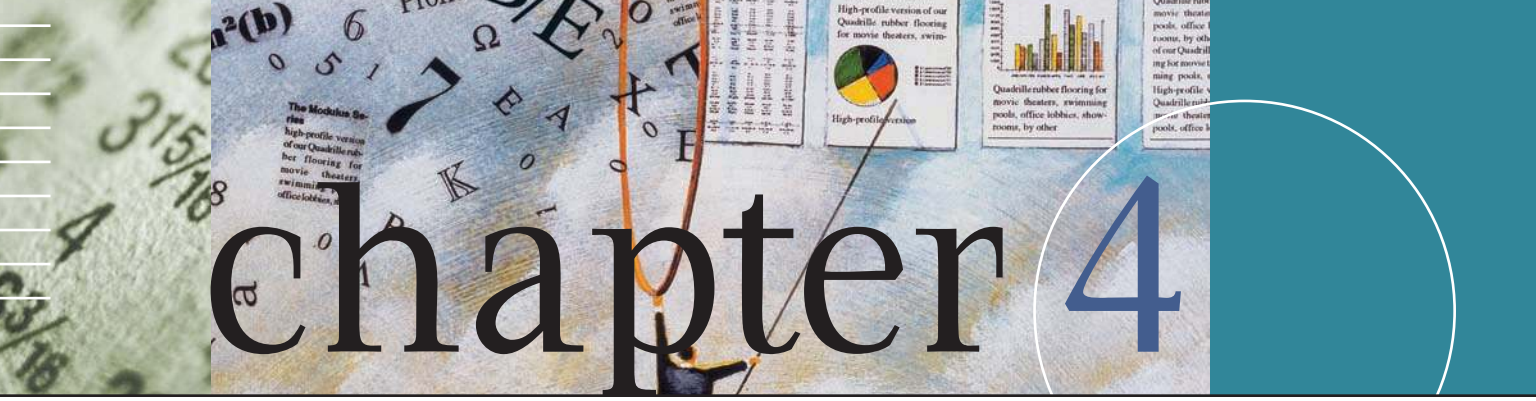

chapter 4

Analysis of Financial Statements

To guide or not to guide, that is the question. Or at least it's the question many companies are wrestling with regarding earnings forecasts. Should a company provide earnings estimates to investors? In 2006, Best Buy answered this question by announcing that it would no longer provide quarterly earnings forecasts. It's no coincidence that Best Buy's decision came shortly after its actual earnings came in just 2 cents below the forecast, yet its stock price fell by 12%. Coca-Cola, Motorola, and Citigroup are among the growing number of companies that no longer provide quarterly earnings forecasts.

Virtually no one disputes that investors need as much information as possible to accurately 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. The Private Securities Litigation Reform Act of 1995 helped prevent "frivolous" lawsuits, but still, before 2000, many companies provided earnings information to brokerage firms' analysts, and the analysts then forecast their own earnings expectations. In 2000 the SEC adopted Reg FD (Regulation Fair Disclosure), which prevented 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, and 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 are now in evidence. 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 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 **http://www.ccgir.com/ccgir/white_papers/pdf/Earnings%20Guidance%202006.pdf.**

Financial statement analysis involves (1) comparing the firm's performance with that of other firms in the same industry and (2) evaluating trends in the firm's financial position over time. This analysis helps managers identify deficiencies and then take actions to improve performance. The real value of financial statements lies in the fact that they can be used to help predict future earnings, dividends, and free cash flow. From an investor's standpoint, *predicting the future is what financial statement analysis is all about*, while from management's standpoint, *financial statement analysis is useful both to help anticipate future conditions and, more important, as a starting point for planning actions that will improve the firm's future performance*.[1]

The textbook's Web site contains an *Excel* file that will guide you through the chapter's calculations. The file for this chapter is ***FM12 Ch 04 Tool Kit.xls*** and we encourage you to open the file and follow along as you read the chapter.

4.1 Ratio Analysis

Financial ratios are designed to help evaluate financial statements. For example, Firm A might have debt of $5,248,760 and interest charges of $419,900, while Firm B might have debt of $52,647,980 and interest charges of $3,948,600. Which company is stronger? The burden of these debts, and the companies' ability to repay them, can best be evaluated by comparing (1) each firm's debt to its assets and (2) the interest it must pay to the income it has available for payment of interest. Such comparisons are made by *ratio analysis*.

We will calculate the Year 2007 financial ratios for MicroDrive Inc., using data from the balance sheets and income statements given in Table 4-1. We will also evaluate the ratios in relation to the industry averages. Note that dollar amounts are in millions.

4.2 Liquidity Ratios

See ***FM12 Ch 04 Tool Kit.xls*** for details.

A **liquid asset** is one that trades in an active market and hence can be quickly converted to cash at the going market price, and a firm's "liquidity ratios" deal with this question: Will the firm be able to pay off its debts as they come due over the next year or so? As shown in Table 4-1, MicroDrive has current liabilities of $310

Corporate Valuation and Analysis of Financial Statements

The value of a firm is determined by the size, timing, and risk of its expected future free cash flows (FCF). This chapter shows you how to use financial statements to evaluate a company's risk and its ability to generate free cash flows.

$$\text{Value} = \frac{FCF_1}{(1 + WACC)^1} + \frac{FCF_2}{(1 + WACC)^2} + \frac{FCF_3}{(1 + WACC)^3} + \cdots + \frac{FCF_\infty}{(1 + WACC)^\infty}$$

[1]Widespread accounting fraud has cast doubt on whether all firms' published financial statements can be trusted. New regulations by the SEC and the exchanges, and new laws enacted by Congress, have both improved oversight of the accounting industry and increased the criminal penalties on management for fraudulent reporting.

Table 4-1

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

Assets	2007	2006	Liabilities and Equity	2007	2006
Cash and equivalents	$ 10	$ 15	Accounts payable	$ 60	$ 30
Short-term investments	0	65	Notes payable	110	60
Accounts receivable	375	315	Accruals	140	130
Inventories	615	415	Total current liabilities	$ 310	$ 220
Total current assets	$1,000	$ 810	Long-term bonds[a]	754	580
Net plant and equipment	1,000	870	Total liabilities	$ 1,064	$ 800
			Preferred stock (400,000 shares)	40	40
			Common stock (50,000,000 shares)	130	130
			Retained earnings	766	710
			Total common equity	$ 896	$ 840
Total assets	$2,000	$1,680	Total liabilities and equity	$ 2,000	$ 1,680

	2007	2006
Net sales	$3,000.0	$2,850.0
Operating costs excluding depreciation and amortization[b]	2,616.2	2,497.0
Earnings before interest, taxes, depreciation, and amortization (EBITDA)	$ 383.8	$ 353.0
Depreciation	100.0	90.0
Amortization	0.0	0.0
Depreciation and amortization	$ 100.0	$ 90.0
Earnings before interest and taxes (EBIT, or operating income)	$ 283.8	$ 263.0
Less interest	88.0	60.0
Earnings before taxes (EBT)	$ 195.8	$ 203.0
Taxes (40%)	78.3	81.2
Net income before preferred dividends	$ 117.5	$ 121.8
Preferred dividends	4.0	4.0
Net income	$ 113.5	$ 117.8
Common dividends	$ 57.5	$ 53.0
Addition to retained earnings	$ 56.0	$ 64.8
Per-Share Data		
Common stock price	$ 23.00	$ 26.00
Earnings per share (EPS)	$ 2.27	$ 2.36
Book value per share (BVPS)	$ 17.92	$ 16.80
Cash flow per share (CFPS)	$ 4.27	$ 4.16

[a]The bonds have a sinking fund requirement of $20 million a year.
[b]The costs include lease payments of $28 million a year.

million that must be paid off within the coming year. Will it have trouble satisfying those obligations? A full liquidity analysis requires the use of cash budgets, but by relating the amount of cash and other current assets to current obligations, ratio analysis provides a quick, easy-to-use measure of liquidity. Two commonly used **liquidity ratios** are discussed in this section.

Ability to Meet Short-term Obligations: The Current Ratio

The **current ratio** is calculated by dividing current assets by current liabilities:

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

$$= \frac{\$1{,}000}{\$310} = 3.2 \text{ times.}$$

$$\text{Industry average} = 4.2 \text{ times.}$$

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 (principally wages).

MicroDrive has a 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 is getting into financial difficulty, it will begin paying its bills (accounts payable) more slowly, borrowing from its bank, and so on, so its current liabilities will be increasing. If current liabilities are rising faster than current assets, 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 the perspective of a shareholder. A high current ratio could mean that the company has a lot of money tied up in non-productive assets, such as excess cash or marketable securities. Or perhaps the high current ratio is due to large inventory holdings, which might well 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 very well-managed firms will be above the average while other good firms will be below it. However, if a firm's ratios are far removed 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 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.

Quick, or Acid Test, Ratio

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

$$\text{Quick, or acid test, ratio} = \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$$

$$= \frac{\$385}{\$310} = 1.2 \text{ times.}$$

$$\text{Industry average} = 2.1 \text{ times.}$$

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.

The industry average quick ratio is 2.1, so MicroDrive's 1.2 ratio is low in comparison with other firms in its industry. Still, if the accounts receivable can be collected, the company can pay off its current liabilities without having to liquidate its inventory.

SELF-TEST

Identify two ratios that are used 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)

4.3 Asset Management Ratios

The second group of ratios, the **asset management ratios,** measures how effectively the firm is managing its assets. These ratios are designed to answer this question: Does the total amount of each type of asset as reported on the balance sheet seem reasonable, too high, or too low in view of current and projected sales levels? If a company has excessive investments in assets, then its operating assets and capital will be unduly high, which will reduce its free cash flow and its stock price. On the other hand, if a company does not have enough assets, it will lose sales, which will 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.

Evaluating Inventories: The Inventory Turnover Ratio

The **inventory turnover ratio** is defined as sales divided by inventories:

$$\text{Inventory turnover ratio} = \frac{\text{Sales}}{\text{Inventories}}$$

$$= \frac{\$3{,}000}{\$615} = 4.9 \text{ times.}$$

$$\text{Industry average} = 9.0 \text{ times.}$$

As a rough approximation, each item of MicroDrive's inventory is sold out and restocked, or "turned over," 4.9 times per year. "Turnover" is a term that originated many years ago with the old Yankee peddler, who would load up his wagon

with goods and then go off to peddle his wares. The merchandise was called "working capital" because it was what he actually sold, or "turned over," to produce his profits, whereas his "turnover" was the number of trips he took each year. Annual sales divided by inventory equaled turnover, or trips per year. 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 went faster and made 20 trips per year, his gross profit would double, other things held constant. So, his turnover directly affected his profits.

MicroDrive's turnover of 4.9 times is much lower than the industry average of 9 times. This suggests that MicroDrive is holding too much inventory. Excess inventory is, of course, unproductive, and it represents an investment with a low or zero rate of return. MicroDrive's low inventory turnover ratio also makes us question the current ratio. With such a low turnover, we must wonder whether the firm is actually holding obsolete goods not worth their stated value.[2]

Note that sales occur over the entire year, whereas the inventory figure is for one point in time. For this reason, it is better to use an average inventory measure.[3] If the firm's business is highly seasonal, or if there has been a strong upward or downward sales trend during the year, it is especially useful to make some such adjustment. To maintain comparability with industry averages, however, we did not use the average inventory figure.

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.[4] 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 has 46 days sales outstanding, well above the 36-day industry average:

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

$$= \frac{\$375}{\$3{,}000>365} = \frac{\$375}{\$8.2192} = 45.6 \text{ days} \approx 46 \text{ days}.$$

$$\text{Industry average} = 36 \text{ days}.$$

The DSO can also be evaluated by comparison with the terms on which the firm sells its goods. For example, MicroDrive's sales terms call for payment within 30 days. The fact that 45 days of sales are outstanding indicates that customers, on the average, are not paying their bills on time. This deprives MicroDrive of funds that it could use to invest in productive assets. Moreover, in some instances the

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[2]A problem arises when calculating and analyzing the inventory turnover ratio. Sales are stated at market prices, so if inventories are carried at cost, as they generally are, the calculated turnover overstates the true turnover ratio. Therefore, it would be more appropriate to use cost of goods sold in place of sales in the formula's numerator. However, established compilers of financial ratio statistics such as Dun & Bradstreet use the ratio of sales to inventories carried at cost. To develop a figure that can be compared with those published by Dun & Bradstreet and similar organizations, it is necessary to measure inventory turnover with sales in the numerator, as we do here.

[3]Preferably, the average inventory value should be calculated by summing the monthly figures during the year and dividing by 12. If monthly data are not available, one can add the beginning and ending annual figures and divide by 2. However, most industry ratios are calculated as above, using end-of-year values.

[4]It would be better to use *average* receivables, but we used year-end values for comparability with the industry average.

fact that a customer is paying late may signal that the customer is in financial trouble, in which case MicroDrive may have a hard time ever collecting the receivable. Therefore, if the trend in DSO over the past few years has been rising, but the credit policy has not been changed, this would be strong evidence that steps should be taken to expedite the collection of accounts receivable.

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:

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

$$= \frac{\$3{,}000}{\$1{,}000} = 3.0 \text{ times.}$$

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

MicroDrive's ratio of 3.0 times is equal to the industry average, indicating that the firm is using its fixed assets about as intensively as are other firms in its industry. Therefore, MicroDrive seems to have about the right amount of fixed assets in relation to other firms.

A potential problem can exist when interpreting the fixed assets turnover ratio. Recall from accounting that fixed assets reflect the historical costs of the assets. Inflation has caused the value of many assets that were purchased in the past to be seriously understated. Therefore, if we were comparing an old firm that had acquired many of its fixed assets years ago at low prices with a new company that had acquired its fixed assets only recently, we would probably find that the old firm had the higher fixed assets turnover ratio. However, this would be more reflective of the difficulty accountants have in dealing with inflation than of any inefficiency on the part of the new firm. Financial analysts must recognize that this problem exists and deal with it judgmentally.

Evaluating Total Assets: The Total Assets Turnover Ratio

The final asset management ratio, the **total assets turnover ratio,** measures the turnover of all the firm's assets; it is calculated by dividing sales by total assets:

$$\text{Total assets turnover ratio} = \frac{\text{Sales}}{\text{Total assets}}$$

$$= \frac{\$3{,}000}{\$2{,}000} = 1.5 \text{ times.}$$

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

MicroDrive's ratio is somewhat below the industry average, indicating that the company is not generating a sufficient volume of business given its total asset investment. Sales should be increased, some assets should be sold, or a combination of these steps should be taken.

SELF-TEST

Identify four ratios that are used to measure how effectively a firm is managing its assets, and write out their equations.
How might rapid growth distort the inventory turnover ratio?
What potential problem might arise when comparing different firms' fixed assets turnover ratios?
A firm has annual sales of $200 million, $40 million of inventory, and $60 million of accounts receivable. What is its inventory turnover ratio? (5) What is its DSO based on a 365-day year? (109.5 days)

4.4 Debt Management Ratios

The extent to which a firm uses debt financing, or **financial leverage,** has three important implications: (1) By raising funds through debt, stockholders can maintain control of a firm without increasing their investment. (2) If the firm earns more on investments financed with borrowed funds than it pays in interest, then its shareholders' returns are magnified, or "leveraged," but their risks are also magnified. (3) Creditors look to the equity, or owner-supplied funds, to provide a margin of safety, so the higher the proportion of funding supplied by stockholders, the less risk creditors face. Chapter 16 explains the first two points in detail, while the following ratios examine leverage from a creditor's point of view.

How the Firm Is Financed: Total Liabilities to Total Assets

The ratio of total liabilities to total assets is called the **debt ratio,** or sometimes the **total debt ratio.** It measures the percentage of funds provided by current liabilities and long-term debt:

$$\text{Debt ratio} = \frac{\text{Total liabilities}}{\text{Total assets}}$$

$$= \frac{\$310 + \$754}{\$2{,}000} = \frac{\$1{,}064}{\$2{,}000} = 53.2\%.$$

$$\text{Industry average} = 40.0\%.$$

Creditors prefer low debt ratios because the lower the ratio, the greater the cushion against creditors' losses in the event of liquidation. Stockholders, on the other hand, may want more leverage because it magnifies expected earnings.

MicroDrive's debt ratio is 53.2%, which means that its creditors have supplied more than half the total financing. As we will discuss in Chapter 16, a variety of factors determine a company's optimal debt ratio. Nevertheless, the fact that MicroDrive's debt ratio exceeds the industry average raises a red flag and may make it costly for MicroDrive to borrow additional funds without first raising more equity capital. Creditors may be reluctant to lend the firm more money, and management would probably be subjecting the firm to the risk of bankruptcy if it increased the debt ratio by borrowing additional funds.

If you use a debt ratio that you did not calculate yourself, be sure to find out how the ratio was defined. Some sources provide the ratio of long-term debt to total assets, and some provide the ratio of debt to equity, so be sure to check the source's definition.[5]

[5]The debt-to-assets (D/A) and debt-to-equity (D/E) ratios are simply transformations of each other when debt is defined as total liabilities:

$$D/E = \frac{D/A}{1 - D/A} \text{ and } D/A = \frac{D/E}{1 + D/E}.$$

Ability to Pay Interest: Times-Interest-Earned

The **times-interest-earned (TIE) ratio** is determined by dividing earnings before interest and taxes (EBIT in Table 4-1) by the interest charges:

$$\text{Times-interest-earned (TIE) ratio} = \frac{\text{EBIT}}{\text{Interest charges}}$$

$$= \frac{\$283.8}{\$88} = 3.2 \text{ times.}$$

$$\text{Industry average} = 6 \text{ times.}$$

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 3.2 times. Since the industry average is 6 times, MicroDrive is covering its interest charges by a relatively low margin of safety. Thus, the TIE ratio reinforces the conclusion from our analysis of the debt ratio that MicroDrive would face difficulties if it attempted to borrow additional funds.

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. If they fail to repay debt or meet lease payments, they can be forced into bankruptcy. (2) EBIT does not represent all the cash flow available to service debt, especially if a firm has high depreciation and/or amortization charges. To account for these deficiencies, bankers and others have developed the **EBITDA coverage ratio,** defined as follows:[6]

$$\text{EBITDA coverage ratio} = \frac{\text{EBITDA} + \text{Lease payments}}{\text{Interest} + \text{Principal payments} + \text{Lease payments}}$$

$$= \frac{\$383.8 + \$28}{\$88 + \$20 + \$28} = \frac{\$411.8}{\$136} = 3.0 \text{ times.}$$

$$\text{Industry average} = 4.3 \text{ times.}$$

MicroDrive had $383.8 million of earnings before interest, taxes, depreciation, and amortization (EBITDA). Also, lease payments of $28 million were deducted while calculating EBITDA. 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 $411.8 million. Fixed financial charges consisted of $88 million of interest, $20 million of sinking fund payments, and $28 million for lease payments, for

[6]Different analysts define the EBITDA coverage ratio in different ways. For example, some would omit the lease payment information, and others would "gross up" principal payments by dividing them by (1 − T) because these payments are not tax deductions, and hence 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 just 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, its tax rate will probably be zero; so the gross up is not necessary whenever the ratio is really important.

International Accounting Differences Create Headaches for Investors

You must be a good financial detective to analyze financial statements, especially if the company operates overseas. Despite attempts to standardize accounting practices, there are many differences in the way financial information is reported in different countries, and these differences create headaches for investors trying to make cross-border company comparisons.

A study by two Rider College accounting professors demonstrated that huge differences can exist. The professors developed a computer model to evaluate the net income of a hypothetical but typical company operating in different countries. Applying the standard accounting practices of each country, the hypothetical company would have reported net income of $34,600 in the United States, $260,600 in the United Kingdom, and $240,600 in Australia.

Such variances occur for a number of reasons. In most countries, including the United States, an asset's balance sheet value is reported at original cost less any accumulated depreciation. However, in some countries, asset values are adjusted to reflect current market prices. Also, inventory valuation methods vary from country to country, as does the treatment of goodwill. Other differences arise from the treatment of leases, research and development costs, and pension plans.

These differences arise from a variety of legal, historical, cultural, and economic factors. For example, in Germany and Japan large banks are the key source of both debt and equity capital, whereas in the United States public capital markets are most important. As a result, U.S. corporations disclose a great deal of information to the public, while German and Japanese corporations use very conservative accounting practices that appeal to the banks.

There are two basic trends regarding international accounting standards. The first is a movement toward a single set of accounting standards. For example, the European Union now requires all EU-listed companies to comply with standards defined by the International Accounting Standards Board (IASB). There are also ongoing discussions between the IASB and the U.S. Financial Accounting Standards Board (FASB) to develop a single set of financial standards for all companies worldwide. Second, IASB standards rely on general principles, while 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. This is fueling a debate over the relative effectiveness of principles-based versus rules-based standards.

Sources: See the Web sites of the IASB and the FASB: **http://www.iasb.org.uk** and **http://www.fasb.org**.

a total of $136 million.[7] Therefore, MicroDrive covered its fixed financial charges by 3.0 times. However, if EBITDA declines, the coverage will fall, and EBITDA certainly can decline. Moreover, 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.

SELF-TEST

How does the use of financial leverage affect current stockholders' control position?
In what way do taxes influence a firm's willingness to finance with debt?
In what way does the use of debt involve a risk-versus-return trade-off?
Explain the following statement: "Analysts look at both balance sheet and income statement ratios when appraising a firm's financial condition."
Name three 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)

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

4.5 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.

Profit Margin on Sales

The **profit margin on sales,** calculated by dividing net income by sales, gives the profit per dollar of sales:

$$\text{Profit margin on sales} = \frac{\text{Net income available to common stockholders}}{\text{Sales}}$$

$$= \frac{\$113.5}{\$3{,}000} = 3.8\%.$$

$$\text{Industry average} = 5.0\%.$$

MicroDrive's profit margin is below the industry average of 5%. This sub-par result occurs because costs are too high. High costs, in turn, generally occur because of inefficient operations. However, MicroDrive's low profit margin is also a result of its heavy use of debt. Recall that net income is income *after interest*. Therefore, if you consider two firms that have identical operations in the sense that their sales, operating costs, and EBIT are the same, then the firm that uses more debt will have higher interest charges. Those interest charges will pull net income down, and since sales are constant, the result will be a relatively low profit margin. In such a case, the low profit margin would not indicate an operating problem—rather, it would indicate a difference in financing strategies. Thus, the firm with the low profit margin might end up with a higher rate of return on its stockholders' investment due to its use of financial leverage. We will see exactly how profit margins and the use of debt interact to affect the return on stockholders' equity later in the chapter, when we examine the Du Pont model.

Basic Earning Power (BEP)

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

$$\text{Basic earning power (BEP) ratio} = \frac{\text{EBIT}}{\text{Total assets}}$$

$$= \frac{\$283.8}{\$2{,}000} = 14.2\ \%.$$

$$\text{Industry average} = 18.0\%.$$

This ratio shows the raw 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.[8]

Return on Total Assets

The ratio of net income to total assets measures the **return on total assets (ROA)** after interest and taxes:

$$\text{Return on total assets} = \text{ROA} = \frac{\text{Net income available to common stockholders}}{\text{Total assets}}$$

$$= \frac{\$113.5}{\$2{,}000} = 5.7\%.$$

$$\text{Industry average} = 9.0\%.$$

MicroDrive's 5.7% return is well below the 9% average for the industry. This low return results from (1) the company's low basic earning power plus (2) high interest costs resulting from its above-average use of debt, both of which cause its net income to be relatively low.

Return on Common Equity

Ultimately, the most important, or "bottom line," accounting ratio is the ratio of net income to common equity, which measures the **return on common equity (ROE):**

$$\text{Return on common equity} = \text{ROE} = \frac{\text{Net income available to common stockholders}}{\text{Common equity}}$$

$$= \frac{\$113.5}{\$896} = 12.7\%.$$

$$\text{Industry average} = 15.0\%.$$

Stockholders invest to get a return on their money, and this ratio tells how well they are doing in an accounting sense. MicroDrive's 12.7% return is below the 15% industry average, but not as far below as the return on total assets. This somewhat better result is due to the company's greater use of debt, a point that is analyzed in detail later in the chapter.

SELF-TEST

Identify and write out the equations for four ratios that show the combined effects of liquidity, asset management, and debt management on profitability.
Why is the basic earning power ratio useful?
Why does the use of debt lower the ROA?
What does ROE measure? Since interest expense lowers profits, does using debt lower ROE?
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)

[8]Notice that EBIT is earned throughout the year, whereas the total assets figure is an end-of-the-year number. Therefore, it would be conceptually better to calculate this ratio as EBIT/Average assets = EBIT/[(Beginning assets + Ending assets)/2]. We have not made this adjustment because the published ratios used for comparative purposes do not include it. However, when we construct our own comparative ratios, we do make the adjustment. Incidentally, the same adjustment would also be appropriate for the next two ratios, ROA and ROE.

4.6 Market Value Ratios

A final group of ratios, the **market value ratios,** relates the firm's stock price to its earnings, cash flow, and book value per share. These ratios give management an indication of what investors think of the company's past performance and future prospects. If the liquidity, asset management, debt management, and profitability ratios all look good, then the market value ratios will be high, and the stock price will probably be as high as can be expected.

Price/Earnings Ratio

The **price/earnings (P/E) ratio** shows how much investors are willing to pay per dollar of reported profits. MicroDrive's stock sells for $23, so with an EPS of $2.27 its P/E ratio is 10.1:

$$\text{Price/earnings (P/E) ratio} = \frac{\text{Price per share}}{\text{Earnings per share}}$$

$$= \frac{\$23.00}{\$2.27} = 10.1 \text{ times.}$$

$$\text{Industry average} = 12.5 \text{ times.}$$

P/E 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 the spring of 2006, the average P/E ratio for firms in the S&P 500 was 21.52, indicating that investors were willing to pay $21.52 for every dollar of earnings.

Price/Cash Flow Ratio

In some industries, stock price is tied more closely to cash flow than to net income. Consequently, investors often look at the **price/cash flow ratio,** where cash flow is defined as net income plus depreciation and amortization:

$$\text{Price/cash flow ratio} = \frac{\text{Price per share}}{\text{Cash flow per share}}$$

$$= \frac{\$23.00}{\$4.27} = 5.4 \text{ times.}$$

$$\text{Industry average} = 6.8 \text{ times.}$$

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.

Note that some analysts look at multiples beyond just the price/earnings and the price/cash flow ratios. For example, depending on the industry, some may look at measures such as price/sales, price/customers, or price/EBITDA per share. 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.

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:

$$\text{Book value per share} = \frac{\text{Common equity}}{\text{Shares outstanding}}$$

$$= \frac{\$896}{50} = \$17.92.$$

Now we divide the market price by the book value to get a **market/book (M/B) ratio** of 1.3 times:

$$\text{Market/book ratio} = \text{M/B} = \frac{\text{Market price per share}}{\text{Book value per share}}$$

$$= \frac{\$23.00}{\$17.92} = 1.3 \text{ times.}$$

$$\text{Industry average} = 1.7 \text{ times.}$$

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

The average company in the S&P 500 had a market/book ratio of about 4.03 in the spring of 2006. Since M/B ratios typically exceed 1.0, this means that investors are willing to pay more for stocks than their accounting book values. 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 May 2006 Alaska Air had a market/book ratio of only 1.69, reflecting the crisis in the airlines industry caused by the terrorist attacks and oil price increases, whereas Dell Computer's market/book ratio was 14.79, indicating that investors expected Dell's past successes to continue.

Table 4-2 summarizes MicroDrive's financial ratios. 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.

How do market value ratios reflect what investors think about a stock's risk and expected rate of return?

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 4-2

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

Ratio	Formula	Calculation	Ratio	Industry Average	Comment
Liquidity					
Current	$\frac{\text{Current assets}}{\text{Current liabilities}}$	$\frac{\$1,000}{\$310}$	=3.2×	4.2×	Poor
Quick	$\frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$	$\frac{\$385}{\$310}$	=1.2×	2.1×	Poor
Asset management					
Inventory turnover	$\frac{\text{Sales}}{\text{Inventories}}$	$\frac{\$3,000}{\$615}$	=4.9×	9.0×	Poor
Days sales outstanding (DSO)	$\frac{\text{Receivables}}{\text{Annual sales}/365}$	$\frac{\$375}{\$8.219}$	=46 days	36 days	Poor
Fixed assets turnover	$\frac{\text{Sales}}{\text{Net fixed assets}}$	$\frac{\$3,000}{\$1,000}$	=3.0×	3.0×	OK
Total assets turnover	$\frac{\text{Sales}}{\text{Total assets}}$	$\frac{\$3,000}{\$2,000}$	=1.5×	1.8×	Somewhat low
Debt Management					
Total debt to total assets	$\frac{\text{Total liabilities}}{\text{Total assets}}$	$\frac{\$1,064}{\$2,000}$	=53.2%	40.0%	High (risky)
Times-interest-earned (TIE)	$\frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Interest charges}}$	$\frac{\$283.8}{\$88}$	=3.2×	6.0×	Low (risky)
EBITDA coverage	$\frac{\text{EBITDA} + \text{Lease payments}}{\text{Interest} + \text{Principal payments} + \text{Lease payments}}$	$\frac{\$411.8}{\$136}$	=3.0×	4.3×	Low (risky)
Profitability					
Profit margin on sales	$\frac{\text{Net income available to common stockholders}}{\text{Sales}}$	$\frac{\$113.5}{\$3,000}$	=3.8%	5.0%	Poor
Basic earning power (BEP)	$\frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Total assets}}$	$\frac{\$283.8}{\$2,000}$	=14.2%	17.2%	Poor
Return on total assets (ROA)	$\frac{\text{Net income available to common stockholders}}{\text{Total assets}}$	$\frac{\$113.5}{\$2,000}$	=5.7%	9.0%	Poor
Return on common equity (ROE)	$\frac{\text{Net income available to common stockholders}}{\text{Common equity}}$	$\frac{\$113.5}{\$896}$	=12.7%	15.0%	Poor
Market Value					
Price/earnings (P/E)	$\frac{\text{Price per share}}{\text{Earnings per share}}$	$\frac{\$23.00}{\$2.27}$	=10.1×	12.5×	Low
Price/cash flow	$\frac{\text{Price per share}}{\text{Cash flow per share}}$	$\frac{\$23.00}{\$4.27}$	=5.4×	6.8×	Low
Market/book (M/B)	$\frac{\text{Market price per share}}{\text{Book value per share}}$	$\frac{\$23.00}{\$17.92}$	=1.3×	1.7×	Low

4.7 Trend Analysis, Common Size Analysis, and Percent Change Analysis

It is important to analyze trends in ratios as well as their absolute levels, for trends give clues as to whether a firm's financial condition is likely to improve or to deteriorate. To do a **trend analysis,** one simply plots a ratio over time, as shown in Figure 4-1. This graph shows that MicroDrive's rate of return on common equity has been declining since 2004, even though the industry average has been relatively stable. All the other ratios could be analyzed similarly.

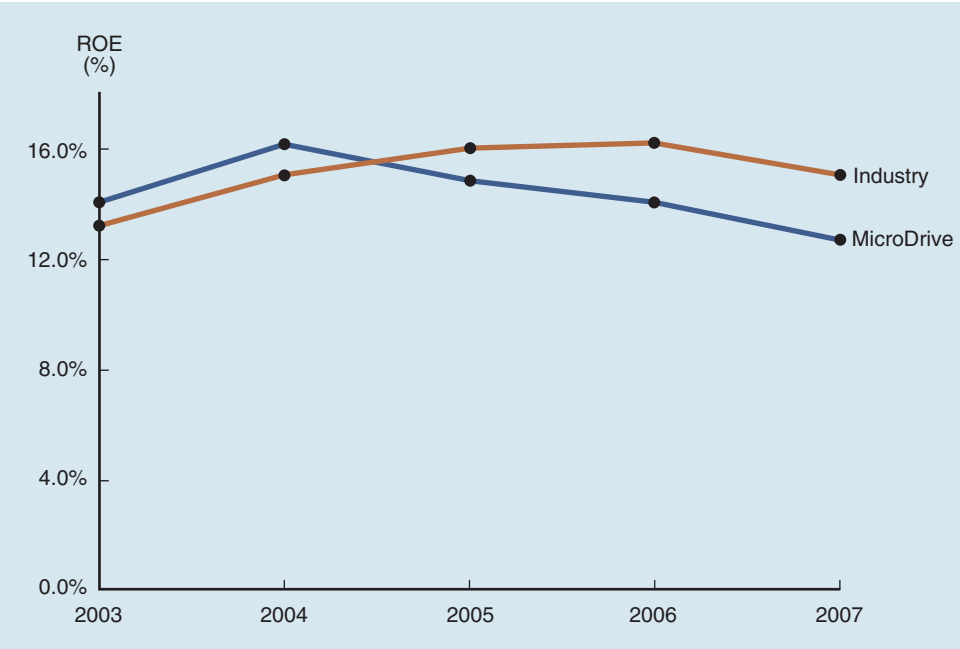
Common size analysis and **percent change analysis** are two other techniques that can be used to identify trends in financial statements. Common size analysis is also useful in comparative analysis, and some sources of industry data, such as Risk Management Associates, are presented exclusively in common size form.[9]

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. 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 very easy to generate if the financial statements are in a spreadsheet. In fact, if you obtain your financial statements from a source with 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

Figure 4-1

Rate of Return on Common Equity, 2003–2007



[9]Risk Management Associates was formerly known as Robert Morris Associates.

Table 4-3

MicroDrive Inc.: Common Size Income Statement

	A	B	C	D	E	F	G
165				2007			
166				Industry Composite	2007	2006	
167	Net sales			100.0%	100.0%	100.0%	
168	Operating costs			87.6%	87.2%	87.6%	
169	Earnings before interest, taxes, depr. & amort. (EBITDA)			2.8%	12.8%	12.4%	
170	Depreciation and amortization			90.4%	3.3%	3.2%	
171	Earnings before interest and taxes (EBIT)			9.6%	9.5%	9.2%	
172	Less interest			1.3%	2.9%	2.1%	
173	Earnings before taxes (EBT)			8.3%	6.5%	7.1%	
174	Taxes (40%)			3.3%	2.6%	2.8%	
175	Net Income before preferred dividends			5.0%	3.9%	4.3%	
176	Preferred dividends			0.0%	0.1%	0.1%	
177	Net Income available to common stockholders (profit margin)			5.0%	3.8%	4.1%	
178							

Note: Percentages may not total exactly due to rounding when printed.

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See ***FM12 Ch 04 Tool Kit.xls*** for all details.

formulas will be valid for the new company. We generated Table 4-3 in the *Excel* file ***FM12 Ch 04 Tool Kit.xls***. This table contains MicroDrive's 2006 and 2007 common size income statements, along with the composite statement for the industry. (Note: Rounding may cause addition/subtraction differences in Tables 4-3 and 4-4.) MicroDrive's operating costs are slightly above average, as are its interest expenses, but its taxes are relatively low because of its low EBIT. The net effect of all these forces is a relatively low profit margin.

Table 4-4 shows MicroDrive's common size balance sheets, along with the industry average. Its accounts receivable are significantly higher than the industry average, its inventories are significantly higher, and it uses far more fixed charge capital (debt and preferred) than the average firm.

A final technique used to help analyze a firm's financial statements is percentage change analysis. In this type of analysis, growth rates are calculated for all income statement items and balance sheet accounts. To illustrate, Table 4-5 contains MicroDrive's income statement percentage change analysis for 2007. Sales increased at a 5.3% rate during 2007, while total operating costs increased at a slower 4.8% rate, leading to 7.9% growth in EBIT. The fact that sales increased faster than operating costs is positive, but this "good news" was offset by a 46.7% increase in interest expense. The significant growth in interest expense caused growth in both earnings before taxes and net income to be negative. Thus, the percentage change analysis points out that the decrease in reported income in 2007 resulted almost exclusively from an increase in interest expense. This conclusion could be reached by analyzing dollar amounts, but percentage change analysis simplifies the task. The same type of analysis applied to the balance sheets would show that assets grew at a 19.0% rate, largely because inventories grew at a whopping 48.2% rate (see ***FM12 Ch 04 Tool Kit.xls***). With only a 5.3% growth in sales, the extreme growth in inventories should be of great concern to MicroDrive's managers.

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See ***FM12 Ch 04 Tool Kit.xls*** for all details.

The conclusions reached in common size and percentage change analyses generally parallel those derived from ratio analysis. However, occasionally a serious deficiency is highlighted by only one of the three analytical techniques. Also, it is often useful to have all three and to drive home to management, in slightly

Table 4-4

MicroDrive Inc.: Common Size Balance Sheet

	A	B	C	D	E	F
187			2007			
188			Industry Composite	2007	2006	
189	*Assets*					
190	Cash and equivalents		1.0%	0.5%	0.9%	
191	Short-term investments		2.2%	0.0%	3.9%	
192	Accounts receivable		17.8%	18.8%	18.8%	
193	Inventories		19.8%	30.8%	24.7%	
194	Total current assets		40.8%	50.0%	48.2%	
195	Net plant and equipment		59.2%	50.0%	51.8%	
196	Total assets		100.0%	100.0%	100.0%	
197						
198	*Liabilities and equity*					
199	Accounts payable		1.8%	3.0%	1.8%	
200	Notes payable		4.4%	5.5%	3.6%	
201	Accruals		3.6%	7.0%	7.7%	
202	Total current liabilities		9.8%	15.5%	13.1%	
203	Long-term bonds		30.2%	37.7%	34.5%	
204	Total liabilities		40.0%	53.2%	47.6%	
205	Preferred stock		0.0%	2.0%	2.4%	
206	Total common equity		60.0%	44.8%	50.0%	
207	Total liabilities and equity		100.0%	100.0%	100.0%	
208						

Note: Percentages may not total exactly due to rounding when printed.

Table 4-5

MicroDrive Inc.: Income Statement Percentage Change Analysis

	A	B	C	D	E
218	Base year =	2006		Percent Change in 2007	
219					
220	Net sales			5.3%	
221	Operating costs			4.8%	
222	Earnings before interest, taxes, depr. & amort. (EBITDA)			8.7%	
223	Depreciation and amortization			11.1%	
224	Earnings before interest and taxes (EBIT)			7.9%	
225	Less interest			46.7%	
226	Earnings before taxes (EBT)			(3.5%)	
227	Taxes (40%)			(3.5%)	
228	Net Income before preferred dividends			(3.5%)	
229	Preferred dividends			0.0%	
230	Net Income available to common stockholders			(3.7%)	
231					

Note: Percentages may not total exactly due to rounding when printed.

different ways, the need to take corrective actions. Thus, a thorough financial statement analysis will include ratio, percentage change, and common size analyses, as well as a Du Pont analysis, as described next.

SELF-TEST

How does one do a trend analysis?
What important information does a trend analysis provide?
What is common size analysis?
What is percent change analysis?

4.8 Tying the Ratios Together: The Du Pont Equation

In ratio analysis, it is sometimes easy to miss the forest for all the trees. Managers often need a framework that ties together a firm's profitability, its asset usage efficiency, and its use of debt. This section provides just such a model. The profit margin times the total assets turnover is called the **Du Pont equation,** and it gives the rate of return on assets (ROA):

$$\begin{aligned} \text{ROA} &= \text{Profit margin} \times \text{Total assets turnover} \\ &= \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}}. \end{aligned} \tag{4-1}$$

For MicroDrive, the ROA is

$$\text{ROA} = 3.8\% \times 1.5 = 5.7\%.$$

MicroDrive made 3.8%, or 3.8 cents, on each dollar of sales, and its assets were turned over 1.5 times during the year. Therefore, the company earned a return of 5.7% on its assets.

To find the return on equity (ROE), multiply the rate of return on assets (ROA) by the *equity multiplier*, which is the ratio of assets to common equity:

$$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Common equity}}. \tag{4-2}$$

Firms that have a lot of leverage (i.e., a lot of liabilities or preferred stock) will necessarily have a high equity multiplier—the more leverage, the less the equity, hence the higher the equity multiplier. For example, if a firm has $1,000 of assets and is financed with $800 (or 80%) liabilities and preferred stock, then its equity will be $200, and its equity multiplier will be $1,000/$200 = 5. Had it used only $200 of liabilities and preferred stock, then its equity would have been $800, and its equity multiplier would have been only $1,000/$800 = 1.25.[10]

Therefore, the return on equity (ROE) depends on the ROA and the use of leverage:

[10]Expressed algebraically,

$$\text{Debt ratio} = \frac{D}{A} = \frac{A - E}{A} = \frac{A}{A} - \frac{E}{A} = 1 - \frac{1}{\text{Equity multiplier}}.$$

Here we use D to denote all debt, other liabilities, and preferred stock; in other words, D is all financing other than common equity, E is common equity, A is total assets, and A/E is the equity multiplier.

$$\begin{aligned} \text{ROE} &= \text{ROA} \times \text{Equity multiplier} \\ &= \frac{\text{Net income}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common equity}}. \end{aligned} \tag{4-3}$$

MicroDrive's ROE is

$$\begin{aligned} \text{ROE} &= 5.7\% \times \frac{\$2{,}000}{\$896} \\ &= 5.7\% \times 2.23 \\ &= 12.7\% \end{aligned}$$

Now we can combine Equations 4-1 and 4-3 to form the *extended Du Pont equation*, which shows how the profit margin, the assets turnover ratio, and the equity multiplier combine to determine the ROE:

$$\begin{aligned} \text{ROE} &= (\text{Profit margin})(\text{Total assets turnover})(\text{Equity multiplier}) \\ &= \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common equity}}. \end{aligned} \tag{4-4}$$

For MicroDrive, we have

$$\begin{aligned} \text{ROE} &= (3.8\%)(1.5)(2.23) \\ &= 12.7\%. \end{aligned}$$

The 12.7% rate of return could, of course, be calculated directly: both Sales and Total assets cancel, leaving Net income/Common equity = \$113.5/\$896 = 12.7%. However, the Du Pont equation shows how the profit margin, the total assets turnover, and the use of debt interact to determine the return on equity.

The insights provided by the Du Pont model are valuable, and it 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 drive up its ratio of sales/total assets to 1.8, then its ROE will improve to (3.8%)(1.8)(2.23) = 15.25%. For a more complete "what if" analysis, most companies use a forecasting model such as the one described in Chapter 14.

SELF-TEST

Explain how the extended, or modified, Du Pont 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%)

4.9 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.

Table 4-6

Comparative Ratios for Dell Computer Corporation, the Computer Hardware Industry, the Technology Sector, and the S&P 500

Ratio	Dell	Computer Hardware Industry[a]	Technology Sector[b]	S&P 500
P/E ratio	17.96	27.13	32.75	21.52
Market to book	14.79	9.13	5.60	4.03
Price to tangible book	14.79	9.71	7.47	7.02
Price to cash flow	16.18	28.39	26.57	15.76
Net profit margin	6.39	6.26	14.82	14.02
Quick ratio	0.91	1.48	2.73	1.29
Current ratio	1.11	1.85	3.22	1.80
Long-term debt to equity	0.12	0.08	0.21	0.55
Total debt to equity	0.12	0.09	0.24	0.69
Interest coverage (TIE)[c]	—	5.87	12.99	14.21
Return on assets	15.60	11.82	11.05	7.96
Return on equity	67.22	35.60	18.60	19.32
Inventory turnover	86.06	61.88	12.77	12.54
Asset turnover	2.44	1.86	0.84	0.96

[a]The computer hardware industry is composed of 50 firms, including IBM, Dell, Apple, Sun Microsystems, Gateway, and Silicon Graphics.
[b]The technology sector contains 11 industries, including communications equipment, computer hardware, computer networks, semiconductors, and software and programming.
[c]Dell had more interest income than interest expense.
Source: Adapted from **http://www.investor.reuters.com**, May 2, 2006.

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 L.L. Bean, even though they are in different industries, because L.L. Bean's shipping department is one of the best. MicroDrive wants its own shippers to strive to match L.L. Bean'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 4-6 reports selected ratios from Reuters.

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 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.

Ratio Analysis on the Web

A great source for comparative ratios is **http://www.investor.reuters.com**. You have to register to use the site, but registration is free. Once you register and log in, this web page contains a field to enter a company's ticker symbol. Once you do this, click the "Symbol" ratio button, and then click the "Go" button. This brings up a table with the stock quote, some company information, and some additional links. Select "Ratios," 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.

SELF-TEST

Differentiate between trend analysis and comparative ratio analysis.
Why is it useful to do a comparative ratio analysis?
What is benchmarking?

4.10 Uses and Limitations of Ratio Analysis

Ratio analysis is used by three main groups: (1) *managers*, who employ ratios to help analyze, control, and thus improve their firms' operations; (2) *credit analysts*, including bank loan officers and bond rating analysts, who analyze ratios to help ascertain a company's ability to pay its debts; and (3) *stock analysts*, who are interested in a company's efficiency, risk, and growth prospects. In later chapters we will look more closely at the basic factors that underlie each ratio, which will give you a better idea about how to interpret and use ratios. Note, though, that while ratio analysis can provide useful information concerning a company's operations and financial condition, it does have limitations that necessitate care and judgment. Some potential problems are listed below:

To find quick information about a company, go to **http://www.investor.reuters.com**. Here you can find company profiles, stock price and share information, and several key ratios.

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, ratio analysis is more useful for small, narrowly focused firms than for large, multidivisional ones.
2. Most firms want to be better than average, so merely attaining average performance is not necessarily good. As a target for high-level performance, it is best to focus on the industry leaders' ratios. Benchmarking helps in this regard.
3. Inflation may have badly distorted firms' balance sheets—recorded values are often substantially different from "true" values. Further, because inflation affects both depreciation charges and inventory costs, profits are also affected. Thus, a ratio analysis for one firm over time, or a comparative analysis of firms of different ages, must be interpreted with judgment.
4. Seasonal factors can also 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 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.
5. Firms can employ **"window dressing" techniques** to make their financial statements look stronger. To illustrate, a Chicago builder borrowed on a two-year basis in late December. Because the loan was for more than 1 year, it was not included in current liabilities. The builder held the proceeds of the loan as cash. This improved his current and quick ratios, and made his year-end balance sheet look stronger. However, the improvement was strictly window dressing; a week later the builder paid off the loan and the balance sheet was back at the old level.

AAII's educational Web site at **http://www.aaii.com** provides information on investing basics, financial planning, portfolio management, and the like, so individuals can manage their own assets more effectively.

6. Different accounting practices can distort comparisons. As noted earlier, inventory valuation and depreciation methods can affect financial statements and thus distort comparisons among firms. Also, 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. At the same time, the liability associated with the lease obligation may not be shown as debt. Therefore, leasing can artificially improve both the turnover and the debt ratios.
7. It is difficult to generalize about whether a particular ratio is "good" or "bad." For example, a high current ratio may indicate a strong liquidity position, which is good, or excessive cash, which is bad (because excess cash in the bank is a nonearning asset). Similarly, a high fixed assets turnover ratio may denote either that a firm uses its assets efficiently or that it is undercapitalized and cannot afford to buy enough assets.
8. A firm may have some ratios that look "good" and others that look "bad," making it difficult to tell whether the company overall is strong or weak. However, statistical procedures can be used to analyze the *net effects* of a set of ratios. Many banks and other lending organizations use discriminant analysis, a statistical technique, to analyze firms' financial ratios, and then classify the firms according to their probability of getting into financial trouble.
9. Effective use of financial ratios requires that the financial statements on which they are based be accurate. Revelations in 2001 and 2002 of accounting fraud by such industry giants as WorldCom and Enron showed that financial statements are not always accurate; hence information based on reported data can be misleading.

Ratio analysis is useful, but analysts should be aware of these problems and make adjustments as necessary. Ratio analysis conducted in a mechanical, unthinking manner is dangerous, but used intelligently and with good judgment, it can provide useful insights into a firm's operations. Your judgment in interpreting a set of ratios is bound to be weak at this point, but it will improve as you go through the remainder of the book.

SELF-TEST

List three types of users of ratio analysis. Would the different users emphasize the same or different types of ratios?
List several potential problems with ratio analysis.

4.11 Looking Beyond the Numbers

Hopefully, working through this chapter has helped your understanding of financial statements and improved your ability to interpret accounting numbers. These important and basic skills are necessary when making business decisions, evaluating performance, and forecasting likely future developments.

Sound financial analysis involves more than just calculating numbers—good analysis requires that certain qualitative factors be considered when evaluating a company. These factors, as summarized by the American Association of Individual Investors (AAII), include the following:

1. **Are the company's revenues tied to one key customer?** If so, the company's performance may decline dramatically if the customer goes elsewhere.
2. **To what extent are the company's revenues tied to one key product?** Companies that rely on a single product may be more efficient and focused, but a lack of diversification increases risk.

3. **To what extent does the company rely on a single supplier?** Depending on a single supplier may lead to unanticipated shortages and thus to lower profits.
4. **What percentage of the company's business is generated overseas?** Companies with a large percentage of overseas business are often able to realize higher growth and larger profit margins. However, firms with large overseas operations also find that the value of their operations depends in large part on the value of the local currency. Thus, fluctuations in currency markets create additional risks for firms with large overseas operations. In addition, the political stability of the region is important.
5. **What about the competition?** It is important to consider both the likely actions of the current competition and the likelihood of new competitors in the future.
6. **What are the company's future prospects?** Does the company invest heavily in research and development? If so, its future prospects may depend critically on the success of products currently in the pipeline.
7. **How does the legal and regulatory environment affect the company?** It is crucial to factor in the effects of proposed regulations and pending or likely lawsuits.

SELF-TEST

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

Summary

The primary purpose of this chapter was to discuss techniques used by investors and managers to analyze financial statements. The key concepts covered are listed below.

- **Financial statement analysis** generally begins with a set of **financial ratios** designed to reveal a company's strengths and weaknesses as compared with other companies in the same industry, and to show whether its financial position has been improving or deteriorating over time.
- **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 ratio, times-interest-earned ratio,** and **EBITDA coverage ratio.**
- **Profitability ratios** show the combined effects of liquidity, asset management, and debt management policies on operating results. They include 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, price/cash flow ratio,** and the **market/book ratio.**
- **Trend analysis,** where one plots a ratio over time, is important, because it reveals whether the firm's condition has been improving or deteriorating over time.

- The **Du Pont system** is designed to show how the profit margin on sales, the assets turnover ratio, and the use of debt 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 used with care and judgment, it can be very helpful.

Questions

(4-1) 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: 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. Du Pont equation; window dressing; seasonal effects on ratios

(4-2) 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?

(4-3) 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?

(4-4) 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.

(4-5) How might (a) seasonal factors and (b) different growth rates distort a comparative ratio analysis? Give some examples. How might these problems be alleviated?

(4-6) 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 had earnings per share of $4 last year, and it paid a $2 dividend. Total retained earnings increased by $12 million during the year, while book value per share at year-end was $40. Argent has no preferred stock, and no new common

stock was issued during the year. If Argent's year-end debt (which equals its total liabilities) was $120 million, what was the company's year-end debt/assets 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.

a. Find Jacobus's (1) accounts receivable (A/R), (2) current liabilities, (3) current assets, (4) total assets, (5) ROA, (6) common equity, and (7) long-term debt.
b. In part a, you should have found Jacobus's accounts receivable (A/R) = $111.1 million. If Jacobus could reduce its DSO from 40.55 days to 30.4 days while holding other things constant, how much cash would it generate? If this cash were used to buy back common stock (at book value), thus reducing the amount of common equity, how would this affect (1) the ROE, (2) the ROA, and (3) the total debt/total assets ratio?

Problems Answers Appear in Appendix B

Easy Problems 1–5

(4-1) 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.

(4-2) Debt Ratio

Vigo Vacations has an equity multiplier of 2.5. The company's assets are financed with some combination of long-term debt and common equity. What is the company's debt ratio?

(4-3) Market/Book Ratio

Winston Washers' 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?

(4-4) Price/Earnings Ratio

A company has an EPS of $1.50, a cash flow per share of $3.00, and a price/cash flow ratio of 8.0 times. What is its P/E ratio?

(4-5) 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

(4-6) Du Pont Analysis

Donaldson & Son has an ROA of 10%, a 2% profit margin, and a return on equity equal to 15%. What is the company's total assets turnover? What is the firm's equity multiplier?

(4-7) 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?

(4-8) Profit Margin and Debt Ratio

Assume you are given the following relationships for the Clayton Corporation:

Sales/total assets	1.5×
Return on assets (ROA)	3%
Return on equity (ROE)	5%

Calculate Clayton's profit margin and debt ratio.

(4-9) 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?

(4-10) Times-Interest-Earned Ratio

The Manor Corporation has $500,000 of debt outstanding, and it pays an interest rate of 10% annually: Manor's annual sales are $2 million, its average tax rate is 30%, and its net profit margin on sales is 5%. If the company does not maintain a TIE ratio of at least 5 times, its bank will refuse to renew the loan, and bankruptcy will result. What is Manor's TIE ratio?

Challenging Problems 11–14

(4-11) Balance Sheet Analysis

Complete the balance sheet and sales information in the table that follows for Hoffmeister Industries using the following financial data:

Debt ratio: 50%
Quick ratio: 0.80×
Total assets turnover: 1.5×
Days sales outstanding: 36.5 days[a]
Gross profit margin on sales: (Sales − Cost of goods sold)/Sales = 25%
Inventory turnover ratio: 5×

[a]Calculation is based on a 365-day year.

Balance Sheet

Cash	_____	Accounts payable	_____
Accounts receivable	_____	Long-term debt	60,000
Inventories	_____	Common stock	_____
Fixed assets	_____	Retained earnings	97,500
Total assets	$300,000	Total liabilities and equity	_____
Sales	_____	Cost of goods sold	_____

(4-12) Comprehensive Ratio Calculations

The Kretovich Company had a quick ratio of 1.4, a current ratio of 3.0, an inventory turnover of 6 times, total current assets of $810,000, and cash and marketable

securities of $120,000. What were Kretovich's annual sales and its DSO? Assume a 365-day year.

(4-13) Comprehensive Ratio Analysis

Data for Morton Chip Company and its industry averages follow.

a. Calculate the indicated ratios for Morton.
b. Construct the extended Du Pont equation for both Morton and the industry.
c. Outline Morton's strengths and weaknesses as revealed by your analysis.
d. Suppose Morton had doubled its sales as well as its inventories, accounts receivable, and common equity during 2007. How would that information affect the validity of your ratio analysis? (Hint: Think about averages and the effects of rapid growth on ratios if averages are not used. No calculations are needed.)

Morton Chip Company: Balance Sheet as of December 31, 2007 (In Thousands)

Cash	$77,500	Accounts payable	$129,000
Receivables	336,000	Notes payable	84,000
Inventories	241,500	Other current liabilities	117,000
Total current assets	$655,000	Total current liabilities	$330,000
Net fixed assets	292,500	Long-term debt	256,500
		Common equity	361,000
Total assets	$947,500	Total liabilities and equity	$947,500

Morton Chip Company: Income Statement for Year Ended December 31, 2007 (In Thousands)

Sales	$1,607,500
Cost of goods sold	1,392,500
Selling, general, and administrative expenses	145,000
Earnings before interest and taxes (EBIT)	$ 70,000
Interest expense	24,500
Earnings before taxes (EBT)	$ 45,500
Federal and state income taxes (40%)	18,200
Net income	$ 27,300

Ratio	Morton	Industry Average
Current assets/current liabilities	_____	2.0×
Days sales outstanding[a]	_____	35.0 days
Sales/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	_____	60.0%

[a]Calculation is based on a 365-day year.

(4-14) Comprehensive Ratio Analysis

The Jimenez Corporation's forecasted 2008 financial statements follow, along with some industry average ratios.

a. Calculate Jimenez's 2008 forecasted ratios, compare them with the industry average data, and comment briefly on Jimenez's projected strengths and weaknesses.

b. What do you think would happen to Jimenez's ratios if the company initiated cost-cutting measures that allowed it to hold lower levels of inventory and substantially decreased the cost of goods sold? No calculations are necessary. Think about which ratios would be affected by changes in these two accounts.

Jimenez Corporation: Forecasted Balance Sheet as of December 31, 2008

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
Accounts and notes payable	$ 432,000
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 2008

Sales	$4,290,000
Cost of goods sold	3,580,000
Selling, general, and administrative expenses	370,320
Depreciation	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×
Market price (average)	$23.57
Number of shares outstanding	23,000

Industry Financial Ratios (2007)[a]	
Quick ratio	1.0×
Current ratio	2.7×
Inventory turnover[b]	7.0×
Days sales outstanding[c]	32 days
Fixed assets turnover[b]	13.0×
Total assets turnover[b]	2.6×
Return on assets	9.1%
Return on equity	18.2%
Debt ratio	50.0%
Profit margin on sales	3.5%
P/E ratio	6.0×
P/cash flow ratio	3.5×

[a]Industry average ratios have been constant for the past 4 years.
[b]Based on year-end balance sheet figures.
[c]Calculation is based on a 365-day year.

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Spreadsheet Problem

(4-15) Build a Model: Ratio Analysis

Start with the partial model in the file ***FM12 Ch 04 P15 Build a Model.xls*** from the textbook's Web site. This problem requires you to further analyze the financial data given for Cumberland Industries in the Build a Model problem for Chapter 3.

Cumberland Industries' common stock has increased in price from $14.75 to $17.25 from the end of 2006 to the end of 2007, and its shares outstanding increased from 9 to 10 million shares during that same period. Cumberland has annual lease payments of $75,000 (which are included in operating costs on the income statement), but no sinking fund payments are required. Now answer the following questions.

Using Cumberland's financial statements as given in the Chapter 3 Build a Model problem, perform a ratio analysis for 2006 and 2007. Consider its liquidity, asset management, debt management, profitability, and market value ratios.

a. Has Cumberland's liquidity position improved or worsened? Explain.
b. Has Cumberland's ability to manage its assets improved or worsened? Explain.
c. How has Cumberland's profitability changed during the last year?
d. Perform an extended Du Pont analysis for Cumberland for 2006 and 2007.
e. Perform a common size analysis. What has happened to the composition (that is, percentage in each category) of assets and liabilities?
f. Perform a percent change analysis. What does this tell you about the change in profitability and asset utilization?

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Cyberproblem

Please go to the textbook's Web site to access any Cyberproblems.

Mini Case

The first part of the case, presented in Chapter 3, discussed the situation that Computron Industries was in after an expansion program. Thus far, sales have not been up to the forecasted level, costs have been higher than were projected, and a large loss occurred in 2007, rather than the expected profit. As a result, its managers, directors, and investors are concerned about the firm's survival.

Donna Jamison was brought in as assistant to Fred Campo, Computron's chairman, who had the task of getting the company back into a sound financial position. Computron's 2006 and 2007 balance sheets and income statements, together with projections for 2008, are shown in the following tables. Also, the tables show the 2006 and 2007 financial ratios, along with industry average data. The 2008 projected financial statement data represent Jamison's and Campo's best guess for 2008 results, assuming that some new financing is arranged to get the company "over the hump."

Balance Sheets	2006	2007	2008E
Assets			
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	715,200	1,287,360	1,716,480
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	146,200	263,160	383,160
Net fixed assets	$ 344,800	$ 939,790	$ 836,840
Total assets	$1,468,800	$2,886,592	$3,516,952
Liabilities and Equity			
Accounts payable	$ 145,600	$ 324,000	$ 359,800
Notes payable	200,000	720,000	300,000
Accruals	136,000	284,960	380,000
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	203,768	97,632	296,216
Total equity	$ 663,768	$ 557,632	$1,977,152
Total liabilities and equity	$1,468,800	$2,886,592	$3,516,952

Note: "E" indicates estimated. The 2008 data are forecasts.

Income Statements	2006	2007	2008E
Sales	$3,432,000	$5,834,400	$7,035,600
Cost of goods sold	2,864,000	4,980,000	5,800,000
Other expenses	340,000	720,000	612,960
Depreciation	18,900	116,960	120,000
Total operating costs	$3,222,900	$5,816,960	$6,532,960
EBIT	$ 209,100	$ 17,440	$ 502,640
Interest expense	62,500	176,000	80,000
EBT	$ 146,600	($ 158,560)	$ 422,640
Taxes (40%)	58,640	(63,424)	169,056
Net income	$ 87,960	($ 95,136)	$ 253,584
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" indicates estimated. The 2008 data are forecasts.

Ratio Analysis

	2006	2007	2008E	Industry Average
Current	2.3×	1.5×	—	2.7×
Quick	0.8×	0.5×	—	1.0×
Inventory turnover	4.8×	4.5×	—	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	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%	21.6%	—	3.6%
Basic earning power	14.2%	0.6%	—	17.8%
ROA	6.0%	23.3%	—	9.0%
ROE	13.3%	217.1%	—	17.9%
Price/earnings (P/E)	9.7×	26.3×	—	16.2×
Price/cash flow	8.0×	27.5×	—	7.6×
Market/book	1.3×	1.1×	—	2.9×

Note: "E" indicates estimated. The 2008 data are forecasts.

Jamison examined monthly data for 2007 (not given in the case), and she detected an improving pattern during the year. Monthly sales were rising, costs were falling, and large losses in the early months had turned to a small profit by

December. Thus, the annual data looked somewhat worse than final monthly data. Also, it appeared to be taking longer for the advertising program to get the message across, for the new sales offices to generate sales, and for the new manufacturing facilities to operate efficiently. In other words, the lags between spending money and deriving benefits were longer than Computron's managers had anticipated. For these reasons, Jamison and Campo see hope for the company—provided it can survive in the short run.

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

a. Why are ratios useful? What are the five major categories of ratios?
b. Calculate the 2008 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 2006, 2007, and as projected for 2008? 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 2008 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 2008 debt, 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 2008 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 2008 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 percent change analysis. What do these analyses tell you about Computron?
h. Use the extended Du Pont equation to provide a summary and overview of Computron's financial condition as projected for 2008. 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 analysts should consider when evaluating a company's likely future financial performance?

Selected Additional Cases

The following cases from Textchoice, Thomson Learning's online library, cover many of the concepts discussed in this chapter and are available at ***http://www.textchoice2.com.***

Klein-Brigham Series:

Case 35, "Mark X Company (A)," which illustrates the use of ratio analysis in the evaluation of a firm's existing and potential financial positions.

Case 36, "Garden State Container Corporation," which is similar in content to Case 35.

Case 51, "Safe Packaging Corporation," which updates Case 36.

Case 68, "Sweet Dreams Inc.," which also updates Case 36.

Case 71, "Swan-Davis, Inc.," which illustrates how financial analysis, based on both historical statements and forecasted statements, is used for internal management and lending decisions.