



CHAPTER 3

Analysis of Financial Statements

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Macy's, a large department store retailer, announced its fourth quarter 2011 results of \$1.74 earnings per share (EPS). According to Zacks.com's Earnings Scorecard, Macy's EPS came in a little higher than analysts' estimates of \$1.65. Perhaps not surprisingly, Macy's stock return during the 5-day period centered on its announcement date was positive: Macy's had a 5% return, much greater than the S&P 500's 0.6% return. Macy's announcement also provided guidance for its expected 2012 EPS of \$3.25 to \$3.30.

Should a company provide earnings guidance estimates to investors? Virtually no one disputes that investors need as much information as possible to evaluate a company, and academic studies show that companies with greater transparency have higher valuations. However, greater disclosure often brings the possibility of lawsuits if investors have reason to believe that the disclosure is fraudulent. In addition, the Security and Exchange Commission's Reg FD (Regulation Fair Disclosure) prevents companies from disclosing information only to select groups, such as analysts. Reg FD led many companies to begin providing quarterly earnings forecasts directly to the public. In fact, a survey by the National Investors Relations Institute showed that 95% of respondents in 2006 provided either annual or quarterly earnings forecasts, up from 45% in 1999.

Two trends have emerged. First, the number of companies reporting quarterly earnings forecasts is falling, but the number reporting annual forecasts is increasing. Second, many companies are providing other types of forward-looking information, including key operating ratios plus qualitative information about the company and its industry. Ratio analysis can help investors use such information, so keep that in mind as you read this chapter.

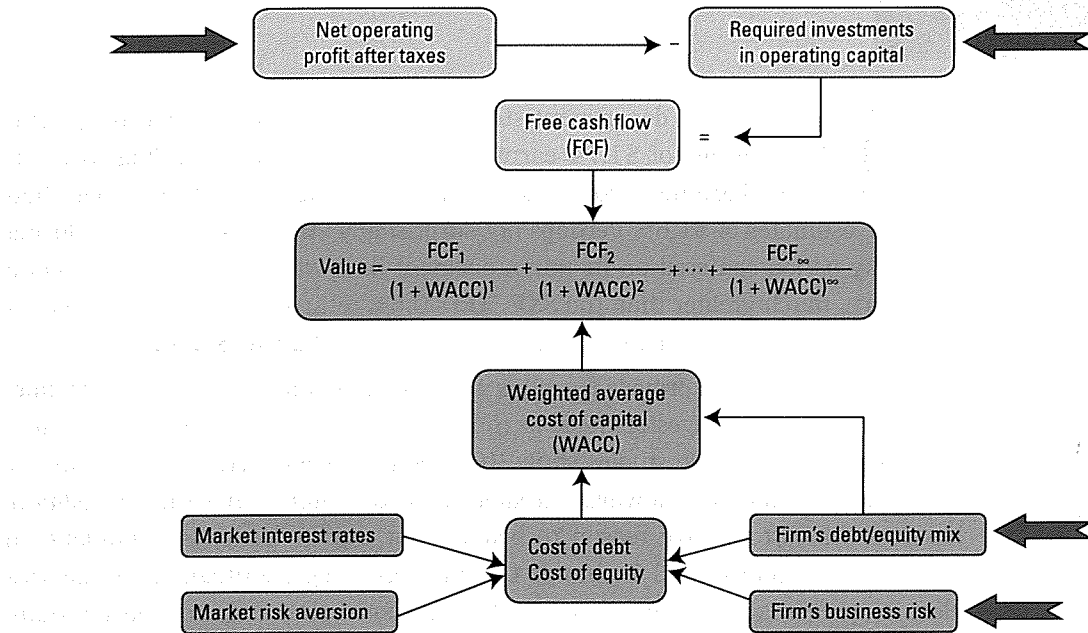
Sources: Adapted from Macy's press release: <http://phx.corporate-ir.net/phoenix.zhtml?c=84477&p=RssLanding&cat=news&id=1663112>; Zacks's Earnings Scorecard: www.zacks.com/stock/news/70862/Earnings+Scorecard%3A+Macy's; Joseph McCafferty, "Guidance Lite," *CFO*, June 2006, 16–17; and William F. Coffin and Crocker Coulson, "Is Earnings Guidance Disappearing in 2006?" 2006, White Paper, available at www.ccgir.com/ccgir/white_papers/pdf/Earnings%20Guidance%202006.pdf.

Intrinsic Value and Analysis of Financial Statements

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The intrinsic value of a firm is determined by the present value of the expected future free cash flows (FCF) when discounted at the weighted average cost of capital

(WACC). This chapter explains how to use financial statements to evaluate a company's profitability, required capital investments, business risk, and mix of debt and equity.



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The textbook's Web site contains an Excel file that will guide you through the chapter's calculations. The file for this chapter is **Ch03 Tool Kit.xls**, and we encourage you to open the file and follow along as you read the chapter.

Financial statement analysis involves (1) comparing a firm's performance with that of other firms in the same industry, and (2) evaluating trends in the firm's financial position over time. Managers use financial analysis to identify situations needing attention, potential lenders use financial analysis to determine whether a company is creditworthy, and stockholders use financial analysis to help predict future earnings, dividends, and free cash flow. This chapter will explain the similarities and differences among these uses.

3-1 Financial Analysis

When we perform a financial analysis, we conduct the following steps.

3-1a Gather Data

The first step in financial analysis is to gather data. As discussed in Chapter 2, financial statements can be downloaded from many different Web sites. One of our favorites is Zacks Investment Research, which provides financial statements in a standardized format.

WWW

See www.zacks.com for a source of standardized financial statements.

If you cut and paste financial statements from Zacks into a spreadsheet and then perform a financial analysis, you can quickly repeat the analysis on a different company by pasting that company's financial statements into the same cells of the spreadsheet. In other words, you do not need to reinvent the wheel each time you analyze a company.

3-1b Examine the Statement of Cash Flows

Some financial analysis can be done with virtually no calculations. For example, we always look to the statement of cash flows first, particularly the net cash provided by operating activities. Downward trends or negative net cash flow from operations almost always indicate problems. The statement of cash flows section on investing activities shows whether the company has made a big acquisition, especially when compared with the prior years' net cash flows from investing activities. A quick look at the section on financing activities also reveals whether a company is issuing debt or buying back stock; in other words, is the company raising capital from investors or returning it to them?

3-1c Calculate and Examine the Return on Invested Capital and Free Cash Flow

After examining the statement of cash flows, we calculate the free cash flow (FCF) and return on invested capital (ROIC) as described in Chapter 2. The ROIC provides a vital measure of a firm's overall performance. If the ROIC is greater than the company's weighted average cost of capital (WACC), then the company usually is adding value. If the ROIC is less than the WACC, then the company usually has serious problems. No matter what the ROIC tells us about overall performance, it is important to examine specific activities, and to do that we use financial ratios.

3-1d Begin Ratio Analysis

Financial ratios are designed to extract important information that might not be obvious simply from examining a firm's financial statements. For example, suppose Firm A owes \$5 million in debt while Firm B owes \$50 million. Which company is in a stronger financial position? It is impossible to answer this question without first standardizing each firm's debt relative to total assets, earnings, and interest. Such standardized comparisons are provided through *ratio analysis*.

We will calculate the 2013 financial ratios for MicroDrive Inc. using data from the balance sheets and income statements given in Figure 3-1. We will also evaluate the ratios in relation to the industry averages. Note that dollar amounts are in millions.

3-2 Liquidity Ratios

As shown in Figure 3-1, MicroDrive has current liabilities of \$780 million that it must pay off within the coming year. Will it have trouble satisfying those obligations? **Liquidity ratios** attempt to answer this type of question. We discuss two commonly used liquidity ratios in this section.

3-2a The Current Ratio

Calculate the **current ratio** by dividing current assets by current liabilities:

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See Ch03 Tool Kit.xls for all calculations.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{\$1,550}{\$780} = 2.0$$

$$\text{Industry average} = 2.2$$

FIGURE 3-1

MicroDrive Inc.: Balance Sheets and Income Statements for Years Ending December 31 (Millions of Dollars, Except for Per Share Data)

	A	B	C	D	E
23	Balance Sheets			2013	2012
24	Assets				
25	Cash and equivalents			\$ 50	\$ 60
26	Short-term investments			-	40
27	Accounts receivable			500	380
28	Inventories			1,000	820
29	Total current assets			\$ 1,550	\$ 1,300
30	Net plant and equipment			2,000	1,700
31	Total assets			\$ 3,550	\$ 3,000
32					
33	Liabilities and Equity				
34	Accounts payable			\$ 200	\$ 190
35	Notes payable			280	130
36	Accruals			300	280
37	Total current liabilities			\$ 780	\$ 600
38	Long-term bonds			1,200	1,000
39	Total liabilities			\$ 1,980	\$ 1,600
40	Preferred stock (400,000 shares)			100	100
41	Common stock (50,000,000 shares)			500	500
42	Retained earnings			970	800
43	Total common equity			\$ 1,470	\$ 1,300
44	Total liabilities and equity			\$ 3,550	\$ 3,000
45					
46	Income Statements			2013	2012
47	Net sales			\$ 5,000	\$ 4,760
48	Costs of goods sold except depreciation			3,800	3,560
49	Depreciation			200	170
50	Other operating expenses			500	480
51	Earnings before interest and taxes (EBIT)			\$ 500	\$ 550
52	Less interest			120	100
53	Pretax earnings			\$ 380	\$ 450
54	Taxes (40%)			152	180
55	Net Income before preferred dividends			\$ 228	\$ 270
56	Preferred dividends			8	8
57	Net Income available to common stockholders			\$ 220	\$ 262
58	Other Data				
59	Common dividends			\$50	\$48
60	Addition to retained earnings			\$170	\$214
61	Lease payments			\$28	\$28
62	Bonds' required sinking fund payments			\$20	\$20
63	Common stock price per share			\$27	\$40

Current assets normally include cash, marketable securities, accounts receivable, and inventories. Current liabilities consist of accounts payable, short-term notes payable, current maturities of long-term debt, accrued taxes, and other accrued expenses.

MicroDrive has a slightly lower current ratio than the average for its industry. Is this good or bad? Sometimes the answer depends on who is asking the question. For example, suppose a supplier is trying to decide whether to extend credit to MicroDrive. In general, creditors like to see a high current ratio. If a company starts to experience financial difficulty, it will begin paying its bills (accounts payable) more slowly and borrowing more from its bank, so its current liabilities will be increasing. If current liabilities are rising faster than current assets, then the current ratio will fall, and this could spell trouble. Because the current ratio provides the best single indicator of the extent to which the claims of short-term creditors are covered by assets that are expected to be converted to cash fairly quickly, it is the most commonly used measure of short-term solvency.

Now consider the current ratio from a shareholder's perspective. A high current ratio could mean that the company has a lot of money tied up in nonproductive assets, such as excess cash or marketable securities. Or perhaps the high current ratio is due to large inventory holdings, which might become obsolete before they can be sold. Thus, shareholders might not want a high current ratio.

An industry average is not a magic number that all firms should strive to maintain—in fact, some well-managed firms will be above the average, while other good firms will be below it. However, if a firm's ratios are far from the averages for its industry, this is a red flag, and analysts should be concerned about why the variance occurs. For example, suppose a low current ratio is traced to low inventories. Is this a competitive advantage resulting from the firm's mastery of just-in-time inventory management, or is it an Achilles' heel that is causing the firm to miss shipments and lose sales? Ratio analysis doesn't answer such questions, but it does point to areas of potential concern.

3-2b The Quick, or Acid Test, Ratio

The **quick ratio**, also called the **acid test ratio**, is calculated by deducting inventories from current assets and then dividing the remainder by current liabilities:

$$\begin{aligned}\text{Quick ratio} &= \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}} \\ &= \frac{\$1,550 - \$1,000}{\$780} = 7.0\end{aligned}$$

$$\text{Industry average} = 0.8$$

A **liquid asset** is one that trades in an active market, so it can be converted quickly to cash at the going market price. Inventories are typically the least liquid of a firm's current assets; hence they are the current assets on which losses are most likely to occur in a bankruptcy. Therefore, a measure of the firm's ability to pay off short-term obligations without relying on the sale of inventories is important.

MicroDrive's quick ratio is close to the industry average. However, both are below 1.0, which means that inventories would have to be liquidated in order to pay off current liabilities should the need arise.

How does MicroDrive compare to S&P 500 companies? There has been a steady decline in the average liquidity ratios of S&P 500 companies during the past decade. As we write this in 2012, the average current and quick ratios are well below 1.0, so MicroDrive and its industry peers are more liquid than the typical S&P 500 company.

SELF - TEST

Identify two ratios to use to analyze a firm's liquidity position, and write out their equations.

What are the characteristics of a liquid asset? Give some examples.

Which current asset is typically the least liquid?

A company has current liabilities of \$800 million, and its current ratio is 2.5. What is its level of current assets? (\$2,000 million) If this firm's quick ratio is 2, how much inventory does it have? (\$400 million)

3-3 Asset Management Ratios

Asset management ratios measure how effectively a firm is managing its assets. If a company has excessive investments in assets, then its operating capital is unduly high, which reduces its free cash flow and ultimately its stock price. On the other hand, if a company does not have enough assets, then it may lose sales, which would hurt profitability, free cash flow, and the stock price. Therefore, it is important to have the *right* amount invested in assets. Ratios that analyze the different types of assets are described in this section.

3-3a Evaluating Total Assets: The Total Assets Turnover Ratio

The **total assets turnover ratio** measures the dollars in sales that are generated for each dollar that is tied up in assets:

$$\begin{aligned} \text{Total assets turnover ratio} &= \frac{\text{Sales}}{\text{Total assets}} \\ &= \frac{\$5,000}{\$3,550} = 1.4 \end{aligned}$$

$$\text{Industry average} = 1.8$$

MicroDrive's ratio is somewhat below the industry average, indicating that the company is not generating as much business (relative to its peers) given its total asset investment. In other words, MicroDrive uses its assets relatively inefficiently. The following ratios can be used to identify the specific asset classes that are causing this problem.¹

¹Sales occur throughout the year, but assets are reported at end of the period. For a growing company or a company with seasonal variation, it would be better to use *average* assets held during the year when calculating turnover ratios. However, we use year-end values for all turnover ratios so that we are more comparable with most reported industry averages.

3-3b Evaluating Fixed Assets: The Fixed Assets Turnover Ratio

The **fixed assets turnover ratio** measures how effectively the firm uses its plant and equipment. It is the ratio of sales to net fixed assets:

$$\text{Fixed assets turnover ratio} = \frac{\text{Sales}}{\text{Net fixed assets}}$$

$$= \frac{\$5,000}{\$2,000} = 2.5$$

$$\text{Industry average} = 3.0$$

MicroDrive's ratio of 2.5 is a little below the industry average, indicating that the firm is not using its fixed assets as intensively as are other firms in its industry.

Inflation can cause problems when interpreting the fixed assets turnover ratio because fixed assets are reported using the historical costs of the assets instead of current replacement costs that may be higher due to inflation. Therefore, a mature firm with fixed assets acquired years ago might well have a higher fixed assets turnover ratio than a younger company with newer fixed assets that are reported at inflated prices relative to the historical prices of the older assets. However, this would reflect the difficulty accountants have in dealing with inflation rather than inefficiency on the part of the new firm. You should be alert to this potential problem when evaluating the fixed assets turnover ratio.

3-3c Evaluating Receivables: The Days Sales Outstanding

Days sales outstanding (DSO), also called the "average collection period" (ACP), is used to appraise accounts receivable, and it is calculated by dividing accounts receivable by average daily sales to find the number of days' sales that are tied up in receivables. Thus, the DSO represents the average length of time that the firm must wait after making a sale before receiving cash, which is the average collection period. MicroDrive's DSO is 37, above the 36-day industry average:

$$\text{DSO} = \frac{\text{Days sales outstanding}}{\text{Average sales per day}} = \frac{\text{Receivables}}{\text{Annual sales}/365}$$

$$= \frac{\$500}{\$5,000/365} = \frac{\$500}{\$13.7} = 36.5 \text{ days} \approx 37 \text{ days}$$

$$\text{Industry average} = 30 \text{ days}$$

MicroDrive's sales terms call for payment within 30 days. The fact that 37 days of sales are outstanding indicates that customers, on average, are not paying their bills on time. As with inventory, high levels of accounts receivable cause high levels of NOWC, which hurts FCF and stock price.

A customer who is paying late may be in financial trouble, which means MicroDrive may have a hard time collecting the receivable. Therefore, if the trend in DSO has been rising unexpectedly, steps should be taken to review credit standards and to expedite the collection of accounts receivable.

3-3d Evaluating Inventories: The Inventory Turnover Ratio

The **inventory turnover ratio** is defined as costs of goods sold (COGS) divided by inventories.² The previous ratios use sales instead of COGS. However, sales revenues include costs and profits, whereas inventory usually is reported at cost. Therefore, it is better to compare inventory with costs rather than sales.

The income statement in Figure 3-1 separately reports depreciation and the portion of costs of goods sold that is not comprised of depreciation, which is helpful when calculating cash flows. However, we need the total COGS for calculating the inventory turnover ratio. For MicroDrive, virtually all depreciation is associated with producing its products, so its COGS is:

$$\begin{aligned}\text{COGS} &= \text{Costs of goods sold except depreciation} + \text{Depreciation} \\ &= \$3,800 + \$200 = \$4,000 \text{ million}\end{aligned}$$

We can now calculate the inventory turnover:

$$\begin{aligned}\text{Inventory turnover ratio} &= \frac{\text{COGS}}{\text{Inventories}} \\ &= \frac{\$3,800 + \$200}{\$1,000} = 4.0 \\ \text{Industry average} &= 5.0\end{aligned}$$

As a rough approximation, each item of MicroDrive's inventory is sold out and restocked, or "turned over," 4 times per year.³

MicroDrive's turnover of 4 is lower than the industry average of 5. This suggests that MicroDrive is holding too much inventory. High levels of inventory add to net operating working capital (NOWC), which reduces FCF, which leads to lower stock prices. In addition, MicroDrive's low inventory turnover ratio makes us wonder whether the firm is holding obsolete goods not worth their stated value.

In summary, MicroDrive's low fixed asset turnover ratio, high DSO, and low inventory turnover ratio each cause MicroDrive's total assets turnover ratio to be lower than the industry average.

²In previous editions, we defined the inventory turnover ratio using sales instead of COGS because some compilers of financial ratio statistics, such as Dun & Bradstreet, use the ratio of sales to inventories. However, most sources now report the turnover ratio using COGS, so we have changed our definition to conform to the majority of reporting organizations.

³"Turnover" is derived from the old Yankee peddler who would load up his wagon with goods and then go off to peddle his wares. If he made 10 trips per year, stocked 100 pans, and made a gross profit of \$5 per pan, his annual gross profit would be $(100)(\$5)(10) = \$5,000$. If he "turned over" (i.e., sold) his inventory faster and made 20 trips per year, then his gross profit would double, other things held constant. So, his turnover directly affected his profits.

GLOBAL ECONOMIC CRISIS



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The Global Economic Crisis

The Price Is Right! (Or Wrong!)

How much is an asset worth if no one is buying or selling? The answer to that question matters because an accounting practice called “mark to market” requires that some assets be adjusted on the balance sheet to reflect their “fair market value.” The accounting rules are complicated, but the general idea is that if an asset is available for sale, then the balance sheet would be most accurate if it showed the asset’s market value. For example, suppose a company purchased \$100 million of Treasury bonds and the value of those bonds later fell to \$90 million. With mark to market, the company would report the bonds’ value on the balance sheet as \$90 million, not the original purchase price of \$100 million. Notice that marking to market can have a significant impact on financial ratios and thus on investors’ perception of a firm’s financial health.

But what if the assets are mortgage-backed securities that were originally purchased for \$100 million? As defaults increased during 2008, the value of such securities fell rapidly, and then investors virtually stopped trading them. How should the company report

them? At the \$100 million original price? At a \$60 million price that was observed before the market largely dried up? At \$25 million when a hedge fund in desperate need for cash to avoid a costly default sold a few of these securities? At \$0, because there are no current quotes? Or should they be reported at a price generated by a computer model or in some other manner?

The answer to this is especially important during times of economic stress. Congress, the SEC, FASB, and the U.S. Treasury all are working to find the right answers. If they come up with a price that is too low, it could cause investors mistakenly to believe that some companies are worth much less than their intrinsic values, and this could trigger runs on banks and bankruptcies for companies that might otherwise survive. But if the price is too high, some “walking dead” or “zombie” companies could linger on and later cause even larger losses for investors, including the U.S. government, which is now the largest investor in many financial institutions. Either way, an error in pricing could perhaps trigger a domino effect that might topple the entire financial system. So let’s hope the price is right!

SELF - TEST

Identify four ratios that measure how effectively a firm is managing its assets, and write out their equations.

What problem might arise when comparing firms’ fixed assets turnover ratios?

A firm has \$200 million annual sales, \$180 million costs of goods sold, \$40 million of inventory, and \$60 million of accounts receivable. What is its inventory turnover ratio? (4.5) What is its DSO based on a 365-day year? (109.5 days)

3-4 Debt Management Ratios

The extent to which a firm uses debt financing is called **financial leverage**. Here are three important implications: (1) Stockholders can control a firm with smaller investments of their own equity if they finance part of the firm with debt. (2) If the firm’s assets generate a higher pre-tax return than the interest rate on debt, then the shareholders’ returns are magnified, or “leveraged.” Conversely, shareholders’ losses are also magnified if assets generate a pre-tax return less than the interest rate. (3) If a company has high leverage, even a small decline in performance might cause the firm’s value to fall below the amount

it owes to creditors. Therefore, a creditor's position becomes riskier as leverage increases. Keep these three points in mind as you read the following sections.

3-4a How the Firm Is Financed: Leverage Ratios

MicroDrive's two primary types of debt are notes payable and long-term bonds, but more complicated companies also might report the portion of long-term debt due within a year, the value of capitalized leases, and other types of obligations that charge interest. For MicroDrive, total debt is:

$$\begin{aligned}\text{Total debt} &= \text{Notes payable} + \text{Long-term bonds} \\ &= \$280 + \$1,200 = \$1,480 \text{ million}\end{aligned}$$

Is this too much debt, not enough, or the right amount? To answer this question, we begin by calculating the percentage of MicroDrive's assets that are financed by debt. The ratio of total debt to total assets is called the **debt-to-assets ratio**. It is sometimes shortened to the **debt ratio**.⁴ Total debt is the sum of all short-term debt and long-term debt; it does not include other liabilities. MicroDrive's debt ratio is:

$$\begin{aligned}\text{Debt-to-assets ratio} = \text{Debt ratio} &= \frac{\text{Total debt}}{\text{Total assets}} \\ &= \frac{\$280 + \$1,200}{\$3,550} = \frac{\$1,480}{\$3,550} = 41.7\% \\ \text{Industry average} &= 25.0\%\end{aligned}$$

MicroDrive's debt ratio is 41.7%, which is substantially higher than the 25% industry average.

The debt-to-equity ratio is defined as:⁵

$$\begin{aligned}\text{Debt-to-equity ratio} &= \frac{\text{Total debt}}{\text{Total common equity}} \\ &= \frac{\$280 + \$1,200}{\$1,470} = \frac{\$1,480}{\$1,470} = 1.01 \\ \text{Industry average} &= 0.46\end{aligned}$$

The debt-to-equity ratio shows that MicroDrive has \$1.01 of debt for every dollar of equity, whereas the debt ratio shows that 41.7% of MicroDrive's assets are financed by debt. We find it more intuitive to think about the percentage of the firm that is financed with debt, so we usually use the debt ratio. However, the debt-to-equity ratio is also widely used, so you should know how to interpret it as well.

Be sure you know how a ratio is defined before you use it. Some sources define the debt ratio using only long-term debt instead of total debt; others use investor-supplied capital instead of total assets. Some sources make similar changes in the debt-to-equity ratio, so be sure to check your source's definition.

⁴In previous editions we defined the debt ratio as total liabilities divided by total assets. For better comparability with Web-based reporting sources, we have changed our definition to total debt divided by total assets.

⁵In previous editions we defined the debt-to-equity ratio as total liabilities divided by total common equity. For better comparability with Web-based reporting sources, we have changed our definition to total debt divided by total common equity.

Sometimes it is useful to express debt ratios in terms of market values. It is easy to calculate the market value of equity, which is equal to the stock price multiplied by the number of shares. MicroDrive's market value of equity is $\$27(50) = \$1,350$. Often it is difficult to estimate the market value of debt, so many analysts use the debt reported in the financial statements. The market debt ratio is defined as:

$$\begin{aligned}\text{Market debt ratio} &= \frac{\text{Total debt}}{\text{Total debt} + \text{Market value of equity}} \\ &= \frac{\$280 + \$1,200}{(\$280 + \$1,200) + (\$27 \times 50)} = \frac{\$1,480}{\$1,480 + \$1,350} \\ &= 52.3\% \\ \text{Industry average} &= 20.0\%\end{aligned}$$

MicroDrive's market debt ratio in the previous year was 36.1%. The big increase was due to two major factors: Debt increased and the stock price fell. The stock price reflects a company's prospects for generating future cash flows, so a decline in stock price indicates a likely decline in future cash flows. Thus, the market debt ratio reflects a source of risk that is not captured by the conventional debt ratio.

Finally, the ratio of total liabilities to total assets shows the extent to which a firm's assets are not financed by equity. The **liabilities-to-assets ratio** is defined as:

$$\begin{aligned}\text{Liabilities-to-assets ratio} &= \frac{\text{Total liabilities}}{\text{Total assets}} \\ &= \frac{\$1,980}{\$3,550} = 55.8\% \\ \text{Industry average} &= 45.0\%\end{aligned}$$

For all the ratios we examined, MicroDrive has more leverage than its industry peers. The next section shows how close MicroDrive might be to serious financial distress.

3-4b Ability to Pay Interest: Times-Interest-Earned Ratio

The **times-interest-earned (TIE) ratio**, also called the **interest coverage ratio**, is determined by dividing earnings before interest and taxes (EBIT in Figure 3-1) by the interest expense:

$$\begin{aligned}\text{Times-interest-earned (TIE) ratio} &= \frac{\text{EBIT}}{\text{Interest expense}} \\ &= \frac{\$500}{\$120} = 4.2 \\ \text{Industry average} &= 10.0\end{aligned}$$

The TIE ratio measures the extent to which operating income can decline before the firm is unable to meet its annual interest costs. Failure to meet this obligation can bring legal action by the firm's creditors, possibly resulting in bankruptcy. Note that earnings before interest and taxes, rather than net income, is used in the numerator. Because interest is paid with pre-tax dollars, the firm's ability to pay current interest is not affected by taxes.

MicroDrive's interest is covered 4.2 times, which is well above 1, the point at which EBIT isn't sufficient to pay interest. The industry average is 10, so even though MicroDrive has enough EBIT to pay interest expenses, it has a relatively low margin of safety compared to its peers. Thus, the TIE ratio reinforces the conclusion from our analysis of the debt ratio that MicroDrive might face difficulties if it attempts to borrow additional funds.

3-4c Ability to Service Debt: EBITDA Coverage Ratio

The TIE ratio is useful for assessing a company's ability to meet interest charges on its debt, but this ratio has two shortcomings: (1) Interest is not the only fixed financial charge—companies must also reduce debt on schedule, and many firms lease assets and thus must make lease payments. Failure to repay debt or meet lease payments may force them into bankruptcy. (2) EBIT (earnings before interest and taxes) does not represent all the cash flow available to service debt, especially if a firm has high depreciation and/or amortization charges. A better coverage ratio would take into account the “cash” earnings and the other financial charges.

MicroDrive had \$500 million of EBIT and \$200 million in depreciation, for an EBITDA (earnings before interest, taxes, depreciation, and amortization) of \$700 million. Also, lease payments of \$28 million were deducted while calculating EBIT. That \$28 million was available to meet financial charges; hence it must be added back, bringing the total available to cover fixed financial charges to \$728 million. Fixed financial charges consisted of \$120 million of interest, \$20 million of sinking fund payments, and \$28 million for lease payments, for a total of \$168 million.⁶

MicroDrive's **EBITDA coverage ratio** is:⁷

$$\begin{aligned}\text{EBITDA coverage ratio} &= \frac{\text{EBITDA} + \text{Lease payments}}{\text{Interest} + \text{Principal payments} + \text{Lease payments}} \\ &= \frac{(\$500 + 200) + \$28}{\$120 + \$20 + \$28} = \frac{\$728}{\$168} = 4.3 \\ \text{Industry average} &= 12.0\end{aligned}$$

MicroDrive covered its fixed financial charges by 4.3 times. MicroDrive's ratio is well below the industry average, so again the company seems to have a relatively high level of debt.

The EBITDA coverage ratio is most useful for relatively short-term lenders such as banks, which rarely make loans (except real estate-backed loans) for longer than about 5 years. Over a relatively short period, depreciation-generated funds can be used to service debt. Over a longer time, those funds must be reinvested to maintain the plant and equipment or else the company cannot remain in business. Therefore, banks and other relatively short-term lenders focus on the EBITDA coverage ratio, whereas long-term bondholders focus on the TIE ratio.

⁶A sinking fund is a required annual payment designed to reduce the balance of a bond or preferred stock issue.

⁷Different analysts define the EBITDA coverage ratio in different ways. For example, some omit the lease payment information; others “gross up” principal payments by dividing them by $1 - T$ because these payments are not tax deductions and so must be made with after-tax cash flows. We included lease payments because for many firms they are quite important, and failing to make them can lead to bankruptcy as surely as can failure to make payments on “regular” debt. We did not gross up principal payments because, if a company is in financial difficulty, then its tax rate will probably be zero; hence the gross up is not necessary whenever the ratio is really important.

SELF - TEST

How does the use of financial leverage affect current stockholders' control position?

Name six ratios that are used to measure the extent to which a firm uses financial leverage, and write out their equations.

A company has EBITDA of \$600 million, interest payments of \$60 million, lease payments of \$40 million, and required principal payments (due this year) of \$30 million. What is its EBITDA coverage ratio? (4.9)

3-5 Profitability Ratios

Profitability is the net result of a number of policies and decisions. The ratios examined thus far provide useful clues as to the effectiveness of a firm's operations, but the **profitability ratios** go on to show the combined effects of liquidity, asset management, and debt on operating results.

3-5a Net Profit Margin

The **net profit margin**, also called the **profit margin on sales**, is calculated by dividing net income by sales. It gives the profit per dollar of sales:

$$\begin{aligned}\text{Net profit margin} &= \frac{\text{Net income available to common stockholders}}{\text{Sales}} \\ &= \frac{\$220}{\$5,000} = 4.4\%\end{aligned}$$

$$\text{Industry average} = 6.2\%$$

MicroDrive's net profit margin is below the industry average of 6.2%, but why is this so? Is it due to inefficient operations, high interest expenses, or both?

Instead of just comparing net income to sales, many analysts also break the income statement into smaller parts to identify the sources of a low net profit margin. For example, the **operating profit margin** is defined as

$$\text{Operating profit margin} = \frac{\text{EBIT}}{\text{Sales}}$$

The operating profit margin identifies how a company is performing with respect to its operations before the impact of interest expenses is considered.

Some analysts drill even deeper by breaking operating costs into their components. For example, the **gross profit margin** is defined as

$$\text{Gross profit margin} = \frac{\text{Sales} - \text{Cost of goods sold}}{\text{Sales}}$$

The gross profit margin identifies the gross profit per dollar of sales before any other expenses are deducted.

Rather than calculate each type of profit margin here, later in the chapter we will use common size analysis and percent change analysis to focus on different parts of the

The World Might Be Flat, but Global Accounting Is Bumpy! The Case of IFRS versus FASB

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In a flat world, distance is no barrier. Work flows to where it can be done most efficiently, and capital flows to where it can be invested most profitably. If a radiologist in India is more efficient than one in the United States, then images will be e-mailed to India for diagnosis; if rates of return are higher in Brazil, then investors throughout the world will provide funding for Brazilian projects. One key to “flattening” the world is agreement on common standards. For example, there are common Internet standards so that users throughout the world are able to communicate.

A glaring exception to standardization is in accounting. The Securities and Exchange Commission (SEC) in the United States requires firms to comply with standards set by the Financial Accounting Standards Board (FASB). But the European Union requires all EU-listed companies to comply with the International Financial Reporting Standards (IFRS) as defined by the International Accounting Standards Board (IASB).

IFRS tends to rely on general principles, whereas FASB standards are rules-based. As the recent accounting scandals demonstrate, many U.S. companies have been able to comply with U.S. rules while violating the principle, or intent, underlying the rules. The United States is likely to adopt IFRS, or a slightly modified IFRS, but the question is “When?” The SEC estimated that a large company is likely to incur costs of up to \$32 million when switching to IFRS. So even though a survey by the accounting firm KPMG indicates that most investors and analysts favor adoption of IFRS, the path to adoption is likely to be bumpy.

Sources: See the Web sites of the IASB and the FASB, www.iasb.org.uk and www.fasb.org. Also see David M. Katz and Sarah Johnson, “Top Obama Advisers Clash on Global Accounting Standards,” January 15, 2009, at www.cfo.com; and “Survey Favors IFRS Adoption,” February 3, 2009, at www.webcpa.com.

income statement. In addition, we will use the DuPont equation to show how the ratios interact with one another.

Sometimes it is confusing to have so many different types of profit margins. To simplify the situation, we will focus primarily on the net profit margin throughout the book and call it the “profit margin.”

3-5b Basic Earning Power (BEP) Ratio

The **basic earning power (BEP) ratio** is calculated by dividing earnings before interest and taxes (EBIT) by total assets:

$$\begin{aligned}\text{Basic earning power (BEP ratio)} &= \frac{\text{EBIT}}{\text{Total assets}} \\ &= \frac{\$500}{\$3,550} = 14.1\%\end{aligned}$$

$$\text{Industry average} = 20.2\%$$

This ratio shows the earning power of the firm’s assets before the influence of taxes and leverage, and it is useful for comparing firms with different tax situations and different degrees of financial leverage. Because of its low turnover ratios and low profit margin on sales, MicroDrive is not getting as high a return on its assets as is the average company in its industry.

3-5c Return on Total Assets

The ratio of net income to total assets measures the **return on total assets (ROA)** after interest and taxes. This ratio is also called the **return on assets** and is defined as follows:

$$\begin{aligned}\text{Return on total assets} &= \text{ROA} = \frac{\text{Net income available to common stockholders}}{\text{Total assets}} \\ &= \frac{\$220}{\$3,550} = 6.2\%\end{aligned}$$

Industry average = 11.0%

MicroDrive's 6.2% return is well below the 9% average for the industry. This low return is due to (1) the company's low basic earning power, and (2) high interest costs resulting from its above-average use of debt. Both of these factors cause MicroDrive's net income to be relatively low.

3-5d Return on Common Equity

The ratio of net income to common equity measures the **return on common equity (ROE)**:

$$\begin{aligned}\text{Return on common equity} &= \text{ROE} = \frac{\text{Net income available to common stockholders}}{\text{Common equity}} \\ &= \frac{\$220}{\$1,470} = 15.0\%\end{aligned}$$

Industry average = 19.0%

Stockholders invest to earn a return on their money, and this ratio tells how well they are doing in an accounting sense. MicroDrive's 15% return is below the 19% industry average, but not as far below as its return on total assets. This somewhat better result is due to the company's greater use of debt, a point that we explain in detail later in the chapter.

SELF - TEST

Identify and write out the equations for four profitability ratios.

Why is the basic earning power ratio useful?

Why does the use of debt lower ROA?

What does ROE measure?

A company has \$200 billion of sales and \$10 billion of net income. Its total assets are \$100 billion, financed half by debt and half by common equity. What is its profit margin? (5%) What is its ROA? (10%) What is its ROE? (20%) Would ROA increase if the firm used less leverage? (Yes) Would ROE increase? (No)

3-6 Market Value Ratios

Market value ratios relate a firm's stock price to its earnings, cash flow, and book value per share. Market value ratios are a way to measure the value of a company's stock relative to that of another company.

3-6a Price/Earnings Ratio

The **price/earnings (P/E) ratio** shows how much investors are willing to pay per dollar of reported profits. MicroDrive has \$220 million in net income and 50 million shares, so its earnings per share (EPS) is $\$4.40 = \$220/50$. MicroDrive's stock sells for \$27, so its P/E ratio is:

$$\begin{aligned}\text{Price/earnings (P/E) ratio} &= \frac{\text{Price per share}}{\text{Earnings per share}} \\ &= \frac{\$27.00}{\$4.40} = 6.1 \\ \text{Industry average} &= 10.5\end{aligned}$$

Price/earnings ratios are higher for firms with strong growth prospects, other things held constant, but they are lower for riskier firms. Because MicroDrive's P/E ratio is below the average, this suggests that the company is regarded as being somewhat riskier than most, as having poorer growth prospects, or both. In early 2012, the average P/E ratio for firms in the S&P 500 was 13.4, indicating that investors were willing to pay \$13.40 for every dollar of earnings.

3-6b Price/Cash Flow Ratio

Stock prices depend on a company's ability to generate cash flows. Consequently, investors often look at the **price/cash flow ratio**, where cash flow is defined as net income plus depreciation and amortization:

$$\begin{aligned}\text{Price/cash flow ratio} &= \frac{\text{Price per share}}{\text{Cash flow per share}} \\ &= \frac{\$27.00}{(\$220 + \$200)/50} = 3.2 \\ \text{Industry average} &= 6.8\end{aligned}$$

MicroDrive's price/cash flow ratio is also below the industry average, once again suggesting that its growth prospects are below average, its risk is above average, or both.

The **price/EBITDA ratio** is similar to the price/cash flow ratio, except the price/EBITDA ratio measures performance before the impact of interest expenses and taxes, making it a better measure of operating performance. MicroDrive's EBITDA per share is $(\$500 + \$200)/50 = \$14$, so its price/EBITDA is $\$27/\$14 = 1.9$. The industry average price/EBITDA ratio is 4.0, so we see again that MicroDrive is below the industry average.

Note that some analysts look at other multiples as well. For example, depending on the industry, some may look at measures such as price/sales or price/customers. Ultimately, though, value depends on free cash flows, so if these "exotic" ratios do not forecast

future free cash flow, they may turn out to be misleading. This was true in the case of the dot-com retailers before they crashed and burned in 2000, costing investors many billions.

3-6c Market/Book Ratio

The ratio of a stock's market price to its book value gives another indication of how investors regard the company. Companies with relatively high rates of return on equity generally sell at higher multiples of book value than those with low returns. First, we find MicroDrive's book value per share:

$$\begin{aligned}\text{Book value per share} &= \frac{\text{Total common equity}}{\text{Shares outstanding}} \\ &= \frac{\$1.470}{50} = \$29.4\end{aligned}$$

Now we divide the market price by the book value to get a **market/book (M/B) ratio**:

$$\begin{aligned}\text{Market/book ratio} = M/B &= \frac{\text{Market price per share}}{\text{Book value per share}} \\ &= \frac{\$27.00}{\$29.40} = 0.9\end{aligned}$$

$$\text{Industry average} = 1.8$$

Investors are willing to pay relatively little for a dollar of MicroDrive's book value.

The book value is a record of the past, showing the cumulative amount that stockholders have invested, either directly by purchasing newly issued shares or indirectly through retaining earnings. In contrast, the market price is forward-looking, incorporating investors' expectations of future cash flows. For example, in early 2012 Bank of America had a market/book ratio of only 0.4, reflecting the financial services industry's problems, whereas Apple's market/book ratio was 5.6, indicating that investors expected Apple's past successes to continue.

Table 3-1 summarizes selected ratios for MicroDrive. As the table indicates, the company has many problems.

SELF - TEST

Describe three ratios that relate a firm's stock price to its earnings, cash flow, and book value per share, and write out their equations.

What does the price/earnings (P/E) ratio show? If one firm's P/E ratio is lower than that of another, what are some factors that might explain the difference?

How is book value per share calculated? Explain why book values often deviate from market values.

A company has \$6 billion of net income, \$2 billion of depreciation and amortization, \$80 billion of common equity, and 1 billion shares of stock. If its stock price is \$96 per share, what is its price/earnings ratio? (16) Its price/cash flow ratio? (12) Its market/book ratio? (1.2)

TABLE 3-1

MicroDrive Inc.: Summary of Selected Financial Ratios (Millions of Dollars)

Ratio	Formula	Calculation	Ratio	Industry Average	Comment
Liquidity					
Current	$\frac{\text{Current assets}}{\text{Current liabilities}}$	$\frac{\$1,550}{\$780} =$	2.0	2.2	Poor
Quick	$\frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$	$\frac{\$1,550}{\$780} =$	0.7	0.8	Poor
Asset Management					
Total assets turnover	$\frac{\text{Sales}}{\text{Total assets}}$	$\frac{\$5,000}{\$3,550} =$	1.4	1.8	Poor
Fixed assets turnover	$\frac{\text{Sales}}{\text{Net fixed assets}}$	$\frac{\$5,000}{\$2,000} =$	2.5	3.0	Poor
Days sales outstanding (DSO)	$\frac{\text{Receivables}}{\text{Annual sales}/365}$	$\frac{\$500}{\$13.7} =$	36.5	30.0	Poor
Inventory turnover	$\frac{\text{COGS}}{\text{Inventories}}$	$\frac{\$4,000}{\$1,000} =$	4.0	5.0	Poor
Debt Management					
Debt-to-assets ratio	$\frac{\text{Total debt}}{\text{Total assets}}$	$\frac{\$1,480}{\$3,550} =$	41.7%	25.0%	High (risky)
Times-interest-earned (TIE)	$\frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Interest charges}}$	$\frac{\$500}{\$120} =$	4.2	10.0	Low (risky)
Profitability					
Profit margin on sales	$\frac{\text{Net income available to common stockholders}}{\text{Sales}}$	$\frac{\$220}{\$5,000} =$	4.4%	6.2%	Poor
Basic earning power (BEP)	$\frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Total assets}}$	$\frac{\$500}{\$3,550} =$	14.1%	20.2%	Poor
Return on total assets (ROA)	$\frac{\text{Net income available to common stockholders}}{\text{Total assets}}$	$\frac{\$220}{\$3,550} =$	6.2%	11.0%	Poor
Return on common equity (ROE)	$\frac{\text{Net income available to common stockholders}}{\text{Common equity}}$	$\frac{\$220}{\$1,470} =$	15.0%	19.0%	Poor
Market Value					
Price/earnings (P/E)	$\frac{\text{Price per share}}{\text{Earnings per share}}$	$\frac{\$27.00}{\$4.40} =$	6.1	10.5	Low
Market/book (M/B)	$\frac{\text{Market price per share}}{\text{Book value per share}}$	$\frac{\$27.00}{\$29.40} =$	0.9	1.8	Low

3-7 Trend Analysis, Common Size Analysis, and Percentage Change Analysis

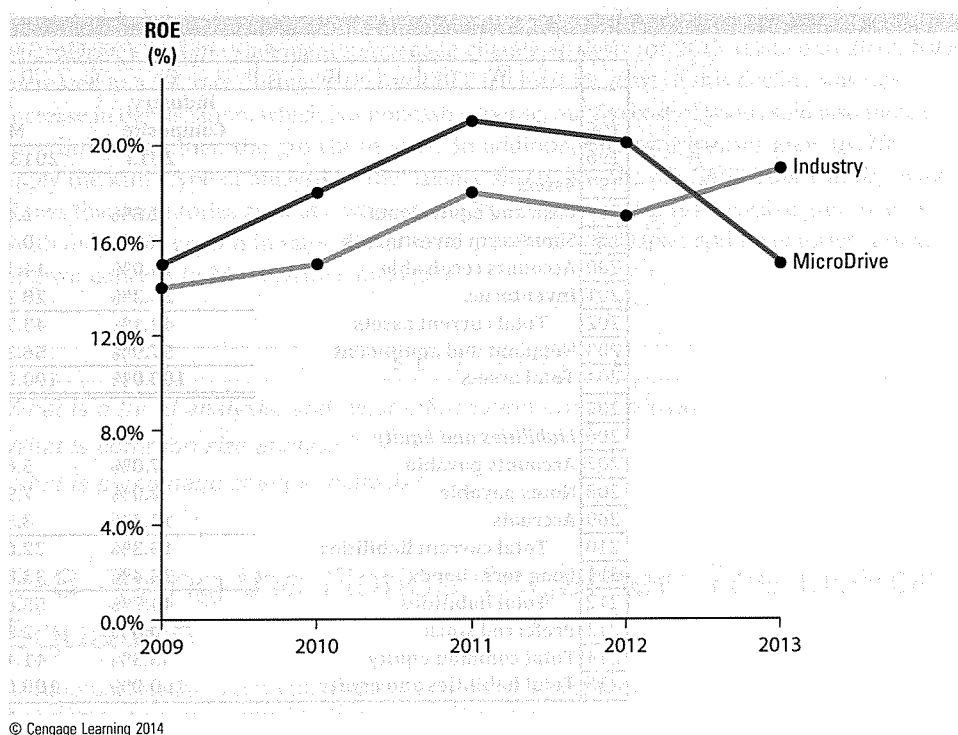
Trends give clues as to whether a firm's financial condition is likely to improve or deteriorate. To do a **trend analysis**, you examine a ratio over time, as shown in Figure 3-2. This graph shows that MicroDrive's rate of return on common equity has been declining since 2011, in contrast to the industry average. All the other ratios could be analyzed similarly.

In a **common size analysis**, all income statement items are divided by sales, and all balance sheet items are divided by total assets. Thus, a common size income statement shows each item as a percentage of sales, and a common size balance sheet shows each item as a percentage of total assets.⁸ The advantage of common size analysis is that it facilitates comparisons of balance sheets and income statements over time and across companies.

Common size statements are easy to generate if the financial statements are in a spreadsheet. In fact, if you obtain your data from a source that uses standardized financial statements, then it is easy to cut and paste the data for a new company over your original company's data, and all of your spreadsheet formulas will be valid for the new company. We generated Figure 3-3 in the Excel file *Ch03 Tool Kit.xls*. Figure 3-3 shows MicroDrive's 2012 and 2013 common size income statements, along with the composite statement for the industry. (Note: Rounding may cause addition/subtraction differences in Figures 3-3, 3-4, and 3-5.) MicroDrive's EBIT is slightly below average, and its interest expenses are slightly above average. The net effect is a relatively low profit margin.

FIGURE 3-2

MicroDrive, Inc.: Trend Analysis of Rate of Return on Common Equity



⁸Some sources of industry data, such as Risk Management Associates (formerly known as Robert Morris Associates), are presented exclusively in common size form.

FIGURE 3-3

MicroDrive Inc.: Common Size Income Statement

	A	B	C	D	E	F
				Industry		
175				Composite	MicroDrive	
176				2013	2013	2012
177	Net sales			100.0%	100.0%	100.0%
178	Costs of goods sold except depreciation			75.5%	76.0%	74.8%
179	Depreciation			3.0%	4.0%	3.6%
180	Other operating expenses			10.0%	10.0%	10.1%
181	Earnings before interest and taxes (EBIT)			11.5%	10.0%	11.6%
182	Less interest			1.2%	2.4%	2.1%
183	Pretax earnings			10.4%	7.6%	9.5%
184	Taxes (40%)			4.1%	3.0%	3.8%
185	Net Income before preferred dividends			6.2%	4.6%	5.7%
186	Preferred dividends			0.0%	0.2%	0.2%
187	Net Income available to common stockholders			6.2%	4.4%	5.5%

FIGURE 3-4

MicroDrive Inc.: Common Size Balance Sheet

	A	B	C	D	E
			Industry		
195			Composite	MicroDrive	
196			2013	2013	2012
197	Assets				
198	Cash and equivalents		1.8%	1.4%	2.0%
199	Short-term investments		0.0%	0.0%	1.3%
200	Accounts receivable		14.0%	14.1%	12.7%
201	Inventories		26.3%	28.2%	27.3%
202	Total current assets		42.1%	43.7%	43.3%
203	Net plant and equipment		57.9%	56.3%	56.7%
204	Total assets		100.0%	100.0%	100.0%
205					
206	Liabilities and Equity				
207	Accounts payable		7.0%	5.6%	6.3%
208	Notes payable		0.0%	7.9%	4.3%
209	Accruals		12.3%	8.5%	9.3%
210	Total current liabilities		19.3%	22.0%	20.0%
211	Long-term bonds		25.4%	33.8%	33.3%
212	Total liabilities		44.7%	55.8%	53.3%
213	Preferred stock		0.0%	2.8%	3.3%
214	Total common equity		55.3%	41.4%	43.3%
215	Total liabilities and equity		100.0%	100.0%	100.0%

FIGURE 3-5

MicroDrive Inc.: Income Statement Percentage Change Analysis

	A	B	C	D
225	Base year = 2012			Percent
226				Change in
				2013
227	Net sales			5.0%
228	Costs of goods sold except depreciation			6.7%
229	Depreciation			17.6%
230	Other operating expenses			4.2%
231	Earnings before interest and taxes (EBIT)			(9.1%)
232	Less interest			20.0%
233	Pretax earnings			(15.6%)
234	Taxes (40%)			(15.6%)
235	Net Income before preferred dividends			(15.6%)
236	Preferred dividends			0.0%
237	Net income available to common stockholders			(16.0%)

resource

See *Ch03 Tool Kit.xls* for details.

Figure 3-4 shows MicroDrive's common size balance sheets along with the industry composite. Its accounts receivable are significantly higher than the industry average, its inventories are significantly higher, and it uses much more debt than the average firm.

In **percentage change analysis**, growth rates are calculated for all income statement items and balance sheet accounts relative to a base year. To illustrate, Figure 3-5 contains MicroDrive's income statement percentage change analysis for 2013 relative to 2012. Sales increased at a 5% rate during 2013, but EBIT fell by 9.1%. Part of this decline was due to an increase in depreciation, which is a noncash expense, but the cost of goods sold also increased by a little more than the growth in sales. In addition, interest expenses grew by 20%. We apply the same type of analysis to the balance sheets (see the file *Ch03 Tool Kit.xls*), which shows that inventories grew at a whopping 22% rate and accounts receivable grew over 31%. With only a 5% growth in sales, the extreme growth in receivables and inventories should be of great concern to MicroDrive's managers.

SELF - TEST

What is a trend analysis, and what information does it provide?

What is common size analysis?

What is percentage change analysis?

3-8 Tying the Ratios Together: The DuPont Equation

In ratio analysis, it is sometimes easy to miss the forest for all the trees. In particular, how do managerial actions affecting a firm's profitability, asset efficiency, and financial leverage interact to determine the return on equity, a performance measure that is important for investors? The extended **DuPont equation** provides just such a framework.

The DuPont equation uses two ratios we covered previously, the profit margin and the total asset turnover ratio, as measures of profitability and asset efficiency. But it also uses a new measure of financial leverage, the *equity multiplier*, which is the ratio of assets to common equity:

$$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Common equity}}$$

(3-1)

Using this new definition of financial leverage, the extended DuPont equation is:

$$\begin{aligned} \text{ROE} &= \frac{\text{Net income}}{\text{Sales}} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common equity}} \\ &= (\text{Profit margin})(\text{Total assets turnover})(\text{Equity multiplier}) \end{aligned}$$

(3-2)

As calculated previously, MicroDrive's 2013 profit margin is 4.4% and its total assets turnover ratio is 1.41. MicroDrive's equity multiplier is:

$$\text{Equity multiplier} = \frac{\$3,550}{\$1,470} = 2.415$$

Applying the DuPont equation to MicroDrive, its return on equity is:

$$\text{ROE} = (4.4\%)(1.41)(2.415) = 15\%$$

Sometimes it is useful to focus just on asset profitability and financial leverage. Firms that have a lot of financial leverage (i.e., a lot of liabilities or preferred stock) have a high equity multiplier because the assets are financed with a relatively smaller amount of equity. Therefore, the return on equity (ROE) depends on the ROA and the use of leverage:

$$\begin{aligned} \text{ROE} &= \text{ROA} \times \text{Equity multiplier} \\ &= \frac{\text{Net income}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common equity}} \end{aligned}$$

(3-3)

Using Equation 3-3, we see that MicroDrive's ROE is 15.0%, the same value given by the DuPont equation:

$$\text{ROE} = 6.20\% \times 2.415 = 15\%$$

The insights provided by the DuPont model are valuable, and the model can be used for "quick and dirty" estimates of the impact that operating changes have on returns. For example, holding all else equal, if MicroDrive can implement lean production techniques and increase to 1.8 its ratio of sales to total assets, then its ROE will improve to $(4.4\%)(1.8)(2.415) = 19.1\%$.

For a more complete "what if" analysis, most companies use a forecasting model such as the one described in Chapter 12.

SELF - TEST

Explain how the extended, or modified, DuPont equation can be used to reveal the basic determinants of ROE.

What is the equity multiplier?

A company has a profit margin of 6%, a total asset turnover ratio of 2, and an equity multiplier of 1.5. What is its ROE? (18%)

3-9 Comparative Ratios and Benchmarking

Ratio analysis involves comparisons. A company's ratios are compared with those of other firms in the same industry—that is, with industry average figures. However, like most firms, MicroDrive's managers go one step further: they also compare their ratios with those of a smaller set of the leading computer companies. This technique is called **benchmarking**, and the companies used for the comparison are called **benchmark companies**. For example, MicroDrive benchmarks against five other firms that its management considers to be the best-managed companies with operations similar to its own.

Many companies also benchmark various parts of their overall operation against top companies, whether they are in the same industry or not. For example, MicroDrive has a division that sells hard drives directly to consumers through catalogs and the Internet. This division's shipping department benchmarks against Amazon, even though they are in different industries, because Amazon's shipping department is one of the best. MicroDrive wants its own shippers to strive to match Amazon's record for on-time shipments.

Comparative ratios are available from a number of sources, including *Value Line*, Dun and Bradstreet (D&B), and the *Annual Statement Studies* published by Risk Management Associates, which is the national association of bank loan officers. Table 3-2 reports selected ratios from Reuters for Apple and its industry, revealing that Apple has a much higher profit margin and lower debt ratio than its peers.

Each data-supplying organization uses a somewhat different set of ratios designed for its own purposes. For example, D&B deals mainly with small firms, many of which are proprietorships, and it sells its services primarily to banks and other lenders. Therefore, D&B is concerned largely with the creditor's viewpoint, and its ratios emphasize current assets and liabilities, not market value ratios. So, when you select a comparative data source, you should be sure that your own emphasis is similar to that of the agency whose ratios you plan to use. Additionally, there are often definitional differences in the ratios presented by different sources, so before using a source, be sure to verify the exact definitions of the ratios to ensure consistency with your own work.

SELF - TEST

Compare and contrast trend analysis and comparative ratio analysis.

Explain benchmarking.

TABLE 3-2

Comparative Ratios for Apple Inc., the Computer Hardware Industry, and the Technology Sector

Ratio	Apple	Computer Hardware Industry ^a	Technology Sector ^b
P/E ratio	15.53	13.69	20.92
Market to book	5.64	2.22	3.6
Net profit margin	21.48	22.48	23.48
Quick ratio	1.55	1.19	1.06
Current ratio	1.58	1.5	2.72
Total debt-to-equity	0.00	56.48	21.7
Interest coverage (TIE) ^c	--	3.38	1.3
Return on assets	29.26	7.06	13.13
Return on equity	35.28	36.28	37.28
Inventory turnover	69.42	15.4	466.83
Asset turnover	1.13	1.45	1.02

^aThe computer hardware industry is composed of 50 firms, including IBM, Dell, Apple, Sun Microsystems, Gateway, and Silicon Graphics.

^bThe technology sector contains 11 industries, including communications equipment, computer hardware, computer networks, semiconductors, and software and programming.

^cApple had more interest income than interest expense.

Source: Adapted from www.reuters.com, March 10, 2012. Select Market, Stocks, and enter the ticker symbol for Apple, AAPL. Select Financials to see updated data.

3-10 Uses and Limitations of Ratio Analysis

Ratio analysis provides useful information concerning a company's operations and financial condition, but it has limitations that necessitate care and judgment. Some potential problems include the following.

1. Many large firms operate different divisions in different industries, and for such companies it is difficult to develop a meaningful set of industry averages. Therefore, industry averages are more meaningful for small, narrowly focused firms than for large, multidivisional ones.
2. To set goals for high-level performance, it is best to benchmark on the industry *leaders'* ratios rather than the industry *average* ratios.
3. Inflation may badly distort firms' balance sheets—reported values are often substantially different from “true” values. Further, because inflation affects depreciation charges and inventory costs, reported profits are also affected. Thus, inflation can distort a ratio analysis for one firm over time or a comparative analysis of firms of different ages.
4. Seasonal factors can distort a ratio analysis. For example, the inventory turnover ratio for a food processor will be radically different if the balance sheet figure used for inventory is the one just before versus the one just after the close of the canning season. This problem can be minimized by using monthly averages for inventory (and receivables) when calculating turnover ratios.

Ratio Analysis on the Web

© Rob Webb/Getty Images

A great source for comparative ratios is www.reuters.com. Enter a company's ticker at the top of the page. This brings up a table with the stock quote, company information, and additional links. Select Financials, which brings up a page with a detailed

ratio analysis for the company and includes comparative ratios for other companies in the same sector, the same industry, and the S&P 500. (Note: You may have to register to get extra features, but registration is free.)

5. Firms can employ “**window dressing**” techniques to make their financial statements look stronger. To illustrate, suppose a company takes out a 2-year loan in late December. Because the loan is for more than 1 year, it is not included in current liabilities even though the cash received through the loan is reported as a current asset. This improves the current and quick ratios and makes the year-end balance sheet look stronger. If the company pays the loan back in January, then the transaction was strictly window dressing.
6. Companies' choices of different accounting practices can distort comparisons. For example, choices of inventory valuation and depreciation methods affect financial statements differently, making comparisons among companies less meaningful. As another example, if one firm leases a substantial amount of its productive equipment, then its assets may appear low relative to sales (because leased assets often do not appear on the balance sheet) and its debt may appear low (because the liability associated with the lease obligation may not be shown as debt).⁹

In summary, conducting ratio analysis in a mechanical, unthinking manner is dangerous. But when ratio analysis is used intelligently and with good judgment, it can provide useful insights into a firm's operations and identify the right questions to ask.

SELF - TEST

List several potential problems with ratio analysis.

3-11 Looking Beyond the Numbers

Sound financial analysis involves more than just calculating and comparing ratios—qualitative factors must be considered. Here are some questions suggested by the American Association of Individual Investors (AAII).

1. To what extent are the company's revenues tied to one key customer or to one key product? To what extent does the company rely on a single supplier? Reliance on single customers, products, or suppliers increases risk.
2. What percentage of the company's business is generated overseas? Companies with a large percentage of overseas business are exposed to risk of currency exchange volatility and political instability.
3. What are the probable actions of current competitors and the likelihood of additional new competitors?

⁹This may change when FASB and IASB complete their joint project on leasing. As of mid-2012, the estimated project completion date was not certain. For the current status of the project, go to www.fasb.org and select the tab for Projects.

4. Do the company's future prospects depend critically on the success of products currently in the pipeline or on existing products?
5. How does the legal and regulatory environment affect the company?

SELF - TEST

What qualitative factors should analysts consider when evaluating a company's likely future financial performance?

SUMMARY

This chapter explained techniques investors and managers use to analyze financial statements. The key concepts covered are listed below.

- **Liquidity ratios** show the relationship of a firm's current assets to its current liabilities and thus its ability to meet maturing debts. Two commonly used liquidity ratios are the **current ratio** and the **quick, or acid test, ratio**.
- **Asset management ratios** measure how effectively a firm is managing its assets. These ratios include **inventory turnover**, **days sales outstanding**, **fixed assets turnover**, and **total assets turnover**.
- **Debt management ratios** reveal (1) the extent to which the firm is financed with debt, and (2) its likelihood of defaulting on its debt obligations. They include the **debt-to-assets ratio** (also called the **debt ratio**), the **debt-to-equity ratio**, the **times-interest-earned ratio**, and the **EBITDA coverage ratio**.
- **Profitability ratios** show the combined effects of liquidity, asset management, and debt management policies on operating results. They include the **net profit margin** (also called the **profit margin on sales**), the **basic earning power ratio**, the **return on total assets**, and the **return on common equity**.
- **Market value ratios** relate the firm's stock price to its earnings, cash flow, and book value per share, thus giving management an indication of what investors think of the company's past performance and future prospects. These include the **price/earnings ratio**, the **price/cash flow ratio**, and the **market/book ratio**.
- **Trend analysis**, in which one plots a ratio over time, is important because it reveals whether the firm's condition has been improving or deteriorating over time.
- The **DuPont system** is designed to show how the profit margin on sales, the assets turnover ratio, and the use of debt all interact to determine the rate of return on equity. The firm's management can use the Du Pont system to analyze ways of improving performance.
- **Benchmarking** is the process of comparing a particular company with a group of similar successful companies.

Ratio analysis has limitations, but when used with care and judgment it can be very helpful.

QUESTIONS

(3-1) Define each of the following terms:

- a. *Liquidity ratios*: current ratio; quick, or acid test, ratio
- b. *Asset management ratios*: inventory turnover ratio; days sales outstanding (DSO); fixed assets turnover ratio; total assets turnover ratio

- c. *Financial leverage ratios*: debt ratio; times-interest-earned (TIE) ratio; coverage ratio
 - d. *Profitability ratios*: profit margin on sales; basic earning power (BEP) ratio; return on total assets (ROA); return on common equity (ROE)
 - e. Market value ratios: price/earnings (P/E) ratio; price/cash flow ratio; market/book (M/B) ratio; book value per share
 - f. Trend analysis; comparative ratio analysis; benchmarking
 - g. DuPont equation; window dressing; seasonal effects on ratios
- (3-2) Financial ratio analysis is conducted by managers, equity investors, long-term creditors, and short-term creditors. What is the primary emphasis of each of these groups in evaluating ratios?
- (3-3) Over the past year, M. D. Ryngaert & Co. has realized an increase in its current ratio and a drop in its total assets turnover ratio. However, the company's sales, quick ratio, and fixed assets turnover ratio have remained constant. What explains these changes?
- (3-4) Profit margins and turnover ratios vary from one industry to another. What differences would you expect to find between a grocery chain such as Safeway and a steel company? Think particularly about the turnover ratios, the profit margin, and the Du Pont equation.
- (3-5) How might (a) seasonal factors and (b) different growth rates distort a comparative ratio analysis? Give some examples. How might these problems be alleviated?
- (3-6) Why is it sometimes misleading to compare a company's financial ratios with those of other firms that operate in the same industry?

SELF-TEST PROBLEMS Solutions Appear in Appendix A

(ST-1) Debt Ratio Argent Corporation has \$60 million in current liabilities, \$150 million in total liabilities, and \$210 million in total common equity; Argent has no preferred stock. Argent's total debt is \$120 million. What is the debt-to-assets ratio? What is the debt-to-equity ratio?

(ST-2) Ratio Analysis The following data apply to Jacobus and Associates (millions of dollars):

Cash and marketable securities	\$ 100.00
Fixed assets	\$ 283.50
Sales	\$ 1,000.00
Net income	\$ 50.00
Quick ratio	2.0
Current ratio	3.0
DSO	40.55 days
ROE	12%

Jacobus has no preferred stock—only common equity, current liabilities, and long-term debt. Find Jacobus's (1) accounts receivable, (2) current liabilities, (3) current assets, (4) total assets, (5) ROA, (6) common equity, and (7) long-term debt.

PROBLEMS **Answers Appear in Appendix B**

Easy Problems 1–5

- (3-1) **Days Sales Outstanding** Greene Sisters has a DSO of 20 days. The company's average daily sales are \$20,000. What is the level of its accounts receivable? Assume there are 365 days in a year.
- (3-2) **Debt Ratio** Vigo Vacations has \$200 million in total assets, \$5 million in notes payable, and \$25 million in long-term debt. What is the debt ratio?
- (3-3) **Market/Book Ratio** Winston Washers's stock price is \$75 per share. Winston has \$10 billion in total assets. Its balance sheet shows \$1 billion in current liabilities, \$3 billion in long-term debt, and \$6 billion in common equity. It has 800 million shares of common stock outstanding. What is Winston's market/book ratio?
- (3-4) **Price/Earnings Ratio** Reno Revolvers has an EPS of \$1.50, a cash flow per share of \$3.00, and a price/cash flow ratio of 8.0. What is its P/E ratio?
- (3-5) **ROE** Needham Pharmaceuticals has a profit margin of 3% and an equity multiplier of 2.0. Its sales are \$100 million and it has total assets of \$50 million. What is its ROE?

Intermediate Problems 6–10

- (3-6) **Du Pont Analysis** Gardial & Son has an ROA of 12%, a 5% profit margin, and a return on equity equal to 20%. What is the company's total assets turnover? What is the firm's equity multiplier?
- (3-7) **Current and Quick Ratios** Ace Industries has current assets equal to \$3 million. The company's current ratio is 1.5, and its quick ratio is 1.0. What is the firm's level of current liabilities? What is the firm's level of inventories?

- (3-8) **Profit Margin and Debt Ratio** Assume you are given the following relationships for the Haslam Corporation:

Sales/total assets	1.2
Return on assets (ROA)	4%
Return on equity (ROE)	7%

Calculate Haslam's profit margin and liabilities-to-assets ratio. Suppose half its liabilities are in the form of debt. Calculate the debt-to-assets ratio.

- (3-9) **Current and Quick Ratios** The Nelson Company has \$1,312,500 in current assets and \$525,000 in current liabilities. Its initial inventory level is \$375,000, and it will raise funds as additional notes payable and use them to increase inventory. How much can Nelson's short-term debt (notes payable) increase without pushing its current ratio below 2.0? What will be the firm's quick ratio after Nelson has raised the maximum amount of short-term funds?

- (3-10) **Times-Interest-Earned Ratio** The Morris Corporation has \$600,000 of debt outstanding, and it pays an interest rate of 8% annually. Morris's annual sales are \$3 million, its average tax rate is 40%, and its net profit margin on sales is 3%. If the company does not maintain a TIE ratio of at least 5 to 1, then its bank will refuse to renew the loan and bankruptcy will result. What is Morris's TIE ratio?

Challenging Problems 11–14

- (3-11) **Balance Sheet Analysis** Complete the balance sheet and sales information in the table that follows for J. White Industries using the following financial data:

Total assets turnover: 1.5

Gross profit margin on sales: $(\text{Sales} - \text{Cost of goods sold})/\text{Sales} = 25\%$

Total liabilities-to-assets ratio: 40%

Quick ratio: 0.80

Days sales outstanding (based on 365-day year): 36.5 days

Inventory turnover ratio: 3.75

Partial Income		Statement Information	
Sales	_____		
Cost of goods sold	_____		
Balance Sheet			
Cash	_____	Accounts payable	_____
Accounts receivable	_____	Long-term debt	50,000
Inventories	_____	Common stock	_____
Fixed assets	_____	Retained earnings	100,000
Total assets	<u>\$400,000</u>	Total liabilities and equity	<u>_____</u>

(3-12) Comprehensive Ratio Calculations The Kretovich Company had a quick ratio of 1.4, a current ratio of 3.0, a days sales outstanding of 36.5 days (based on a 365-day year), total current assets of \$810,000, and cash and marketable securities of \$120,000. What were Kretovich's annual sales?

(3-13) Comprehensive Ratio Analysis Data for Lozano Chip Company and its industry averages follow.

- Calculate the indicated ratios for Lozano.
- Construct the extended Du Pont equation for both Lozano and the industry.
- Outline Lozano's strengths and weaknesses as revealed by your analysis.

Lozano Chip Company: Balance Sheet as of December 31, 2013 (Thousands of Dollars)

Cash	\$ 225,000	Accounts payable	\$ 601,866
Receivables	1,575,000	Notes payable	326,634
Inventories	<u>1,125,000</u>	Other current liabilities	<u>525,000</u>
Total current assets	\$2,950,000	Total current liabilities	\$1,453,500
Net fixed assets	1,350,000	Long-term debt	1,068,750
	_____	Common equity	<u>1,752,750</u>
Total assets	<u>\$4,275,000</u>	Total liabilities and equity	<u>\$4,275,000</u>

Lozano Chip Company: Income Statement for Year Ended December 31, 2013 (Thousands of Dollars)

Sales	\$ 7,500,000
Cost of goods sold	6,375,000
Selling, general, and administrative expenses	<u>825,000</u>
Earnings before interest and taxes (EBIT)	\$ 300,000
Interest expense	<u>111,631</u>
Earnings before taxes (EBT)	\$ 188,369
Federal and state income taxes (40%)	<u>75,348</u>
Net income	<u>\$ 113,022</u>

Ratio	Lozano	Industry Average
Current assets/Current liabilities	_____	2.0
Days sales outstanding (365-day year)	_____	35.0 days
COGS/Inventory	_____	6.7
Sales/Fixed assets	_____	12.1
Sales/Total assets	_____	3.0
Net income/Sales	_____	1.2%
Net income/Total assets	_____	3.6%
Net income/Common equity	_____	9.0%
Total debt/Total assets	_____	30.0%
Total liabilities/Total assets	_____	60.0%

(3-14) The Jimenez Corporation's forecasted 2014 financial statements follow, along with some industry average ratios. Calculate Jimenez's 2014 forecasted ratios, compare them with the industry average data, and comment briefly on Jimenez's projected strengths and weaknesses.

Comprehensive Ratio
Analysis

Jimenez Corporation: Forecasted Balance Sheet as of December 31, 2014

Assets

Cash	\$ 72,000
Accounts receivable	439,000
Inventories	894,000
Total current assets	\$ 1,405,000
Fixed assets	431,000
Total assets	\$ 1,836,000

Liabilities and Equity

Accounts payable	\$ 332,000
Notes payable	100,000
Accruals	170,000
Total current liabilities	\$ 602,000
Long-term debt	404,290
Common stock	575,000
Retained earnings	254,710
Total liabilities and equity	\$ 1,836,000

Jimenez Corporation: Forecasted Income Statement for 2014

Sales	\$4,290,000
Cost of goods sold	3,580,000
Selling, general, and administrative expenses	370,320
Depreciation and amortization	159,000
Earnings before taxes (EBT)	\$ 180,680
Taxes (40%)	72,272
Net income	\$ 108,408

Per Share Data

EPS	\$ 4.71
Cash dividends per share	\$ 0.95
P/E ratio	5.0
Market price (average)	\$ 23.57
Number of shares outstanding	23,000

Industry Financial Ratios (2013)^a

Quick ratio	1.0
Current ratio	2.7
Inventory turnover ^b	7.0
Days sales outstanding ^c	32.0 days
Fixed assets turnover ^b	13.0
Total assets turnover ^b	2.6
Return on assets	9.1%
Return on equity	18.2%
Profit margin on sales	3.5%
Debt-to-assets ratio	21.0%
Liabilities-to-assets ratio	50.0%

P/E ratio	6.0
Price/Cash flow ratio	3.5
Market/Book ratio	3.5

^aIndustry average ratios have been constant for the past 4 years.

^bBased on year-end balance sheet figures.

^cCalculation is based on a 365-day year.

SPREADSHEET PROBLEMS

(3-15)
Build a Model: Ratio
Analysis

Start with the partial model in the file **Ch03 P15 Build a Model.xls** from the textbook's Web site. Joshua & White (J&W) Technologies's financial statements are also shown below. Answer the following questions. (*Note:* Industry average ratios are provided in **Ch03 P15 Build a Model.xls**.)

Resource

- Has J&W's liquidity position improved or worsened? Explain.
- Has J&W's ability to manage its assets improved or worsened? Explain.
- How has J&W's profitability changed during the last year?
- Perform an extended DuPont analysis for J&W for 2012 and 2013. What do these results tell you?
- Perform a common size analysis. What has happened to the composition (that is, percentage in each category) of assets and liabilities?
- Perform a percentage change analysis. What does this tell you about the change in profitability and asset utilization?

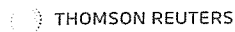
Joshua & White Technologies: December 31 Balance Sheets
(Thousands of Dollars)

Assets	2013	2012	Liabilities & Equity	2013	2012
Cash	\$ 21,000	\$ 20,000	Accounts payable	\$ 33,600	\$ 32,000
Short-term investments	3,759	3,240	Accruals	12,600	12,000
Accounts receivable	52,500	48,000	Notes payable	<u>19,929</u>	<u>6,480</u>
Inventories	<u>84,000</u>	<u>56,000</u>	Total current liabilities	\$ 66,129	\$ 50,480
Total current assets	\$161,259	\$127,240	Long-term debt	<u>67,662</u>	<u>58,320</u>
Net fixed assets	<u>218,400</u>	<u>200,000</u>	Total liabilities	\$133,791	\$108,800
Total assets	<u>\$379,659</u>	<u>\$327,240</u>	Common stock	183,793	178,440
			Retained earnings	<u>62,075</u>	<u>40,000</u>
			Total common equity	<u>\$245,868</u>	<u>\$218,440</u>
			Total liabilities & equity	<u>\$379,659</u>	<u>\$327,240</u>

Joshua & White Technologies December 31 Income Statements
(Thousands of Dollars)

	2013	2012
Sales	\$420,000	\$400,000
COGS excluding depr. & amort.	300,000	298,000
Depreciation and amortization	19,660	18,000
Other operating expenses	<u>27,600</u>	<u>22,000</u>
EBIT	\$ 72,740	\$ 62,000
Interest expense	<u>5,740</u>	<u>4,460</u>
EBT	\$ 67,000	\$ 57,540
Taxes (40%)	<u>26,800</u>	<u>23,016</u>
Net income	<u>\$ 40,200</u>	<u>\$ 34,524</u>
Common dividends	\$ 18,125	\$ 17,262

Other Data	2012	2011
Year-end stock price	\$ 90.00	\$ 96.00
Number of shares (thousands)	4,052	4,000
Lease payment (thousands of dollars)	\$ 20,000	\$ 20,000
Sinking fund payment (thousands of dollars)	\$ 5,000	\$ 5,000

THOMSON ONE Business School Edition Problem

THOMSON REUTERS

Use the Thomson ONE—Business School Edition online database to work this chapter's questions.

Analysis of Ford's Financial Statements with Thomson ONE—Business School Edition

Use Thomson ONE to analyze Ford Motor Company. Enter Ford's ticker symbol (F) and select GO. By selecting the menu at left labeled Financials, you can find Ford's key financial statements for the past several years. Under the Financial Ratios heading, select Thomson Ratios and then Annual Ratios to see an in-depth summary of Ford's various ratios over the past 5 years.

Click on the Comparables menu at left and scroll down to find the submenu items for Key Financials and Key Financial Ratios for Ford and a few of its peers. If you scroll up, still in the Comparables menu, you can select a different list of peer firms to be included in the analysis. The default group is "Peers by SIC code."

Thomson ONE—BSE Discussion Questions

1. What has happened to Ford's liquidity position over the past 3 years? How does Ford's liquidity compare with its peers? (*Hint:* You may use both the peer key financial ratios and liquidity comparison to answer this question.)
2. Look at Ford's inventory turnover ratio. How does this ratio compare with its peers? Have there been any interesting changes over time in this measure? Do you consider Ford's inventory management to be a strength or a weakness?
3. Construct a simple DuPont analysis for Ford and its peers. What are Ford's strengths and weaknesses relative to its competitors?

MINI CASE

The first part of the case, presented in Chapter 2, discussed the situation of Computron Industries after an expansion program. A large loss occurred in 2013, rather than the expected profit. As a result, its managers, directors, and investors are concerned about the firm's survival.

Jenny Cochran was brought in as assistant to Gary Meissner, Computron's chairman, who had the task of getting the company back into a sound financial position. Computron's 2012 and 2013 balance sheets and income statements, together with projections for 2014, are shown in the following tables. The tables also show the 2012 and 2013 financial ratios, along with industry average data. The 2014 projected financial statement data represent Cochran's and Meissner's best guess for 2014 results, assuming that some new financing is arranged to get the company "over the hump."

Balance Sheets

	2012	2013	2014E
<i>Assets</i>			
Cash	\$ 9,000	\$ 7,282	\$ 14,000
Short-term investments	48,600	20,000	71,632
Accounts receivable	351,200	632,160	878,000
Inventories	<u>715,200</u>	<u>1,287,360</u>	<u>1,716,480</u>
Total current assets	\$ 1,124,000	\$1,946,802	\$2,680,112
Gross fixed assets	491,000	1,202,950	1,220,000
Less: Accumulated depreciation	<u>146,200</u>	<u>263,160</u>	<u>383,160</u>
Net fixed assets	\$ 344,800	\$ 939,790	\$ 836,840
Total assets	<u>\$ 1,468,800</u>	<u>\$2,886,592</u>	<u>\$3,516,952</u>
<i>Liabilities and Equity</i>			
Accounts payable	\$ 145,600	\$ 324,000	\$ 359,800
Notes payable	200,000	720,000	300,000
Accruals	<u>136,000</u>	<u>284,960</u>	<u>380,000</u>
Total current liabilities	\$ 481,600	\$1,328,960	\$1,039,800
Long-term debt	323,432	1,000,000	500,000
Common stock (100,000 shares)	460,000	460,000	1,680,936
Retained earnings	<u>203,768</u>	<u>97,632</u>	<u>296,216</u>
Total equity	\$ 663,768	\$ 557,632	\$1,977,152
Total liabilities and equity	<u>\$ 1,468,800</u>	<u>\$2,886,592</u>	<u>\$3,516,952</u>

Note: "E" denotes "estimated"; the 2014 data are forecasts.

Income Statements

	2012	2013	2014E
Sales	\$ 3,432,000	\$5,834,400	\$7,035,600
Cost of goods sold except depr.	2,864,000	4,980,000	5,800,000
Depreciation and amortization	18,900	116,960	120,000
Other expenses	<u>340,000</u>	<u>720,000</u>	<u>612,960</u>
Total operating costs	\$ 3,222,900	\$5,816,960	\$6,532,960
EBIT	\$ 209,100	\$ 17,440	\$ 502,640
Interest expense	<u>62,500</u>	<u>176,000</u>	<u>80,000</u>
EBT	\$ 146,600	(\$ 158,560)	\$ 422,640
Taxes (40%)	<u>58,640</u>	<u>(63,424)</u>	<u>169,056</u>
Net income	<u>\$ 87,960</u>	<u>(\$ 95,136)</u>	<u>\$ 253,584</u>

Other Data

Stock price	\$ 8.50	\$ 6.00	\$ 12.17
Shares outstanding	100,000	100,000	250,000
EPS	\$ 0.880	(\$ 0.951)	\$ 1.014
DPS	\$ 0.220	0.110	0.220
Tax rate	40%	40%	40%
Book value per share	\$ 6.638	\$ 5.576	\$ 7.909
Lease payments	\$ 40,000	\$ 40,000	\$ 40,000

Note: "E" denotes "estimated"; the 2014 data are forecasts.

Ratio Analysis

	2012	2013	2014E	Industry Average
Current	2.3	1.5	_____	2.7
Quick	0.8	0.5	_____	1.0
Inventory turnover	4.0	4.0	_____	6.1
Days sales outstanding	37.3	39.6	_____	32.0
Fixed assets turnover	10.0	6.2	_____	7.0
Total assets turnover	2.3	2.0	_____	2.5
Debt ratio	35.6%	59.6%	_____	32.0%
Liabilities-to-assets ratio	54.8%	80.7%	_____	50.0%
TIE	3.3	0.1	_____	6.2
EBITDA coverage	2.6	0.8	_____	8.0
Profit margin	2.6%	-1.6%	_____	3.6%
Basic earning power	14.2%	0.6%	_____	17.8%
ROA	6.0%	-3.3%	_____	9.0%
ROE	13.3%	-17.1%	_____	17.9%
Price/Earnings (P/E)	9.7	-6.3	_____	16.2
Price/Cash flow	8.0	27.5	_____	7.6
Market/Book	1.3	1.1	_____	2.9

Note: "E" denotes "estimated."

Cochran must prepare an analysis of where the company is now, what it must do to regain its financial health, and what actions to take. Your assignment is to help her answer the following questions. Provide clear explanations, not yes or no answers.

- Why are ratios useful? What three groups use ratio analysis and for what reasons?
- Calculate the 2014 current and quick ratios based on the projected balance sheet and income statement data. What can you say about the company's liquidity position in 2012, 2013, and as projected for 2014? We often think of ratios as being useful (1) to managers to help run the business, (2) to bankers for credit analysis, and (3) to stockholders for stock valuation. Would these different types of analysts have an equal interest in the liquidity ratios?

- c. Calculate the 2014 inventory turnover, days sales outstanding (DSO), fixed assets turnover, and total assets turnover. How does Computron's utilization of assets stack up against that of other firms in its industry?
- d. Calculate the 2014 debt ratio, liabilities-to-assets ratio, times-interest-earned, and EBITDA coverage ratios. How does Computron compare with the industry with respect to financial leverage? What can you conclude from these ratios?
- e. Calculate the 2014 profit margin, basic earning power (BEP), return on assets (ROA), and return on equity (ROE). What can you say about these ratios?
- f. Calculate the 2014 price/earnings ratio, price/cash flow ratio, and market/book ratio. Do these ratios indicate that investors are expected to have a high or low opinion of the company?
- g. Perform a common size analysis and percentage change analysis. What do these analyses tell you about Computron?
- h. Use the extended DuPont equation to provide a summary and overview of Computron's financial condition as projected for 2014. What are the firm's major strengths and weaknesses?
- i. What are some potential problems and limitations of financial ratio analysis?
- j. What are some qualitative factors that analysts should consider when evaluating a company's likely future financial performance?

SELECTED ADDITIONAL CASES

The following cases from CengageCompose cover many of the concepts discussed in this chapter and are available at compose.cengage.com.

Klein-Brigham Series:

Case 35, "Mark X Company (A)," illustrates the use of ratio analysis in the evaluation of a firm's existing and potential financial positions; Case 36, "Garden State Container Corporation," is similar in content to Case 35; Case 51, "Safe Packaging Corporation," updates Case 36; Case 68, "Sweet Dreams Inc.," also updates Case 36; and Case 71, "Swan-Davis, Inc.," illustrates how financial analysis—based on both historical statements and forecasted statements—is used for internal management and lending decisions.