                 |
| Depreciation Expenses   | 625              | 0                              | (625)            | 0.0%                   |
| Income Before Income Taxes  | \$ 13,620        | \$ 12,800                      | \$ (820)         | 94.0%                  |
| Income Tax Expense  | 795              | 0                              | (795)            | 0.0%                   |
| <b>Net Profit</b>   | <b>\$ 12,825</b> | <b>\$ 12,800</b>               | <b>\$ (25)</b>   | <b>99.8%</b>           |

Note that in Figures 6.4 and 6.5, Cost of Goods Sold and Gross Profit percentage change of budget are both shown in red. The Costs of Goods Sold is higher than budgeted. This could be a sign that prices for goods being purchased for sale are higher than anticipated. Management would want to quickly assess the reason for the difference and fix it. This may mean finding a new supplier or it may mean a sales price adjustment is needed. If neither is possible, the company would need to adjust its profit expectations.

The percentage change of budget for commission expenses are also shown in red in Figures 6.4 and 6.5. The sales manager would need to determine why commissions are higher than budgeted. Three of the line items are in green in Figures 6.4 and 6.5 because no money has been spent in those areas. As long as that is normal for the company because those expenses occur during other months, it is not a problem. If the report may be missing expenses that were not recorded, the manager for that department would need to discuss the missing expenses with the accounting department. Depreciation does not show an expense on the monthly report. Many companies adjust depreciation expenses at the end of a quarter or end of a year, so it is common to see \$0 on a monthly report.

Generally, it is easier to fix an accounting problem as quickly as possible, while the information is still readily available. The other line items that are green are subtotals impacted by other activity line items, so no specific action would be needed.

## Aging Schedule

Another key report accounting and sales managers need to see is the aging schedule showing the customers who have not paid their bills on time. This report shows when customers pay. If customers are behind, sales managers may want to cut off any new charges until the customer's payments are up to date. Figure 6.6 shows an example of an accounts receivable aging schedule.

Looking at the aging schedule in Figure 6.6, a manager could quickly see that three customers are more than 60 days late and two customers are over 90 days late. The sales managers may want to alert their sales staff not to accept additional charges from the late payers. When a company decides to no longer accept orders from certain customers, the decision should be consistent for all customers and made according to the company's credit policies. The aging schedule helps managers to implement the credit rules.

## Figure 6.6: Accounts receivable aging schedule

The accounts receivable aging schedule gives managers a tool to discover which customers are behind on their payments. Based on company policy, some customer accounts will be frozen until the customer is up to date on payments.

| Everyday Foods Company<br>Accounts Receivable Aging Schedule<br>As of April 30, 2013 |                 |                 |                 |                 |                  |
|--|-----------------|-----------------|-----------------|-----------------|------------------|
| Customers  | 30–45 Days      | 46–60 Days      | 61–90 Days      | Over 90 Days    | Total            |
| Len Adams  | \$ 2,000        | \$ 250          | \$ 0            | \$ 0            | \$ 2,250         |
| Larry Evans  | 1,000           | 500             | 0               | 0               | 1,500            |
| Sue Ross   | 3,000           | 1,500           | 1,500           | 500             | 6,500            |
| Barb Levy  | 2,000           | 1,000           | 500             | 0               | 3,500            |
| Harvey Lee   | 1,000           | 500             | 500             | 500             | 2,500            |
| <b>Total</b>   | <b>\$ 9,000</b> | <b>\$ 3,750</b> | <b>\$ 2,500</b> | <b>\$ 1,000</b> | <b>\$ 16,250</b> |

These two report samples, a budget versus actual report and an aging schedule, provide financial report readers with key information collected by the financial accounting staff. The reports do not require additional input by staff. Once the design of an internal financial report has been developed, the report can be run in seconds each time the executive or managerial staff needs it.

## Summary and Resources

### Chapter Summary

- In this chapter, we explored how financial ratios are used by key stakeholders, including managers, executives, creditors, investors, vendors, financial analysts, financial reporters, and competitors. Creditors can use these ratios to make a decision about whether to lend to a company, and if they do decide to lend, at what interest rate. Vendors and suppliers can determine whether to sell to a company on credit and how much credit they should offer the company. Investors use financial ratios to help them determine whether to buy or sell stocks.
- The accuracy of ratios does have some limitations and can be inaccurate because of factors such as inflation, seasonality, accounting methods, cost of fixed assets, and projections about future trends.

- To measure how well a company is doing using ratios, we examined how to calculate the following:
  1. Liquidity ratios: These ratios measure the availability of cash to fund operations and pay debt.
  2. Activity ratios: These ratios measure how efficiently and effectively an organization uses its resources.
  3. Leverage ratios: These ratios measure whether a company can repay its long-term debt.
  4. Profitability ratios: These measure the company's rates of return from various perspectives.
- Companies do not operate in a vacuum. These ratios do not mean much unless the manager compares them among similar companies and for the industry.
- The ratios can also be used to measure trends for the same company by calculating them for a three- to five-year period.
- We also discussed the value of internal financial reporting, which does not have the same restrictions to meet GAAP standards as external financial reporting does. The primary purpose of internal reporting is to help executives and managers make decisions. To give an example of how internal reports can be used, we provided samples of budget versus actual reports and an aging schedule for accounts receivable.

### Takeaways for Chapter 6

- Managers use ratios to measure how well the company is doing in four key areas: liquidity, periodic activity, leverage/debt, and profitability.
- Managers know a company does not operate in a vacuum, so ratios for one accounting period do not mean much; instead, they can be used to determine trends by comparing period to period within one company or to determine how the company is doing versus its competitors.
- Managers must consider the impact financial ratios may have on the ability of the company to borrow money and satisfy their investors, creditors, and vendors.

### Post-Test

1. Which of the following is/are most likely to use financial analysis primarily to determine if a company can pay its bills?
  - a. executives and managers
  - b. creditors
  - c. vendors
  - d. both (b) and (c)
2. The value of financial ratios is limited because:
  - a. accounting methods differ
  - b. inflation can impact the use of ratios to gauge trends
  - c. data can be hard to gather quickly enough to make decisions
  - d. both (a) and (b)

3. An executive wants to know how many days it takes for his customers to pay their bills. Which ratio should be used?
  - a. accounts receivable turnover ratio
  - b. average accounts receivable
  - c. days in accounts receivable
  - d. all of the above
4. A manager asks the worker who tracks accounts receivable which customers are behind on their bills. What report would the worker generate?
  - a. customer payments
  - b. aging schedule
  - c. accounts receivable ledger
  - d. none of the above
5. The best way to determine whether a department is meeting its financial goals is to:
  - a. generate a sales report
  - b. generate a cash report
  - c. generate a budget versus actual report
  - d. talk with the department manager
6. Company A has total current assets of \$32,000 and current liabilities of \$30,500. The current ratio for Company A is:
  - a. 1.05
  - b. 0.91
  - c. 4.42
  - d. 2.27
7. Company B has current assets of \$125,000,000; current liabilities of \$137,000; cash of \$40,000; marketable securities of \$15,000; accounts receivable of \$10,000; and inventory of \$55,000. The quick ratio for Company B is:
  - a. 4.42
  - b. 2.27
  - c. 0.47
  - d. 0.80
8. Company A EBIT is \$55,000 and its Interest expense is \$1,500. The interest coverage ratio for Company A is:
  - a. 36.67
  - b. 24.21
  - c. 4.42
  - d. 2.27
9. Company B Cost of Goods Sold is \$127,000. The 2012 Inventory was \$55,000 and 2011 Inventory was \$57,000. The days in inventory ratio for Company B is:
  - a. 36.67
  - b. 21.21
  - c. 82.61
  - d. 160.79

10. Company A 2012 total liabilities is \$57,000. The 2012 total liabilities and shareholders' equity is \$102,000. The debt to capital ratio for Company A is:
  - a. 0.80
  - b. 0.47
  - c. 0.56
  - d. 0.51
11. Company B total liabilities is \$165,000. Shareholders' equity is \$160,000. The debt to equity ratio for Company B is:
  - a. 0.80
  - b. 1.03
  - c. 1.27
  - d. 1.03

*Answers:* 1 (d), 2 (d), 3 (d), 4 (b), 5 (c), 6 (a), 7 (c), 8 (a), 9 (d), 10 (c), 11 (d)

### Answers and Rejoinders to Chapter Pre-Test

1. d. Creditors and suppliers use financial statements to make credit decisions. Creditors use the information to make decisions about whether or not to lend money to the company. Suppliers use the information to make decisions about whether or not to offer credit to the company.
2. d. All factors can affect the accuracy of financial reports. Companies whose revenue is earned primarily based on seasons, such as a retailer at Christmas time, will see an impact on their ratios depending on how good the economy performs each season. Inflation can go up, go down, or be flat. These differences will impact the comparison of financial ratios from year to year. If a company changes the accounting method it uses, such as the valuation of inventory, then that, too, can impact the accuracy of financial ratios.
3. a. Liquidity ratios are a common type of ratio that test whether or not the company has enough cash for its operations and to pay its invoices.
4. d. Lenders often use both the quick ratio and the current ratio to decide whether to extend credit to a company. Turnover ratios are used to test a company's activity levels.
5. a. Internal reports do not need to meet any GAAP requirements. They can be formatted to give the information in any way acceptable to management.

### Rejoinders to Chapter Post-Test

1. Both creditors and vendors use financial reports primarily to determine whether or not they will get paid. Creditors seek to determine this before making a loan. Vendors seek to determine this before deciding whether or not to extend credit to the business. Executives and managers also are interested in this type of financial analysis, but it's just one of the things they need to know to make decisions. It's not their primary reason for using financial analysis.
2. Both (a) and (b). Accounting methods can differ and inflation changes can impact trends. For example, one company can use the LIFO inventory valuation method and another company can use the FIFO inventory valuation number, which can impact a company's profits. As inflation changes period to period, it can impact the ability to compare period to period. Companies enter data daily into their

- accounting systems. Managers should be able to get reports within 24 hours to make decisions. Some companies even have instant reporting on sales if they have the most advanced point of sale computer systems.
- All of the above would need to be calculated to find out the number of days it takes for customers to pay their bills.
  - The aging schedule.
  - A department's goals include more than just sales or cash. To review all financial goals, a budget versus actual report is the best tool. A manager would need to review this report, as well, to make the determination if his department is meeting its goals.
  - 1.05

$$\text{Current Ratio} = \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}} = \frac{\$32,000}{\$30,500}$$

- 0.47

$$\text{Quick Ratio} = \frac{\text{Cash} + \text{Cash Equivalents} + \text{A/R}}{\text{Total Current Liabilities}} = \frac{\$65,000}{\$137,500}$$

- 36.67

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expense}} = \frac{\$55,000}{\$1,500}$$

- 160.79

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = \frac{\$127,000}{(\$55,000 + \$57,000)/2} = 2.27$$

$$\text{Days in Inventory} = \frac{365}{\text{Inventory Turnover}} = 160.79$$

- 0.56

$$\text{Debt to Capital Ratio} = \frac{\text{Total Liabilities}}{\text{Total Liabilities} + \text{Shareholders' Equity}} = \frac{\$57,000}{\$102,000}$$

- 1.03

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Shareholders' Equity}} = \frac{\$165,000}{\$160,000}$$

### Discussion Questions

- After you have calculated the current ratios for Company A in the scenario above, would that company be a good risk for a bank loan? Why or why not?
- After you have calculated the days in inventory for Company B in the scenario above, do you think the company may have trouble generating cash from its inventory and why or why not?
- After you have calculated the interest coverage ratio for Company A in the scenario above, do you think the company would have trouble paying its interest and why or why not?



4. If a bank is planning to lend money to a company, which ratios would it most likely use to make a determination? Why?
5. Investors are trying to decide whether to buy a stock. Which ratios should they use and why should they choose those ratios?

### Further Reading/Resources

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### Key Terms

**accounts payable turnover ratio (creditors turnover ratio)** Measures the number of times the accounts payables are paid during an accounting period.

**accounts receivable turnover ratio** Measures how many times receivables turn over during the year. The higher the number, the shorter the time between sales of products and collection of cash from customers.

**activity ratios** Measure how effectively a company uses its resources by comparing financial results for certain key activities. These ratios, also called turnover ratios, help gauge how well a company is managing its assets and liabilities.

**budget vs. actual report** A report that compares a company's budget to the actual numbers. This can be done monthly, quarterly, yearly, or at whatever interval a manager determines would be helpful for decision making.

**cash debt coverage ratio** Measures whether a company can pay its debt over the long term. Long-term liabilities include all debt that will need to be paid beyond the current 12-month period. If long-term debt is too high, the company will eventually have trouble paying off its debt and meeting its interest obligations.

**cash flow coverage ratio** Shows what percentage of a company's cash requirements are paid from its operating activities. It measures the company's ability to pay its bills and grow the company. If the company pays dividends, then that, too, will be taken into consideration when calculating this ratio.

**cash flow margin** Measures how effectively a company converts its sales into cash.

**current cash debt coverage ratio** Measures whether the actual operations of the company are sufficient to pay its bills.

**current ratio** Seeks to determine whether the company has the ability to pay its current obligations. Generally, the higher the current ratio, the better the company will appear to creditors.

**debt to capital ratio** Measures what portion of a company's capital comes from debt financing. Lenders monitor this number closely and often place debt to capital ratio requirements in the terms of credit agreements for a company.

**debt to equity ratio** Measures how much a company allocates each year to debt versus equity.

**dividend yield ratio** Determines the effective return an investor gets from the dividends paid.

**financial ratio analysis** A group of financial tools used by managers to analyze information in a company's financial statements. These ratios can be used to compare current results to the results of previous years, as well as to compare the company's results to the industry and to competitors.

**interest coverage ratio** Measures whether the company can pay its interest on both short-term and long-term debt using its earnings.

**inventory turnover ratio** Measures the liquidity of inventory. Using this ratio, a manager can determine how many times the company sold and replaced its inventory during an accounting period.

**leverage** The degree to which the business borrows money. By using leverage, a company's cash can go a lot further. For example, when a company buys a building using leverage (a mortgage) and cash, it will likely only use a small portion of its cash as a down payment and borrow the rest.

**leverage ratios** Measure how much total debt a company owes to its creditors and whether it can pay its long-term debt obligations.

**liquidity ratios** Measure the ability to generate enough money to pay the bills.

**net profit ratio** Measures the percentage of sales that resulted in a profit for the owners of the company.

**price/earnings (P/E) ratio** Measures the price of a company's stock versus its earnings.

**profitability ratios** Enable managers to determine whether a company is profitable. Managers use these ratios to test the company's profitability to be certain goals have been met and to compare their company's profitability to that of similar companies as a benchmark to measure its success within its industry.

**quick ratio (acid test ratio)** A stricter, more conservative measure of whether the company has the money to pay its bills than the current ratio. This ratio includes only the most liquid assets—cash, cash equivalents (such as certificates of deposit, money market funds, and marketable securities) and Accounts Receivables. All these assets can be quickly converted to cash if needed to pay the bills.

**return on assets (ROA) ratio** How much a company earns from its assets or capital invested and how well the company uses its assets to generate a profit.

**return on equity (ROE) ratio** Measures the return a company earns for its investors.

**total asset turnover ratio** Measures how efficiently a company is using its assets to generate sales. The turnover number equals the amount generated in sales for every dollar invested.

**turnover ratios** Measure how effectively a company uses its resources by comparing financial results for certain key activities. These ratios, also called activity ratios, help gauge how well a company is managing its assets and liabilities.

