Chapter 2 Financial Statement and Cash Flow Analysis

Chapter Overview

Financial statements document a firm's performance during a fiscal year period for a firm. But how can firm know if a recovering economy is affecting the bottom line of the firm – its revenues? The opening segment of this chapter discusses one of the most widely used ratios – the DSO or Days Sales Outstanding. An excellent glance into an economy is to look at how well customers take to pay their bills. If the time has decreased – customers are taking less time to pay their bills. A recent study showed a decline in DSO from 42.6 to 37.5 days. The 5 day decline was a sure sign that the economy was turning around and people were paying their debt in a more timely fashion. Chapter 2 explains what the major financial statements are, what information they provide and introduces various measures of a firm's cash flows. The chapter also shows the incredible value in using ratio analysis as was described in this introduction.

Opening Focus Discussion Questions:

1. Have the recent reduction in Days Sales Outstanding told us anything about the changes in credit policies of companies? Could the change in credit policies change the DSO?
2. What other ratios might be a good indicator of an improving or declining economy?

This chapter reviews:

1-1. Financial Statements
1-2. Cash Flow Analysis
1-3. Assessing Financial Performance Using Ratio Analysis
1-4. Corporate Taxes

Technology

1. **Smart Practices Video.** This video interviews Jon Olson, vice president of finance for Intel Corp. He talks about Intel's use of accounting numbers and why accounting information is so important in financial analysis. Discussion question: What makes accounting knowledge and information so important to financial analysis?

2. **Smart Ethics Video.** This video quotes Frank Popoff, retired chairman of the board of Dow Chemical, that "Overstating or understating the performance of the enterprise is anathema…it's just not on." This video talks about the difficulty in communicating information to investors. The company wants to accurately represent its performance, neither overly optimistic nor pessimistic. However, this balance is hard to achieve in an uncertain business environment. Discussion question: What is the delicate balance that a company must achieve when communicating its financial results in the market?

3. **Smart Ideas Video.** This video interviews John Graham of Duke University about whether companies manage their earnings.

4. **Smart Concepts.** This video illustrates a DuPont analysis of Microsoft, Wal-mart and Kroger. Discussion questions: How does the DuPont formula illustrate why investors might put pressure on Microsoft to distribute some of its cash? In 2002, Microsoft and Wal-mart reported similar ROE ratios, but they achieved their results in very different ways. Explain.

5. **Smart Solutions.** Step-by-step solution to Problems 2-2 and 2-12, calculating cash flow from operations, operating cash flow, and free cash flow.

Lecture Guide

Accounting is the language of business. This means there are a lot of terms in this chapter, and the more familiar students are with the language, the easier this chapter will be. Accounting looks at historical numbers and paints a picture of a company's financial situation at a given point in time. Finance is more dynamic and forward-looking, trying to determine what impact decisions have on wealth.

The financial accounting process is about recording transactions, summarizing what effect these have on a company's financial position and finally transforming those effects into accounting statements. Transactions are any purchases, sales, or other exchanges that impact a company's financial position.

The current hot accounting topic is whether or not to expense stock option grants to executives. Not required to do so, even by the recently-passed Sarbanes-Oxley Act, but many large companies, such as Coca Cola, IBM) have done so voluntarily.

Another area of interest is the rapid acceptance of *International Financial and Reporting Standards (IFRS, formerly called International Accounting Standards).* IFRS have been adopted by most of the world outside the U.S. and there is a good chance that the U.S. will abandon GAAP (Generally Accepted Accounting Principles) and adopt IFRS within the next two or three years. The European Union has mandated that all companies headquartered in Europe adopt IFRS by 2005, and China just announced they will do so as well. The main difference between GAAP and IFRS is that the first is rules-based and the second principles-based. There are also significant substantive differences, for example, IFRS prohibits LIFO (last in, first out) accounting of inventories and requires expensing of stock options.

2-1 Financial Statements

Regular financial statements:

- Make it easier to predict the future and make decisions
- Show a company's liquidity
- Monitor the firm's current condition
- Show the progress a firm has made over time
- Provide information to outsiders

Many interested parties, including shareholders, the government, and creditors, want to know if the firm is doing better or worse than it has in the past, how fast the business is growing and whether the firm will survive.

While accounting is primarily concerned with historical statements, in finance it may be useful to create pro forma statements, predictions about how the firm's statements will look in the future. These are used in valuation – to project the numbers used in multiples and cash flow valua-

tions and in financing to determine the creditworthiness of the firm and how much financing a firm needs. These are also used to perform sensitivity analyses – how likely is a company to meet its goals? Pro forma statements are also used to help the company make strategic decisions; for example, will introducing a new product really increase shareholder value? The accuracy of the pro forma statements depends on the accuracy of the inputs.

Four Key Financial Statements

The three basic financial statements, *the balance sheet, income statement and statement of retained earnings* are used in the creation of the derivative statements, the statement of cash flows. The following sections go over each of the main statements used in financial analysis, presenting financial statements for Global Petroleum Corp.

2-1a Balance Sheet

Note that a firm's assets are everything the firm owns. Current assets are those that are easy to sell and turn into cash, while fixed assets are physical assets like buildings and equipments. A company may also have intangible assets that may not appear on the balance sheet, like patents, copyrights or franchises. *Asset*s include everything that can be used to benefit the business or give the company the right to receive benefits.

Liabilities are what the firm owes to others. Current liabilities are those that must be paid within a year, while long-term liabilities are due in more than a year, like mortgages or long-term loans. Shareholders' equity is the owners' residual share of the business, including their original investment plus any money the firm has made since its inception. Typically shareholders' equity is divided into two accounts, capital stock, the amount of investment in the business that the owners made plus retained earnings, all of the past, accumulated net income minus dividends since the firm began.

Emphasize the basic balance sheet equation:

Assets = Liabilities + Shareholders Equity.

2-1b Income Statement

The *income statement*, or profit and loss statement shows what money a company has taken and spent during a specified time period. It is getting harder to accurately account for financial numbers with some new economy companies. For example, Priceline.com acts as a broker for customers wanting airline tickets and hotel rooms. Yet it claims as revenue the full price of the ticket or room. Priceline's justification for this is that it does own the tickets, even if only for a nanosecond. This practice means the company could be seen as overstating its revenues. On the other hand, other companies routinely do something similar without being questioned. A department store sells clothing that is shipped to it by clothing manufacturers without changing the final product just as priceline.com does. Are these just two different versions of a store that adds value by providing a place for customers to find the product they are looking for?

When to report revenue is also an issue. For example, MicroStrategy had a three-year deal with a customer and claimed all of the revenue immediately. The SEC said this was not correct and required the company to restate its revenues, only listing revenues when the company expected them to occur. MicroStrategy lost 90% of its market value on the announcement of the restatements.

A company's expenses are decreases in assets or increases in liabilities resulting from revenue –producing activities. They include costs of goods sold, how much inventory was used during the period, along with the labor needed to produce the product. Operating expenses include salaries of executives, marketing expenses, mortgage payments, utility costs, etc. Depreciation expense is how much value an asset loses as it ages. Point out that they can see the effects of depreciation in the want ads of any newspaper – a new car sells for a lot more than the same type of used car.

Note that not everything is necessarily reported on the company's financial statements. For example, a company could have a lawsuit pending that has not yet impacted the financial statements. Typically, a company is required to disclose such potential effects in the notes to its financial statements which often contain a great deal of valuable information.

2-1c Statement of Retained Earnings

This statement is primarily used to see how the firm has made its investment/consumption decision. Is the firm reinvesting its earnings? If so, how much? Is the firm paying out its earnings as dividends? These decisions are recorded in the *statement of retained earnings.*

2-1d Statement of Cash Flows

Note that a *statement of cash flows* is an easy to see the cash flow – the lifeblood of a business – from each of the main area, operations, investment and financing. What did the company invest in? How did it finance its investment? Did its operations provide cash for future expansion, or did the company need to seek external financing?

2-2 Cash Flows Analysis

Cash is the lifeblood of a company, and the company's *statement of cash flows* records what money has gone into and out of a firm because of its operations, investments and financing activities. A past statement of cash flows shows where the firm's money came from and how it was used. Where these good sources and uses? In other words, did sources include substantial net profits, or did the firm need to borrow heavily because its profits were low? Are there any sources or uses that stand out? For example, did the firm greatly increase its cash? If so why? Does it not have any more productive use for its profits other than adding to its cash account? Did inventories increase? Why? Was there a production bottleneck that caused a buildup of inventories, or is this a reasonable increase given the firm's sales increases?

In general, finance is more concerned with cash flows than with accounting earnings. While earnings and cash flows are highly correlated, they are not necessarily the same. Cash flows are used to provide the information for wealth increasing decisions. Profits must be converted into cash flows in order to make company investment decisions. Cash flow is how much cash actually moves through a business. How this cash flow is managed can mean the success or failure of the firm.

An important concept to stress here is that increasing an asset or decreasing a liability is a use of cash, while decreasing an asset or increasing a liability is a source of cash. Sources of cash include new loans, collecting accounts receivable or choosing to pay your creditors over a longer period of time. Uses of cash include buying new equipment, paying expenses, and allowing your creditors to take longer to pay you.

Explain to students why depreciation is not a cash flow, and that the company would be double counting its capital expenditures if it did not add back in depreciation to the cash flow equation.

Point out the differences between cash flow from operations and free cash flow. Cash flow from operations refers to revenues minus operating costs, depreciation and taxes, with depreciation added back in. Free cash flow takes cash flow from operations and subtracts (adds) incremental working capital or capital expenditure needs.

A statement of cash flows can be historical or forward looking. In other words, it can show how the company has spent money and where it has received money in the past, or it can be used to predict what funds will be needed in the future. A past sources and uses of funds statement will balance – the amount of sources will match the amount of uses of funds in the past. Unlike in accounting classes, a future statement of cash flows can be unbalanced; in other words, the company may have more sources than uses, and the difference shows how much new debt or equity financing the company will need in the future. Note that a student can simply move down the balance sheet to create this statement, by looking at how each account on the balance sheet has changed over the time period being studied, and whether this account has been a source of funds (increased liabilities or decreased assets) or a use of funds (decreased liability or increased assets).

2-3 Types of Financial Ratios

The instructor should note the main types of ratio and which groups are interested in which ratios. For example, creditors are primarily interested in liquidity ratios to assess a company's current ability to pay, and in a company's debt ratios to see if their overall debt load is manageable. Shareholders are interested in all ratios – they want to know how profitable the company is, whether it is using its assets efficiently and what is its market value. Ratios are used by many other interested parties. For example, the company's unions might use the results of ratio analysis to help them negotiate a new contract. Regulators use ratios to set an allowed rate of return for regulated companies like utilities.

2-3a Financial Ratios

Financial ratio analysis is the use of ratios to analyze financial statements. They can be used to determine the company's strengths and weaknesses, its historical performance and its present financial condition. Ratios are used to make it easier to make comparisons – between the company's past and its present and between the company and its competitors. Managers use ratios to improve the company's performance. Creditors use ratios to see whether the firm will be able to repay its debts, while stockholders want to predict what future dividends and earnings will be.

2-3b Liquidity Ratios

Point out to students that it is difficult to tell if a ratio is bad or good without additional information. For example, a lender would prefer high current and quick ratios, but when are these ratios "too high"?
(Answer: when a company has too much cash that it is not using productively.)

2-3c Activity Ratios

In general, a higher inventory turnover is an indication of greater efficiency, which is good for a company. When can a high inventory turnover ratio be negative for a company? (Answer: when the company is experiencing frequent stockouts because it can't keep enough inventory to meet customer needs.)

2-3d Debt Ratios

When discussing debt ratios, relate debt to risk. More debt makes a company riskier. Why? What difference does variability in cash flows make? (Answer: if a company has very stable cash flows, it is more able to take on more debt.) If its cash flows are very variable, then it runs the risk of not being able to meet its debt obligations if it is experiencing a bad year. Note that a company usually can't choose the riskiness of its assets – that is usually determined by the nature of the business, but it can choose the amount of financing risk that it takes on. Too much debt and too little cash flow can force a company into bankruptcy.

2-3e Profitability Ratios

The term "profits" is very vague. "Profits" may mean:

- Gross profits, sales minus cost of goods sold
- Operating profits, sales minus cost of goods sold minus operating expenses
- Pre-tax profit, operating profit plus non-operating income and minus non-operating expenses like interest
- Net profit, pretax profit minus taxes, also called net income or earnings.

Analysts need to look closely at how a company classifies its expenses. For example, Amazon.com has what it classifies as fulfillments costs, the expense associated with each order such as inspecting and warehousing inventories, packaging orders and responding to customer queries. These might seem like traditional cost of good sold, yet Amazon.com lists them as marketing expenses on its income statement. This means that the company's gross profits are considerably higher than they would be without this accounting choice. The firm's bottom line is the same – the costs are ultimately all expensed, but it could give a misleading view of the company's profits from operations. In another example, the author of Indecent Proposal, Jack Engelhard, signed a contract giving him royalties from the hit movie starring Robert Redford and Demi Moore. In spite of the fact that the movie's world-wide gross was $250 million, the studio is showing losses on the movie and refusing to pay the author more than the $120,000 he received upfront. Robert Redford reportedly earned $20 million for his role in the movie.

Note the relationship between return on assets and return on equity. ROA decreases if a company takes on a lot of debt, because interest will increase and net income or earnings available for common shareholders, the numerator of the ratio, will also decrease. But using debt financing reduces the amount of equity needed, and may raise return on equity, which is earnings available for common shareholders divided by common equity. Usually the use of debt financing increases value to shareholders, unless a company is taking on more debt than it can reasonably handle. You can illustrate this by using a housing example. Suppose you purchase a house for $100,000. You pay cash for the house. The house subsequently increases in value to $150,000, a profit of $50,000 and a return on assets of $50,000/$100,000 or 50%. Suppose instead you put down $10,000 in cash to purchase the house and borrowed $90,000 of the purchase price. The house increases in value to $150,000 providing you with the same $50,000 profit. Now, however, your return on equity is 50,000/10,000 or 500%. Using leverage has greatly increased your profits. This is a very simplified example, ignoring transactions costs and taxes.

To improve ROA a firm needs to improve its cost control, for example, reducing labor costs, purchases and overhead. Or, the company needs to increase its revenue, say through higher pricing, changing its product mix or volumes. The firm might also be able to improve its capacity uti-

lization, making more use of the same equipment. Or, it could improve its working capital management, collecting accounts receivable faster or paying its accounts payable more slowly.

2-3f Market Ratios

When discussing market ratios, note that price/earnings ratio is one of the most talked about ratios. It would be difficult to pick up a Wall Street Journal without seeing price-earnings ratio mentioned. Ask students what they think high or low P/E ratios would mean. Is a high (or low) P/E ratio good or bad? Note that in general low P/E ratio firms are considered to be lower growth companies while high P/E companies are considered to be high growth. Some investors think low P/E ratio companies are underpriced and therefore good values. High P/E ratios in general mean the market thinks the company will have high growth and high future earnings. Ask students what can make a P/E ratio high. It can be a high price or low earnings. Some extraordinarily high P/E ratios are the result of the company's having extremely low earnings per share.

Give an example of how quickly and simply P/E ratio can be used. Suppose you go to your company's annual stockholders' meeting, enjoy the wine and cheese and wait for the CEO to give his speech about the prospects of the company. The CEO tells you that next year the company will earn $6.00 per share. The company's historical P/E ratio has been 10 times. This says the stock should trade for $6 x 10 or $60 next year.

2-4 Corporate Taxes

Point out that average tax rate may not be representative of a firm's overall tax rate; it could reflect temporary tax credits and may not be representative of the future. Marginal tax rate is generally more important to the financial analyst. One of the major decision made by managers is the capital budgeting decision – what projects should be accepted. Any profits resulting from these projects are incremental dollars, and will be taxed at the firm's marginal tax rate, not the firm's historical, average tax rate. Note that capital gains for individuals on their stock sales are treated differently than for corporations. Under the recently passed tax law, individuals' capital gains and dividends are taxed at the maximum rate of 15%, not at the individual's marginal personal income tax rate.

Ratios seldom can stand alone. It is generally more useful to compare a firm's ratios to and industry average or an industry leader to see if the firm is underperforming or outperforming its peers. This is called an interfirm ratio analysis. An intrafirm, or trend analysis may also be helpful – has the firm been improving or declining over time?

Financial Statements and Financial Ratios Summary

Point out that market values and not accounting numbers are what count, even though the two can be related. As recent headlines have shown, accounting numbers can be manipulated. Accounting numbers, however, can provide information used in making wealth-increasing decisions. Accounting numbers serve as a proxy for cash flow, for example, net income. An accounting number is an important part of the cash flow equation.

Point out the limitations of ratio analysis. Most firms do not operate in a single industry, so it may be difficult to make industry comparisons. Average performance may not really be good, particularly if the entire industry is in a slump. Management can (legally and illegally) manipulate its financial statements, potentially distorting ratios. Typically ratio analysis is a starting point, not an answer to your questions about a firm's financial health. Ratio analysis tells you what questions to

ask and is the starting point of an analysis, not the ending point. It is usually part of a company analysis, but not the entire analysis.

Ratios need to be put into perspective. *Ratios need to be compared to some standard,* to a trend over time or compared to an industry average or industry leader.

Chapter 2 Resource Articles:

"Cash Flow Hocus Pocus", *Business Week,* July 15, 2002. Finance says that the focus should be on a firm's cash flows, not necessarily its accounting statements. This article points out ways that a firm can manipulate its cash flows, for example, through selling accounts receivable, classifying outstanding checks as accounts payable, trading securities and capitalizing certain expenses.

"Amazon is All Grown Up, Except for its Accounting," *Business Week,* August 5, 2002. This article talks about the disfavor pro forma statements have fallen into because of recent accounting scandals. It looks at Amazon's failure to use GAAP in its projections and skip pro forma projections.

"Brainpower on the Balance Sheet," *Business Week,* August 26, 2002. This article looks at the increase in intangible assets like brand names and research and development and the difficulties in having accounting statements reflect a firm's intangible value.

"Battle of the Accountants: Europe Tries to Win Over U.S.," *Wall Street Journal,* July 16, 2002. This article looks at differences between GAAP and International Accounting Standards and mentions pressure on U.S. companies to adopt international standards.

Enrichment Exercises

1. Chapter 2 raises questions about accounting standards – GAAP standards vs. IAS standards. Ask students to find an article in their local newspapers, on the internet or on the Wall Street Journal or its web site, and ask them to:
   a. Write up their opinion about the value of accounting standards – what needs to be reformed (if anything) and why? OR
   b. Have a roundtable discussion with each student contributing information from his or her article, and reaching a group consensus.

2. Have students, either individually or in a group choose a company for which to perform a financial statement analysis. It's best to choose a company that is primarily operating in one industry. Bank and financial service company accounting also can be very different and sometimes harder to interpret than traditional firm accounting. The financial statement analysis should involve calculating the ratios listed in the textbook for two years and comparing them to industry average ratios. Students could then see if the company's ratios are trending up or down and how they compare to industry averages.

   Some guidelines for the project could:
   - Include a copy of your company's most recent income statement and balance sheet. I recommend that you also transfer the values in these statements into an excel spreadsheet. It will make the subsequent calculations easier.

- Include a page with calculations of ratios for your company for one year. You should go through Ch. 2 of the textbook, list the ratios from the textbook on your spreadsheet, enter the formulas on your spreadsheet, and then have the spreadsheet calculate the values for your company. You may not be able to calculate all of the Ch. 2 ratios. For example, if your company is an all-equity company, you will not be able to compute a debt ratio. If ratio information is not available, just write N/A or not available by that ratio.
- Explain any trends you see in your company. Are its ratios becoming better or worse over time? How does your company compare to the industry average?

3. Have students each download financial statements from different companies. In a round table discussion, they could go through the statements, noting how companies use different terminology for the same parts of the statements. Ratios give very little information without something to compare it to – what would the students use to compare and why? Discuss the merit of using same company past ratios versus industry comparisons

4. Have students perform a two-minute ratio analysis. The article "Financial Statement Analysis – A Two-Minute Drill" by William L. Stone, Journal of Commercial Bank Lending, November 1983: 11-19, provides a framework for very quickly computing (without a calculator) current ratio, debt ratio, net profit margin, accounts receivable turnover, inventory turnover, and accounts payable turnover and making a decision about whether to extend a loan to the company. Students could take a company's financial statements and perform the two-minute drill and then discuss their conclusions.

Answers to Concept Review Questions

1. The **FASB** is a nongovernmental, professional-standards body that examines controversial accounting topics and then issues "rulings" that have almost the force of law, at least in terms of their impact on accounting practices. In the U.S., the FASB has developed the **GAAP** (Generally Accepted Accounting Principles) as the set of accounting rules with which companies must comply as they prepare financial statements. The Securities and Exchange Commission (**SEC**) regulates publicly traded U.S. companies, as well as the nation's stock and bond markets. The SEC ensures compliance of publicly traded companies with the GAPP. The four key financial statements, prepared according to GAAP principles and required by the SEC are (1) the balance sheet, (2) the income statement, (3) the statement of retained earnings, and (4) the statement of cash flows.

2. Companies prepare both balance sheets and income statements for the purpose of providing financial information about a company at a point in time, but they are used for slightly different purposes. A balance sheet provides a picture of the company's assets and liabilities (or net worth) at a point in time and sums all of the company's past earnings in the shareholder equity account. An income statement, on the other hand, provides a picture of the company's revenues and expenses for a specified period of time. Both statements are very useful in analyzing the company's past and future prospects.

3. Creditors would most likely be interested in the balance sheet, which states how much the company holds in liabilities, but they also would want to see an income statement, which indicates the company's ability to meet its payment commitments. Shareholders will certainly be interested in the balance sheet and income statement, which will allow them to compute ratios for the company; in the statement of retained earnings, which states how much their share of

the company has increased or decreased; and in the statement of cash flows, which describes where cash is coming in and going out of the company.

4. Depreciation and other non-cash charges are sources of cash to the firm. These charges are subtracted from the firm's revenues, decreasing cash flow in order to get a correct estimate of taxes owed. They need to be added back to compute an accurate cash flow. These charges are not real cash flows – no dollars exchange hands when a company takes a depreciation expense – and are only subtracted because they reduce the company's tax bill, and taxes are a real dollar cash flow. The tax code does not allow a company to expense its capital equipment in the year it was purchased. It requires companies to charge this expense over the lifetime of the equipment, taking a percentage of the total cost each year. For a profitable firm, it is better to depreciate assets as quickly as possible. The larger the depreciation expense, the lower the taxable income and the lower the taxes owed.

5. Operating cash flow **(OCF)** is earnings before interest and taxes (EBIT) less actual taxes plus depreciation. OCF is related to NOPAT because OCF can also be calculated as NOPAT plus depreciation. Free cash flow **(FCF)** is operating cash flow (revenues minus operating costs, depreciation and taxes, with depreciation added back in) minus changes in fixed assets minus changes in working capital (current assets minus operating current liabilities, accounts payable and accruals). Free cash flow takes operating cash flow and subtracts any short term and long term capital investments needed to support operating cash flow.

6. Financial managers must concern themselves very much with the statement of cash flows, because cash flows are the lifeblood of the firm. A firm that does not have sufficient cash flow to meet its obligations will soon face financial difficulty. Analysts, banks and creditors use cash flows to value the firm. The firm wants to maximize cash flows in order to maximize firm value.

7. a. Existing and prospective lenders would be most interested in liquidity ratios (how much in liquid assets the firm has to pay its bills) and debt ratios (how much of a commitment the firm has overall to debt).
   b. Existing and prospective shareholders will be interested in most ratios. In particular, they will want to know the activity ratios (how efficiently the company is using its assets), profitability ratios and market ratios.
   c. The firm's management should be interested in all ratios, identifying the firm's strengths and weaknesses and looking at how to continue the strengths and improve the weak areas.

8. Cash inflow and outflow data can be used to improve the accuracy of liquidity and debt coverage ratios over the previously presented methods because we would be using direct data rather than estimated ratios. For example, times interest earned is earnings before interest and taxes divided by interest. If cash flow were used instead, it could provide a more accurate measure of how much cash the firm had available to pay its interest expense. Debt ratios could be calculated using market value numbers rather than book value numbers, as the share price represents the discounted value of all future cash flows to the company.

9. a. Cash outflow
   b. Cash inflow—decrease in inventory
   c. Cash outflow—increase in AR
   d. Cash inflow—increase in AP; decrease in inventory

e. No effect on cash—just a shifting of financing sources because total assets don't change
f. Cash inflow, because although sales are unchanged, profit in dollars will increase

10. The DuPont system evaluates the impact of the different ratios on the company's ROE, we need to decompose the ROE by means of the DuPont system. ROE = Profit margin * Asset turnover * Equity multiplier. If the company has an above-average net profit margin and an average leverage, the only way that the company can have a below-average ROE is for its asset turnover to be lower (slower) than the industry average.

11. Investors may not get excited about a stock with an above-average M/B ratio and a below-average P/E ratio, especially if the firm is an older one. Since the M/B ratio compares market and book values, it is possible that the ratio is high not so much due to high market price as due to a low book value. The M/B ratio shows how investors view the company's past and how they project it to the company's future. Therefore, a high M/B and a low P/E do not necessarily mean that there is a discrepancy in the investors' expectations. It may be explained by the fact that because investors do not expect the company to perform well in the future, they are willing to pay less for its earnings thus bringing the P/E ratio down. In the same time, however, if the company has existed for a long time it may have initially sold its shares at a low for the current period value. Therefore, a low value of common stock on the company's books combined with decreasing retained earnings, leads to a high M/B ratio due to the small denominator of the ratio.

12. Ordinary corporate income is income resulting from the sale of the firm's goods and services. Under current tax laws, the applicable tax rates are subject to progressive tax rate schedule much as individuals in the U.S. are subject to increasing tax brackets as their incomes rise. Corporate average tax rates are calculated by dividing the company's tax liability by its pretax income. The firm's marginal tax rate is the tax rate applicable to the firm's next dollar of earnings.

13. *Capital gains* occur when companies sell capital assets, such as equipment or stock held as an investment, for more than the asset's original purchase price. The amount of the capital gain would be equal to the difference between the sale price and initial purchase price. If the sale price is less than the initial purchase price, the difference is called *capital loss*. Under current tax law, corporate capital gains are merely added to operating income and taxed at the ordinary corporate tax rates. The tax treatment of capital losses on depreciable business assets involves a deduction from pretax ordinary income, whereas any other capital losses must be used to offset capital gains.

Answers to Self-Test Problems

ST2-1. Use the financial statements below to answer the questions concerning M&M Manufacturing's financial position at the end of the calendar year 2012.

a. How much cash and near cash does M&M have at year-end 2012?
b. What was the original cost of all of the firm's real property that is currently owned?
c. How much in total liabilities did the firms have at year-end 2012?
d. How much did M&M owe for credit purchases at year-end 2012?
e. How much did the firm sell during 2012?
f. How much equity did the common stockholders have in the firm at year-end 2012?

g. What is the cumulative total of earnings reinvested in the firm from its inception through the end of 2012?
h. How much *operating profit* did the firm earn during 2012?
i. What is the total amount of dividends paid out by the firm during the year 2012?
j. How many shares of common stock did M&M have outstanding at year-end 2012?

M&M Manufacturing, Inc.
Balance Sheet
At December 31, 2012 ($000)

Assets		**Liabilities and Equity**	
Current assets		Current liabilities	
Cash	$ 140,000	Accounts payable	$ 480,000
Marketable securities	260,000	Notes payable	500,000
Accounts receivable	650,000	Accruals	80,000
Inventories	800,000	Total current liabilities	$1,060,000
Total current assets	$1,850,000	Long-term debt	
Fixed assets		Bonds outstanding	$1,300,000
Gross fixed assets	$3,780,000	Bank debt (long-term)	260,000
Less: Accumulated depreciation	1,220,000	Total long-term debt	$1,560,000
Net fixed assets	$2,560,000	Total Liabilities	$2,620,000
Total assets	**$4,410,000**	Shareholders' equity	
		Preferred stock	$ 180,000
		Common stock (at par)	200,000
		Paid-in capital in excess of par	810,000
		Retained earnings	600,000
		Total shareholders' equity	$1,790,000
		Total liabilities and equity	**$4,410,000**

M&M Manufacturing, Inc.
Income Statement for year ended December 31, 2012 ($000)

Sales revenue		$6,900,000
Less: Cost of goods sold		4,200,000
Gross profits		$2,700,000
Less: Operating expenses		
Sales expense	$ 750,000	
General and administrative expense	1,150,000	
Leasing expense	210,000	
Depreciation expense	235,000	
Total operating expenses		$2,345,000
Earnings before interest and taxes		$ 355,000
Less: Interest expense		85,000
Net profit before taxes		$ 270,000
Less: Taxes		81,000
Net profits after taxes		**$ 189,000**
Less: Preferred stock dividends		10,800
Earnings available for common stockholders		**$ 178,200**
Less: Dividends		75,000
To retained earnings		**$ 103,200**

Per share data:	
Earnings per share (EPS)	$1.43
Dividends per share (DPS)	$0.60
Price per share	$15.85

A: a. $400,000 (only cash and marketable securities should be included $140,000 + $260,000)
b. $3,780,000 (net asset position + depreciation)
c. $2,620,000 (current liabilities + long-term debt)
d. $480,000 (accounts payable)
e. $6,900,000 (sales)
f. $1,610,000 (common stock at par + paid-in capital + retained earnings)
g. $600,000 (retained earnings)
h. $355,000 (EBIT)
i. $85,800 (preferred + common stock dividends)
j. 124,615 shares outstanding ($178,200/$1.43)

ST2-2. The partially complete 2012 balance sheet and income statement for Challenge Industries are given below, followed by selected ratio values for the firm based on its completed 2012 financial statements. Use the ratios along with the partial statements to complete the financial statements. *Hint:* Use the ratios in the order listed to calculate the missing statement values that need to be installed in the partial statements.

Challenge Industries, Inc.
Balance Sheet
At December 31, 2012
(in $ thousands)

Assets		**Liabilities and Equity**	
Current assets		Current liabilities	
Cash	$ 52,000	Accounts payable	$150,000
Marketable securities	60,000	Notes payable	?
Accounts receivable	200,000	Accruals	80,000
Inventory	?	Total current liabilities	?
Total current assets	?	Long-term debt	425,000
Fixed assets (gross)	?	Total liabilities	?
Less: Accumulated depreciation	240,000	Shareholders' equity	
Net fixed assets	?	Preferred stock	?
Total assets	**?**	Common stock (at par)	150,000
		Paid-in capital in excess of par	?
		Retained earnings	390,000
		Total shareholders' equity	?
		Total liabilities and shareholders' equity	**?**

Challenge Industries, Inc.
Income Statement
For the Year Ended December 31, 2012
(in $ thousands)

Sales revenue		$ 4,800,000
Less: Cost of goods sold		?
Gross profits		?
Less operating expenses:		
Selling expense	$690,000	
General and administrative expense	150,000	
Depreciation	120,000	
Total operating expenses		$1,560,000
Earnings before interest and taxes		?
Less: Interest expense		35,000
Earnings before taxes		?
Less: Taxes		?
Net income (Net profits after taxes)		?
Less: Preferred dividends		15,000
Earnings available for common stockholders		?
Less: Dividends		60,000
To retained earnings		?

Challenge Industries, Inc.
Ratios for the Year Ended December 31, 2012

Ratio	Value
Total asset turnover	2.00
Gross profit margin	40%
Inventory turnover	10
Current ratio	1.60
Net profit margin	3.75%
Return on common equity	12.5%

A:

Challenge Industries, Inc.
Balance Sheet
At December 31, 2012
(in $ thousands)

Assets		**Liabilities and Equity**	
Current assets		Current liabilities	
Cash	$ 52,000	Accounts payable	$ 150,000
Marketable securities	60,000	Notes payable	145,000
Accounts receivable	200,000	Accruals	80,000
Inventory	288,000	Total current liabilities	$ 375,000
Total current assets	$ 600,000	Long-term debt	425,000
Fixed assets (gross)	$2,040,000	Total liabilities	$ 800,000
Less: Accumulated depreciation	240,000	Shareholders' equity	
Net fixed assets	$1,800,000	Preferred stock	$ 160,000
Total assets	**$2,400,000**	Common stock (at par)	150,000
		Paid-in capital in excess of par	900,000
		Retained earnings	390,000
		Total shareholders' equity	$1,600,000
		Total liabilities and shareholders' equity	**$2,400,000**

Challenge Industries, Inc.
Income Statement
For the year ended December 31, 2012
(in $ thousands)

Sales revenue		$4,800,000
Less: Cost of goods sold		2,880,000
Gross profits		$1,920,000
Less operating expenses		
Selling expense	$690,000	
General and administrative expense	150,000	
Depreciation	120,000	
Total operation expenses		1,560,000
Earnings before interest and taxes		$ 360,000
Less: Interest expense		35,000
Earnings before taxes		$ 325,000
Less: Taxes		130,000
Net income (Net profits after taxes)		$ 195,000
Less: Preferred dividends		15,000
Earnings available for common stockholders		$ 180,000
Less: Dividends		60,000
To retained earnings		$ 120,000

ST2-3. Use the corporate income tax rate schedule in Table 2.6 of the chapter to calculate the tax liability for each of the following firms with the amounts of 2012 pretax income noted.

Firm	2012 Pretax Income	Tax Liability
A	$12,500,000	
B	200,000	
C	80,000	

a. What tax rate – average or marginal – is relevant to financial decisions for these firms?
b. Calculate, compare, and discuss the *average tax rates* for each of the firms during 2012.
c. Find the *marginal tax rates* for each of the firms at the end of 2012.
d. What relationship exists between the average and marginal tax rates for each firm?

A: a. The *marginal tax rate* is relevant to financial decisions for these firms, because it reflects the rate at which the next dollar of the firm's income will be taxed.

b.

Firm	2012 Pretax Income	Tax Liability	Average Tax Rate
A	$12,500,000	50,000 × 0.15 = 7,500 (75,000-50,000) × 0.25 = 6,250 (100,000-75,000) × 0.34 = 8,500 (335,000-100,000) × 0.39 = 91,650 (10,000,000-335,000) × 0.34 = 3,286,100 (12,500,000-10,000,000) × 0.35 = 875,000 Total 4,275,000	4,275,000/12,500,000 = 34.2%
B	$200,000	50,000 × 15 = 7,500 (75,000-50,000) × 0.25 = 6,250 (100,000-75,000) × 0.3 4 = 8,500 (200,000-100,000) × 0.39 = 39,000 Total 61,250	61,250/200,000 = 30.63%
C	$80,000	50,000 × 0.15 = 7,500 (75,000-50,000) × 0.25 = 6,250 (80,000-75,000) × 0.34 = 1,700 Total 15,450	15,450/80,000 = 19.31%

Companies A, B and C pay on average 34.2, 30.63 and 19.31 cents respectively on each dollar of pretax income earned.

c. Marginal tax rate: The tax companies will have to pay if they earn one more dollar – A: 35%; B: 39%; C: 34%

d. The observable pattern is that the higher the average tax rate the less the marginal tax rate increases and vice versa.

Answers to End-of-Chapter Questions

Q2-1. What information (explicit and implicit) can be derived from financial statement analysis? Does the standardization required by GAAP add greater validity to comparisons of financial data between companies and industries? Are there possible shortcomings to relying solely on financial statement analysis to value companies?

A2-1. Financial statement analysis provides information about the company's financial health, and its strengths and weaknesses. Using standardized GAAP rules does add validity by making comparisons between companies easier. Possible shortcomings include:

- If a company is in multiple lines of business it may be difficult to make comparisons
- The accounting data may not be accurate
- Average performance may not be a good measure, especially if the industry is in a slump
- It is possible to manipulate accounting numbers.

Q2-2. Distinguish between the types of financial information contained in the various financial statements. Which statements provide information on a company's performance over a reporting period, and which present data on a company's current position? What sorts of valuable information may be found in the notes to financial statements? Describe a situation in which the information contained in the notes would be essential to making an informed decision about the value of a corporation.

A2-2. Data on a company's performance over a reporting period: income statement, statement of cash flows, statement of retained earnings (how much additional retained earnings will be added to existing retained earnings)

Data on a company's performance about the company's current position: balance sheet
Notes to the financial statements contain details about the composition and cost of the company's debt, any liabilities such as lawsuits that are still pending, revenue recognition, taxes, significant clients, detailed breakdowns of fixed asset accounts, executive compensation, and descriptions of employee benefit plans. An example of a situation in which the notes would be essential to valuation would be a company that relied on a few clients, rather than a wide base of clients. The notes would detail current and expected revenue from those clients and how that revenue would be recognized. An analyst would need this information to develop a set of cash flows for the company which would provide the basis of a company valuation.

Q2-3. If you were a commercial credit analyst charged with the responsibility of making an accept/reject decision on a company's loan request, with which financial statement would you be most concerned? Which financial statement is most likely to provide pertinent information about a company's ability to repay its debt?

A2-3. An analyst looking at granting a loan request would be most interested in the company's balance sheet, which she could use to compute liquidity ratios (current and quick ratios) and debt ratios. A credit analyst would also want an income statement with EBIT and interest with which to compute times interest earned. Times interest earned is a measure of how well a company can pay its interest obligations, while liquidity and debt ratios show what assets are available to repay debt.

Q2-4. What is *operating cash flow (OCF)?* How is it calculated? What is *free cash flow (FCF)?* How is it calculated from operating cash flow (*OCF*)? Why do financial managers focus attention on the value of *FCF*?

A2-4. Operating cash flow is earnings before interest and taxes minus taxes plus depreciation. Financial analysts like this measure because it uses only operating flows, with no financing cash flows like interest. This makes it easier to separate the effects of operating decisions from those from financing decisions. Free Cash Flow (FCF) is the Operating Cash Flow (OCF) minus the amount of the firm's net investments in fixed and current assets. The larger the firms FCF, the better positioned the company is for growth, debt repayment, and dividend payouts.

Q2-5. Describe the common definitions of "inflows of cash" and "outflows of cash" used by analysts to classify certain balance sheet changes and income statement values. What three categories of cash flow are used in the statement of cash flows? To what value should the net value in the statement of cash flows reconcile?

A2-5. A cash inflow is an increase in liabilities or a decrease in assets. A cash outflow occurs when there is a decrease in liabilities or an increase in assets. A statement of cash flows is divided into operating cash flows, financing cash flows and investment cash flows. For a historical statement of cash flows, the cash outflows for the period must equal the cash inflows for the period.

Q2-6. What precautions must one take when using ratio analysis to make financial decisions? Which ratios would be most useful for a financial manager's internal financial analysis? For an analyst trying to decide on which stocks are most attractive within an industry?

A2-6. With ratio analysis it is important to know the reliability of the data and the methods of accounting used to provide data for the analysis. A manager interested in internal control will focus on activity ratios, which measure the firm's efficiency in its use of its assets, and profitability ratios, which show a firm's returns. A financial analyst may be more interested in market ratios such as price to earnings, price to sales, or price to book value, which show how the market is evaluating the firm.

Q2-7. How do analysts use ratios to analyze a firm's *financial leverage?* Which ratios convey more important information to a credit analyst—those revolving around the levels of indebtedness or those measuring the ability to meet the contractual payments associated with debt? What is the relationship between a firm's levels of indebtedness and risk? What must happen in order for an increase in financial leverage to be successful?

A2-7. Analysts use debt ratios to determine the firm's financial leverage--its use of debt financing. A credit analyst is going to be concerned with a firm's ability to repay its obligations. She will care about times interest earned which demonstrates the firm's ability to pay its interest, and current and quick ratio, which show how much in short term assets the firm has compared to its short term liabilities. Financial leverage adds risk to a firm – the more debt, the more risk, but also the more potential reward to shareholders. For an increase in financial leverage to be successful, the firm must be profitable and earn enough to justify the additional interest expense.

Q2-8. How is the *DuPont system* useful in analyzing a firm's *ROA* and *ROE*? What information can be inferred from the decomposition of *ROE* into contributing ratios? What is the mathematical relationship between each of the individual components (net profit margin, total asset turnover, and assets-to-equity ratio) and *ROE*? Can *ROE* be raised without affecting *ROA*? How?

A2-8. The DuPont system is useful in breaking down ROE and ROA into its component parts. If ROE is increasing (decreasing), a manager can see if the cause is a higher (lower) profit margin, a higher (lower) asset turnover or a higher (lower) equity multiplier. If one of the components is improving (declining) the firm can take steps to pay attention to that area of the business. ROE is equal to ROA times the equity multiplier. It would be possible to raise ROE by choosing to finance the firm more aggressively, even if ROA remained the same.

Q2-9. Provide a general description of the tax rates applicable to U.S. corporations. What is the difference between the *average tax rate* and the *marginal tax rate*? Which rate is relevant to financial decision making? Why? How do *capital gains* differ from *ordinary corporate income*?

A2-9. Under current tax laws the applicable tax rates to U.S corporations are progressive. The average tax rate is calculated by dividing the company' tax liability by its pretax income. The marginal tax rate is the amount of tax paid on an additional dollar of income generated. The marginal tax rate is relevant to financial decisions because it shows the tax the company will have to pay in case it generates any new cash flows. Ordinary corporate income is income resulting from the sale of the firm's goods and services, which is the corporation's core business. Capital gains arise when companies sell capital assets, such as equipment or stock held as an investment, for more than their original purchase price. The amount of the capital gain would be equal to the difference between the sale price and initial purchase price. Basically, capital gains play the role of additional, extraordinary income.

Solutions to End-of-Chapter Problems

Financial Statements

P2-1. Obtain financial statements for Microsoft for the last five years either from its web site (http://www.microsoft.com) or from EDGAR online (http://www.sec.gov/edgar/searchedgar/webusers.htm). First, look at the statements without reading the notes. Then, read the notes carefully, concentrating on those regarding executive stock options. Do you have a different perspective after analyzing these notes?

A2-1. Internet exercise – answers will vary.

Cash Flow Analysis

P2-2. Given the balance sheets and selected data from the income statement of SMG Industries that follow, answer parts (a)–(c).

a. Calculate the firm's *operating cash flow (OCF)* for the year ended December 31, 2012, using Equation 2.2.
b. Calculate the firm's *free cash flow (FCF)* for the year ended December 31, 2012, using Equation 2.4.

c. Interpret, compare, and contrast your cash flow estimates in parts (a) and (b).

SMG Industries
Balance Sheet
(in $ millions)

Assets	December 31, 2012	December 31, 2011	Liabilities and Stockholders' Equity	December 31, 2012	December 31, 2011
Cash	$ 3,500	$ 3,000	Accounts payable	$ 3,600	$ 3,500
Marketable securities	3,800	3,200	Notes payable	4,800	4,200
Accounts receivable	4,000	3,800	Accruals	1,200	1,300
Inventories	4,900	4,800	Total current liabilities	$ 9,600	$ 9,000
Total current assets	$16,200	$14,800	Long-term debt	6,000	6,000
Gross fixed assets	$31,500	$30,100	Total liabilities	$15,600	$15,000
Less: Accumulated depreciation	14,700	13,100	Common stock	$11,000	$11,000
Net fixed assets	$16,800	$17,000	Retained earnings	6,400	5,800
Total assets	**$33,000**	**$31,800**	Total stockholders' equity	$17,400	$16,800
			Total liabilities and stockholders' equity	**$33,000**	**$31,800**

Income Statement Data (2012, in $millions)

Depreciation expense	$1,600
Earnings before interest and taxes (*EBIT*)	4,500
Taxes	1,300
Net profits after taxes	2,400

A2-2. a. Operating cash flow = EBIT – Taxes + Depreciation
= $4,500 – $1,300 + $1,600
= $4,800

b. Free cash flow = OCF – Δ FA – (ΔCA – ΔA/P – ΔAccruals)
= 4,800 – (31,500 – 30,100) – [(16,200 – 14,800) – (3,600 – 3,500) – (1,200 – 1,300)]
= $2,000

c. Operating cash flow (OCF) is higher than free cash flow (FCF) because operating cash flow does not account for investments made during the year. Free cash flow not only looks at operations but also considers whether the company has added assets or reduced liabilities uses of cash) or reduced assets and increased liabilities (sources of cash).

P2-3. Classify each of the following items as an inflow (I) or an outflow (O) of cash, or as neither (N).

Item	Change ($)	Item	Change ($)
Cash	+600	Accounts receivable	−900
Accounts payable	−1,200	Net profits	+700
Notes payable	+800	Depreciation	+200
Long-term debt	−2,500	Repurchase of stock	+500
Inventory	+400	Cash dividends	+300
Fixed assets	+600	Sale of stock	+1,300

A2-3. Cash + 600 (O)
Accounts payable –1,200 (O)
Notes payable +800 (I)
Long-term debt –2,500 (O)
Inventory + 400 (O)
Fixed assets +600(O)
Accounts receivable –900 (I)
Net profits +700 (I)
Depreciation +200 (I)
Repurchase of stock +500 (O)
Cash Dividends +300 (O)
Sale of Stock +1,300 (I)

Analyzing Financial Performance Using Ratio Analysis

P2-4. Manufacturers Bank is evaluating Aluminum Industries, Inc., which has requested a $3 million loan. On the basis of the debt ratios for Aluminum, along with the industry averages and Aluminum's recent financial statements (which follow), evaluate and recommend appropriate action on the loan request.

Aluminum Industries, Inc.
Income Statement
For the Year Ended December 31, 2012

Sales revenue		$30,000,000
Less: Cost of goods sold		21,000,000
Gross profit		$ 9,000,000
Less operating expenses:		
Selling expense	$ 3,000,000	
General and administrative expenses	1,800,000	
Lease expense	200,000	
Depreciation expense	1,000,000	
Total operating expenses		$ 6,000,000
Operating profit		$ 3,000,000
Less: Interest expense		1,000,000
Net profit before taxes		$ 2,000,000
Less: Taxes (rate = 40%)		800,000
Net profits after taxes		$ 1,200,000

Aluminum Industries, Inc.
Balance Sheet
December 31, 2012

Assets		Liabilities and Stockholders' Equity	
Current assets		Current liabilities	
Cash	$ 1,000,000	Accounts payable	$ 8,000,000
Marketable securities	3,000,000	Notes payable	8,000,000
Accounts receivable	12,000,000	Accruals	500,000
Inventories	7,500,000	Total current liabilities	$16,500,000
Total current assets	$23,500,000	Long-term debt (incl. financial leases)	$20,000,000
Fixed assets (at cost)		Total Liabilities	$36,500,000
Land and buildings	$11,000,000	Stockholders' equity	
Machinery and equipment	20,500,000	Preferred stock (25,000 shrs, $4 div.)	$ 2,500,000
Furniture and fixtures	8,000,000	Common stock (1 million shrs, $5 par)	5,000,000
Gross fixed assets	$39,500,000	Paid-in capital in excess of par	4,000,000
Less: Accumulated depreciation	13,000,000	Retained earnings	2,000,000
Net fixed assets	$26,500,000	Total stockholders' equity	$13,500,000
Total assets	**$50,000,000**	Total liabilities and stockholders' equity	**$50,000,000**

Industry Averages

Debt ratio	0.51
Debt-equity ratio	1.07
Times interest earned ratio	7.30

A2-4.

Ratio	Definition	Calculation	Aluminum	Industry Avg.
Debt	Debt	$36,500,000	.73	.51
		Total Assets $50,000,000		
Debt-Equity	Long-Term Debt	$20,000,000	1.48	1.07
		Equity $13,500,000		
Times Interest Earned	EBIT	$3,000,000	3.00	7.30
	Interest	$1,000,000		

Because Aluminum Industries, Inc. has a much higher degree of indebtedness and much lower ability to service debt than the average firm in the industry, the loan probably should be rejected.

P2-5. Use the following information to answer the questions that follow.

Income Statements
For the Year Ended December 31, 2012

	Heavy Metal Manufacturing (HMM)	**Metallic Stamping Inc. (MS)**	**High-Tech Software Co. (HTS)**
Sales	$75,000,000	$50,000,000	$100,000,000
− Operating expenses	65,000,000	40,000,000	60,000,000
Operating profit	$10,000,000	$10,000,000	$ 40,000,000
− Interest expenses	3,000,000	3,000,000	0
Earnings before taxes	$ 7,000,000	$ 7,000,000	$ 40,000,000
− Taxes	2,800,000	2,800,000	16,000,000
Net income	$ 4,200,000	$ 4,200,000	$ 24,000,000

Balance Sheet
As of December 31, 2012

	Heavy Metal Manufacturing (HMM)	**Metallic Stamping Inc. (MS)**	**High-Tech Software Co. (HTS)**
Current assets	$ 10,000,000	$ 5,000,000	$ 20,000,000
Net fixed assets	90,000,000	75,000,000	80,000,000
Total assets	$100,000,000	$80,000,000	$100,000,000
Current liabilities	$ 20,000,000	$10,000,000	$ 10,000,000
Long-term debt	40,000,000	40,000,000	0
Total liabilities	$ 60,000,000	$50,000,000	$ 10,000,000
Common stock	$ 15,000,000	$10,000,000	$ 25,000,000
Retained earnings	25,000,000	20,000,000	65,000,000
Total common equity	$ 40,000,000	$30,000,000	$ 90,000,000
Total liabilities and common equity	$100,000,000	$80,000,000	$100,000,000

a. Use the DuPont system to compare the two heavy metal companies shown above (HMM and MS) during 2012. Which of the two has a higher return on common equity? What is the cause of the difference between the two?
b. Calculate the return on common equity of the software company, HTS. Why is this value so different from those of the heavy metal companies calculated in part a.?
c. Compare the leverage levels between the industries. Which industry receives a greater contribution from return on total assets? Which industry receives a greater contribution from the financial leverage as measured by the assets-to-equity ratio?
d. Can you make a meaningful DuPont comparison across industries? Why or why not?

A2-5. a. ROE = Net Profit Margin (NPM) × Total Asset Turnover (TAT) × Financial leverage multiplier (A/E)

$$ROE_{HMM} = \frac{\$4,200,000}{\$75,000,000} \times \frac{\$75,000,000}{\$100,000,000} \times \frac{\$100,000,000}{\$40,000,000}$$

$$ROE_{HMM} = .056 \times .75 \times 2.50$$

$$ROE_{HMM} = 10.5\%$$

$$ROE_{MS} = \frac{\$4,200,000}{\$50,000,000} \times \frac{\$50,000,000}{\$80,000,000} \times \frac{\$80,000,000}{\$30,000,000}$$

$$ROE_{MS} = .084 \times .625 \times 2.67$$

$$ROE_{MS} = 14.0\%$$

Metallic Stamping (MS) has an ROE of 14% as compared to 10.5% for Heavy Metal (HMM). While Heavy Metal utilizes its assets more efficiently (TAT= 0.75 vs. 0.625 for Metallic Stamping), Metallic converts a greater percentage of sales into net income (NPM = 0.084 vs. 0.056 for Heavy Metal) and makes greater use of financial leverage, given its slightly higher equity multiplier (2.67 vs 2.50 for Heavy Metal).

b. $$ROE_{HTS} = \frac{\$24,000,000}{\$100,000,000} \times \frac{\$100,000,000}{\$100,000,000} \times \frac{\$100,000,000}{\$90,000,000}$$

$$ROE_{HTS} = .24 \times 1 \times 1.11$$

$$ROE_{HTS} = 26.7\%$$

The ROE of High Tech Software (HTS) is greater than those of the two heavy metal companies because HTS has a much higher net profit margin and a higher total asset turnover (TAT).

c. The software company generates much higher returns on total assets (ROAs) of 24% (.24 x 1.00) versus ROAs for the heavy metal companies of 4.2% (.056 x .75) for HMM and of 5.25% (.084 x .625) for MS. The opposite relationship exists for financial leverage. HMM and MS have higher assets-to-equity (A/E) ratios of 2.50 and 2.67, respectively, versus an A/E value for HTS of 1.11.

d. No, because there are significant differences in both the operating and financial structures across industries as demonstrated by the comparison between heavy metal and software companies in part c.

P2-6. Refer to Problem 2-5 and perform the same analysis with real data. Download last year's financial data from Ford Motor Company (http://www.ford.com), General Motors (http://www.gm.com), and Microsoft (http://www.microsoft.com). Which ratios demonstrate the greatest difference between Ford and General Motors? Which of the two is more profitable? Which ratios drive the greater profitability?

A2-6. Internet exercise – answers will vary.

P2-7. A common-size income statement for Aluminum Industries' 2011 operations follows. Using the firm's 2012 income statement presented in Problem 2-4, develop the 2012 common-size income statement (see footnote 2) and compare it to the 2011 statement. Which areas require further analysis and investigation?

Aluminum Industries, Inc.
Common-Size Income Statement
For the Year Ended December 31, 2011

Sales revenue ($35,000,000)		100.0%
Less: Cost of goods sold		65.9
Gross profit		34.1%
Less: Operating expenses		
Selling expense	12.7%	
General and administrative expenses	6.3	
Lease expense	0.6	
Depreciation expense	3.6	
Total operating expense		23.2
Operating profit		10.9%
Less: Interest expense		1.5
Net profit before taxes		9.4%
Less: Taxes (rate = 40%)		3.8
Net profits after taxes		5.6%

A2-7.

Aluminum Industries
Income Statement
For the Year Ended December 31, 2012

		Common Size %
Sales	$30,000,000	100.0%
Cost of goods sold	21,000,000	70.0%
Gross profit	$ 9,000,000	30.0%
Selling expense	3,000,000	10.0%
G&A expense	1,800,000	6.0%
Lease expense	200,000	0.7%
Depreciation	1,000,000	3.3%
Total operating expense	6,000,000	20.0%
Operating profits	$ 3,000,000	10.0%
Interest expense	1,000,000	3.3%
Net profit before taxes	$ 2,000,000	6.7%
Taxes	800,000	2.7%
Net profit after taxes	$ 1,200,000	4.0%

Sales have declined from $35 million to $30 million and cost of goods sold has increased as a percentage of sales (from 65.9% in 2011 to 70% in 2012), probably due to a loss of productive efficiency. Total operating expenses have decreased as a percent of sales (from 23.2% in 2011 to 20.0% in 2012); this appears favorable unless this decline has contributed toward the fall in sales. The level of interest as a percentage of sales has increased significantly (from 1.5% in 2011 to 3.3% in 2012); this is likely attributable to the firm's relatively high debt levels in 2012. Further analysis and investigation should therefore focus on the firm's increased cost of goods sold and its high level of debt.

P2-8. Use the following financial data for Greta's Gadgets, Inc., to determine the impact of using additional debt financing to purchase additional assets. Assume that an additional $1 million of assets is purchased with 100 percent debt financing with a 10 percent annual interest rate.

Greta's Gadgets, Inc.
Income Statement
For the Year Ended December 31, 2012

Sales	$4,000,000
– Costs and expenses @ 90%	3,600,000
Earnings before interest & taxes	$ 400,000
– Interest (.10*$1,000,000)	100,000
Earnings before taxes	$ 300,000
Taxes @ 40%	120,000
Net income	$ 180,000

Greta's Gadgets, Inc.
Balance Sheet
As of December 31, 2012

Assets		**Liabilities and Stockholders' Equity**	
Current assets	$ 0	Current liabilities	$ 0
Fixed assets	2,000,000	Long-term debt @ 10%	1,000,000
Total assets	**$2,000,000**	Total liabilities	$1,000,000
		Common stock equity	1,000,000
		Total liabilities and stockholders' equity	**$2,000,000**

a. Calculate the current (2012) net profit margin, total asset turnover, assets-to-equity ratio, return on total assets, and return on common equity for Greta's Gadgets.
b. Now, assuming no other changes, determine the impact of purchasing the $1 million in assets using 100 percent debt financing with a 10 percent annual interest rate. Further assume that the newly purchased assets generate an additional $2 million in sales and that the costs and expenses remain at 90 percent of sales. For purposes of this problem, further assume a tax rate of 40 percent. What is the effect on the ratios calculated in part (a)? Is the purchase of these assets justified on the basis of the return on common equity?

c. Assume that the newly purchased assets in part (b) generate only an extra $500,000 in sales. Is the purchase justified in this case?
d. Which component ratio(s) of the DuPont system is not affected by the change in sales? What does this imply about the use of financial leverage?

A2-8. a. Net Profit Margin = $\frac{\$180,000}{\$4,000,000} = .045 = 4.5\%$

Total Asset Turnover = $\frac{\$4,000,000}{\$2,000,000} = 2.00$

Financial Leverage Multiplier = $\frac{\$2,000,000}{\$1,000,000} = 2.00$

Return on Total Assets (ROA) = Net Profit Margin × Total Asset Turnover
= 0.045 × 2.00
= 0.09 = 9%

Return on Equity (ROE) = Return on Total Assets × Financial Leverage Multiplier
= 0.09 × 2.00
= .18 = 18%

b.

Sales	$6,000,000	Current assets	$ 0
Expenses (.90 x $6,000,000)	5,400,000	Fixed assets	3,000,000
EBIT	$ 600,000	Total assets	$3,000,000
Interest (.10 x $2,000,000)	200,000		
EBT	$ 400,000	Current liabilities	$ 0
Taxes @ 40%	160,000	Long-term debt (@ 10%)	2,000,000
Net income	$ 240,000	Total liabilities	$2,000,000
		Common equity	1,000,000
		Total liab. & S/H equity	$3,000,000

Net Profit Margin = $\frac{\$240,000}{\$6,000,000} = .04 = 4\%$

Total Asset Turnover = $\frac{\$6,000,000}{\$3,000,000} = 2.00$

Financial Leverage Multiplier = $\frac{\$3,000,000}{\$1,000,000} = 3.00$

Return on Total Assets (ROA) = 4% × 2.00 = 8%

Return on Equity (ROE) = 8% × 3.00 = 24%

As measured by ROE, which increases from 18% to 24%, the purchase of the assets is a success.

c.

Sales	$4,500,000	Current assets	$ 0
Expenses (.90 x $4,500,000)	4,050,000	Fixed assets	3,000,000
EBIT	$ 450,000	Total assets	$3,000,000
Interest (.10 x $2,000,000)	200,000	Current liabilities	$ 0
EBT	$ 250,000	Long-term debt	2,000,000
Taxes @ 40%	100,000	Total liabilities	$2,000,000
Net income	$ 150,000	Common equity	1,000,000
		Total liab. & S/H equity	$3,000,000

Net Profit Margin = $\frac{\$150,000}{\$4,500,000}$ = .0333 = 3.33%

Total Asset Turnover = $\frac{\$4,500,000}{\$3,000,000}$ = 1.50

Equity Multiplier = Assets ÷ Equity = $3,000,000 ÷ $1,000,000 = 3.00

Return on Total Assets (ROA) = 3.33% × 1.50 = 5%

Return on Equity (ROE) = 5% × 3.00 = 15%

In this case, the acquisition of assets lowers ROE (from 18%to 15%) and therefore is not a good investment.

d. The *equity multiplier* is affected only by the financing decision – not by changes in sales. This implies that ROE can be enhanced by an increase in financial leverage only if the assets purchased with the debt are utilized at least as efficiently as existing assets in generating sales and in earning net income on those sales.

P2-9. Tracey White, the owner of the Buzz Coffee Shop chain, has decided to expand her operations. Her 2012 financial statements follow. Tracey can buy two additional coffeehouses for $3 million, and she has the choice of completely financing these new coffeehouses with either a 10 percent (annual interest) loan or the issuance of new common stock. She also expects these new shops to generate an additional $1 million in sales. Assuming a 40 percent tax rate and no other changes, should Tracey buy the two coffeehouses? Why or why not? Which financing option results in the better *ROE*?

Buzz Coffee Shops, Inc. 2012 Financial Statements

Balance Sheet		**Income Statement**	
Current assets	$ 250,000	Sales	$500,000
Fixed assets	750,000	− Costs and expenses @ 40%	200,000
Total assets	$1,000,000	Earnings before interest and taxes (EBIT)	$300,000
Current liabilities	$ 300,000	− Interest expense	0
Long-term debt	0	Net profit before taxes	$300,000
Total liabilities	$ 300,000	− Taxes @ 40%	120,000
Common equity	700,000	Net income	$180,000
Total liabilities and stockholders' equity	$1,000,000		

A2-9.

Balance Sheet Items	**Currently**	**Debt Financing**	**Stock Financing**
Current assets	$ 250,000	$ 250,000	$ 250,000
Fixed assets	750,000	3,750,000	3,750,000
Total assets	$1,000,000	$4,000,000	$4,000,000
Current liabilities	$ 300,000	$ 300,000	$ 300,000
Long-term debt	0	3,000,000	0
Total liabilities	$ 300,000	$3,300,000	$ 300,000
Common equity	700,000	700,000	3,700,000
Total liabilities & S/H equity	$1,000,000	$4,000,000	$4,000,000

Income Statement Items	**Currently**	**Debt Financing**	**Stock Financing**
Sales	$500,000	$1,500,000	$1,500,000
Expenses @ 40%	200,000	600,000	600,000
EBIT	$300,000	$ 900,000	$ 900,000
Interest exp. (0.10 × LTDebt)	0	300,000	0
Net profit before taxes	$300,000	$ 600,000	$ 900,000
Taxes @ 40%	120,000	240,000	360,000
Net income	$180,000	$ 360,000	$ 540,000
ROE (Net income ÷ S/H's equity)	25.71%	51.43%	14.59%

All else remaining the same, Tracey should expand her operations using debt financing because this strategy will double her firm's ROE.

P2-10. The financial statements of Access Corporation for the year ended December 31, 2012, follow.

Access Corporation
Income Statement
For the Year Ended December 31, 2012

Sales revenue		$160,000
Less: Cost of goods sold[a]		106,000
Gross profit		$ 54,000
Less operating expenses:		
Selling expense	$16,000	
General and administrative expense	10,000	
Lease expense	1,000	
Depreciation expense	10,000	
Total operating expenses		37,000
Operating profit		$17,000
Less: Interest expense		6,100
Net profit before taxes		$10,900
Less: Taxes @ 40%		4,360
Net profits after taxes		$ 6,540

[a]Access Corporation's annual purchases are estimated to equal 75 percent of cost of goods sold.

Access Corporation
Balance Sheet
As of December 31, 2012

Assets		**Liabilities and Stockholders' Equity**	
Cash	$ 500	Accounts payable	$ 22,000
Marketable securities	1,000	Notes payable	47,000
Accounts receivable	25,000	Total current liabilities	$ 69,000
Inventories	45,500	Long-term debt	22,950
Total current assets	$ 72,000	Total liabilities	$ 91,950
Land	$ 26,000	Common stock [a]	31,500
Buildings and equipment	$ 90,000	Retained earnings	26,550
Less: Accumulated depreciation	38,000	Total liabilities and stockholders'	
Net fixed assets	$ 78,000	equity	$150,000
Total assets	$150,000		

[a] The firm's 3,000 outstanding shares of common stock closed 2012 at a price of $25 per share.

a. Use the preceding financial statements to complete the following table. Assume that the industry averages given in the table are applicable for both 2011 and 2012.
b. Analyze Access Corporation's financial condition as it relates to (1) liquidity, (2) activity, (3) debt, (4) profitability, and (5) market value. Summarize the company's overall financial condition.

Access Corporation's Financial Ratios

	Industry Average	Actual Ratio 2011	Actual Ratio 2012
Current ratio	1.80	1.84	
Quick (acid-test) ratio	.70	.78	
Inventory turnover	2.50	2.59	
Average collection period[a]	37 days	36 days	
Average payment period[a]	72 days	78 days	
Debt-to-equity ratio	50%	51%	
Times interest earned ratio	3.8	4.0	
Gross profit margin	38%	40%	
Net profit margin	3.5%	3.6%	
Return on total assets (*ROA*)	4.0%	4.0%	
Return on common equity (*ROE*)	9.5%	8.0%	
Market/book (M/B) ratio	1.1	1.2	

[a]Based on a 365-day year and on end-of-year figures.

A2-10. a. Access Corporation – Ratio Analysis

	Actual 2012
Current ratio	1.04
Quick ratio	0.38
Inventory turnover	2.33
Average collection period	57 days
Average payment period	76 days
Debt-to-equity ratio	39.5%
Times interest earned	2.8
Gross profit margin	33.8%
Net profit margin	4.1%
Return on total assets (ROA)	4.4%
Return on common equity (ROE)	11.3%
Market/book (M/B) ratio	1.3

b. (1) **Liquidity:** Access Corporation's liquidity position has deteriorated from 2011 to 2012 and is inferior to the industry average. The firm may *not* be able to satisfy short-term obligations as they come due.

(2) **Activity:** Access' ability to convert assets into cash has deteriorated from 2011 to 2012. Examination into the cause of the 21-day increase in the average collection period is warranted. Inventory turnover has also decreased for the period under review. The firm may be holding slightly excessive inventory. Average payment period has decreased, which may also warrant examination.

(3) **Debt:** Access' long-term debt position has improved since 2011 and is significantly below the industry average. Access Corp.'s ability to service interest payments has deteriorated and is well below the industry average.

(4) **Profitability:** Although the company's gross profit margin is below its industry average, indicating high cost of goods sold, the firm has a superior net profit margin in comparison to the industry average. The firm has lower than average operating expenses. The firm has a superior return on investment and return on equity in comparison to the industry and shows an upward trend.
(5) **Market:** The firm's increasing and above-industry-average market/book ratio indicates that investors are willing to pay an increasing and above-industry-average amount for each dollar of book value. Clearly investors have possible expectations of the firm's future success.

Overall, the firm maintains superior profitability at the risk of illiquidity. Investigation into the management of accounts receivable and inventory is warranted. Regardless, investors appear to feel positively about the firm's future prospects.

P2-11. Given the following financial statements, historical ratios, and industry averages, calculate the UG Company's financial ratios for 2012. Analyze its overall financial situation both in comparison to industry averages and over the period 2010–2012. Break your analysis into an evaluation of the firm's liquidity, activity, debt, profitability, and market value.

UG Company
Income Statement
For the Year Ended December 31, 2012

Sales revenue		$10,000,000
Less: Cost of goods sold[a]		7,500,000
Gross profit		$ 2,500,000
Less operating expenses:		
Selling expense	$300,000	
General and administrative expense	650,000	
Lease expense	50,000	
Depreciation expense	200,000	
Total operating expense		1,200,000
Operating profit (*EBIT*)		$1,300,000
Less: Interest expense		200,000
Net profits before taxes		$1,100,000
Less: Taxes (rate = 40%)		440,000
Net profits after taxes		$ 660,000
Less: Preferred stock dividends		50,000
Earnings available for common stockholders		$ 610,000
Earnings per share (*EPS*)		$3.05

[a]Annual credit purchases of $6.2 million were made during the year.

UG Company
Balance Sheet
As of December 31, 2012

Assets		**Liabilities and Stockholders' Equity**	
Current assets		Current liabilities	
Cash	$ 200,000	Accounts payable	$ 900,000
Marketable securities	50,000	Notes payable	200,000
Accounts receivable	800,000	Accruals	100,000
Inventories	950,000	Total current liabilities	$ 1,200,000
Total current assets	$ 2,000,000	Long-term debt (including financial leases)	$ 3,000,000
Gross fixed assets	$12,000,000	Stockholders' equity	
Less: Accumulated depreciation	3,000,000	Preferred stock (25,000 shares, $2 dividend)	$ 1,000,000
Net fixed assets	$ 9,000,000	Common stock (200,000 shrs, $3 par)[a]	600,000
Other assets	$ 1,000,000	Paid-in capital in excess of par	5,200,000
Total assets	$12,000,000	Retained earnings	1,000,000
		Total stockholders' equity	$ 7,800,000
		Total liabilities and stockholders' equity	$12,000,000

[a]On December 31, 2009, the firm's common stock closed at $27.50.

UG Company
Historical and Industry Average Ratios

Industry Ratio	**Actual 2010**	**Actual 2011**	**Industry Average 2012**
Current ratio	1.4	1.55	1.85
Quick (acid-test) ratio	1.00	0.92	1.05
Inventory turnover	9.52	9.21	8.60
Average collection period[a]	45.0 days	36.4 days	35.0 days
Average payment period[a]	58.5 days	60.8 days	45.8 days
Fixed asset turnover	1.08	1.05	1.07
Total asset turnover	0.74	0.80	0.74
Debt ratio	0.20	0.20	0.30
Debt-to-equity ratio	0.25	0.27	0.39
Times interest earned ratio	8.2	7.3	8.0
Gross profit margin	0.30	0.27	0.25
Operating profit margin	0.12	0.12	0.10
Net profit margin	0.067	0.067	0.058
Return on total assets (*ROA*)	0.049	0.054	0.043
Return on common equity (*ROE*)	0.066	0.073	0.072
Earnings per share (*EPS*)	$1.75	$2.20	$1.50
Price/earnings (P/E) ratio	12	10.5	11.2
Market/book (M/B) ratio	1.20	1.05	1.10

[a]Based on a 365-day year and on end-of-year figures.

A2-11. *Complete Ratio Analysis:*

UG Company
Ratio Analysis

Ratio	Actual 2010	Actual 2011	Actual 2012	Industry 2012	Time Series (TS) Cross-Sectional (CS)
Current ratio	1.40	1.55	1.67	1.85	TS: Improving CS: Fair
Quick ratio	1.00	0.92	0.88	1.05	TS: Deteriorating CS: Poor
Inventory turnover	9.52	9.21	7.89	8.60	TS: Deteriorating CS: Fair
Average collection period	45.0 days	36.4 days	29.2 days	35 days	TS: Improving CS: Good
Average payment period	58.5 days	60.8 days	53.0 days	45.8 days	TS: Improving CS: Good
Fixed asset turnover	1.08	1.05	1.11	1.07	TS: Stable CS: Good
Total asset turnover	0.74	0.80	0.83	0.74	TS: Improving CS: Good
Debt ratio	0.20	0.20	0.35	0.30	TS: Increasing CS: Fair
Debt-to-equity ratio	0.25	0.27	0.38	0.39	TS: Increasing CS: Good
Times interest earned	8.2	7.3	6.5	8.0	TS: Deteriorating CS: Poor
Gross profit margin	0.30	0.27	0.25	0.25	TS: Deteriorating CS: Good
Operating profit margin	0.12	0.12	0.13	0.10	TS: Stable CS: Good
Net profit margin	0.067	0.067	0.061	0.058	TS: Stable CS: Good
Return on total assets (ROA)	0.049	0.054	0.051	0.043	TS: Improving CS: Good
Return on equity (ROE)	0.066	0.073	0.090	0.072	TS: Improving CS: Good
Earnings per share (EPS)	$1.75	$2.20	$3.05	$1.50	TS: Improving CS: Good
Price/earnings (P/E)	12.0	10.5	9.0	11.2	TS: Decreasing CS: Below Average
Market/book (M/B)	1.2	1.05	0.81	1.10	TS: Decreasing CS: Below Average

Liquidity: UG Company's overall liquidity as reflected by the current ratio and quick ratio appears to have remained relatively stable but both are below the industry average. The quick ratio is particularly poor.

Activity: The activity of accounts receivable has improved, but inventory turnover has deteriorated and is currently below the industry average. It has brought its long payables down to below the industry average.
Debt: The firm's debt ratios have increased from 2010 and are very close to the industry averages, indicating currently acceptable values but an undesirable trend.
Profitability: The firm's gross profit margin, while in line with the industry average, has declined, probably due to higher cost of goods sold. The operating and net profit margins have been stable and are also in the range of the industry averages. Both the return on total assets and return on equity appear to have improved slightly and are better than the industry averages. Earnings per share made a significant increase in 2011 and 2012.
Market: The price/earnings (P/E) ratio indicates a declining level of investor confidence in the firm's future earnings potential, perhaps due to the added risk of the increased financial leverage reflected in the firm's increased debt load and higher servicing requirements. The declines in both the price/earnings and market/book (M/B) ratios in 2012 also reflect declining and below-industry-average investor confidence in the firm in 2012.

In summary, the firm needs to attend to inventory and should not incur added debts until their leverage and interest coverage ratios are improved. Other than these indicators, the firm appears to be doing well operationally-- particularly in generating return on sales. UG Company is out-performing the industry average values in terms of profitability, but it is under-performing in terms of the market valuation ratios (P/E and M/B).

P2-12. Choose a company that you would like to analyze, and obtain its financial statements. Now, select another firm from the same industry, and obtain its financial data from the Internet. Perform a complete ratio analysis on each firm. How well does your selected company compare to its industry peer? Which components of your firm's *ROE* are superior, and which are inferior?

A2-12. Internet exercise – answers will vary.

Corporate Taxes

P2-13. Thomsonetics, Inc., a rapidly growing early stage technology company, had the pretax income noted below for calendar years 2010-2012. The firm was subject to corporate taxes consistent with the rates shown in Table 2.6 of the text.

Year	**Pretax Income**
2010	$ 87,000
2011	$312,000
2012	$760,000

a. Calculate Thomsonetics' tax liability for each year 2010, 2011, and 2012.
b. What was the firm's average tax rate in each year?
c. What was the firm's marginal tax rate in each year?
d. If in addition to its ordinary pretax income, Thomsonetics realized a capital gain of $80,000 during calendar year 2011, what effect would this have on its tax liability, average tax rate, and marginal tax rate in 2011?
e. Which tax rate – average or marginal – should Thomsonetics use in decision-making? Why?

A2-13. a. 2010:

50,000 × 0.15 =	7,500
(75,000-50,000) × 0.25 =	6,250
(87,000-75,000) × 0.34 =	4,080
Total	$17,830

2011:

50,000 × 0.15 =	7,500
(75,000-50,000) × 0.25 =	6,250
(100,000-75,000) × 0.34 =	8,500
(312,000-100,000) × 0.39 =	82,680
Total	$104,930

2012:

50,000 × 0.15 =	7,500
(75,000-50,000) × 0.25 =	6,250
(100,000-75,000) × 0.34 =	8,500
(335,000-100,000) × 0.39 =	91,650
(760,000-335,000) × 0.34 =	144,500
Total	$258,400

b. 2010: 17,830/87,000 = 20.49%
2011: 104,930/312,000 = 33.63%
2012: 258,400/760,000 = 34%

c. 2010: 34%
2011: 39%
2012: 34%

d. Total income in 2011 would be 312,000 + 80,000 = 392,000. Consequently, tax liability would become:

50,000 × 0.15 =	7,500
(75,000-50,000) × 0.25 =	6,250
(100,000-75,000) × 0.34 =	8,500
(335,000-100,000) × 0.39 =	91,650
(392,000-335,000) × 0.34 =	19,380
Total	$133,280

The average tax rate becomes 133,280/392,000 = 34%
The marginal tax rate becomes: 34%

e. Thomsonetics should use their marginal tax rate in decision making. It is the important tax rate as it shows what the company will have to pay if it generates new cash flows in the future.

P2-14. Trish Foods, Inc. had pretax ordinary corporate income during 2012 of $2.7 million. In addition during the year, Trish Foods sold a group of non-depreciable business assets (in the 5-year depreciation class) that it had purchased new for $980,000 three years earlier. Because the assets were not depreciable, their book value at the time of sale was also $980,000. The firm pays corporate income taxes at the rates shown in text Table 2.6.

a. Calculate Trish Foods 2012 tax liability, average tax rate, and marginal tax rate, assuming the group of assets was sold for $1,150,000.
b. Calculate Trish Foods 2012 tax liability, average tax rate, and marginal tax rate, assuming the group of assets was sold for $890,000.
c. Compare, contrast, and discuss your findings in parts a.) and b.).

A2-14. a. Because Trish Foods realized a capital gain of 1,150,000 – 980,000 = 170,000 from the sale of the equipment, its total income is 2,700,000 +170,000 = 2,870,000 and its tax liability is:

50,000 × 0.15 =	7,500
(75,000-50,000) × 0.25 =	6,250
(100,000-75,000) × 0.34 =	8,500
(335,000-100,000) × 0.39 =	91,650
(2,870,000-335,000) × 0.34 =	861,900
Total	$975,800

Average tax rate = 975,800/2,870,000 = 34%
Marginal tax rate is: 34%

b. Because Trish Foods realized a capital *loss* of 90,000 on the sale of the equipment, its total income is 2,700,000 – 90,000 = 2,610,000.

The tax liability is:

50,000 × 0.15 =	7,500
(75,000-50,000) × 0.25 =	6,250
(100,000-75,000) × 0.34 =	8,500
(335,000-100,000) × 0.39 =	91,650
(2,610,000-335,000) × 0.34 =	773,500
Total	$887,400

Average tax rate = 887,400/2,610,000 = 34%
Marginal tax rate is: 34%

c. The average and marginal tax rates are 34% in both a.) and b.). While capital gains and losses affect taxable income, the marginal tax rate remains the same in both cases because the gains/losses are not substantial enough to move the company into a different tax bracket.

THOMSON ONE Business School Edition:

Access financial information from the Thomson ONE – Business School Edition Web site for the following problem(s). Go to http://tobsefin.swlearning.com/. If you have already registered your

access serial number and have a username and password, click **Enter**. Otherwise, click **Register** and follow the instructions to create a username and password. Register your access serial number and then click **Enter** on the aforementioned Web site. When you click Enter, you will be prompted for your username and password (please remember that the password is case sensitive). Enter them in the respective boxes and then click **OK** (or hit **Enter**). From the ensuing page, click **Click Here to Access Thomson ONE – Business School Edition Now!** This opens up a new window that gives you access to the Thomson ONE – Business School Edition database. You can retrieve a company's financial information by entering its ticker symbol (provided for each company in the problem(s) in the box below "Name/Symbol/Key."

P2-15. Compare the profitability of Delta Air Lines (ticker: U:DAL) and United Airlines (U:UAL) for the latest year. Using the *return on common equity (ROE)*, determine which firm is more profitable. Use the *DuPont system* to determine what drives the difference in the profitability of the two.

P2-16. Analyze the financial condition of Carter's, Inc., (ticker: CRI) over the last five years. Use financial ratios that relate to its liquidity, activity, debt, profitability, and market value. In which areas has the company improved, and in which areas has the company's financial position worsened?

Because these exercises depend upon real-time data, your answers will change continuously depending upon when you access the Internet to download your data.

Answer to MiniCase

Financial Statement and Cash Flow Analysis

You have been hired by First Citizens Bank as a financial analyst. One of your first job assignments is to analyze the present financial condition of Bradley Stores, Incorporated. You are provided with the following 2012 balance sheet and income statement information for Bradley Stores. In addition, you are told that Bradley Stores has 10,000,000 shares of common stock outstanding, currently trading at $9 per share, and has made annual purchases of $210,000,000.

Your assignment calls for you to calculate certain financial ratios and to compare these calculated ratios with the industry average ratios that are provided. You are also told to base your analysis on five categories of ratios: (a) liquidity ratios, (b) activity ratios, (c) debt ratios, (d) profitability ratios, and (e) market ratios.

Balance Sheet (in 000s)

Cash	$ 5,000	Accounts payable	$ 15,000
Accounts receivable	20,000	Notes payable	20,000
Inventory	40,000	Total current liabilities	$ 35,000
Total current assets	$ 65,000	Long-term debt	100,000
Net fixed assets	135,000	Stockholders' equity	65,000
Total assets	$200,000	Total liabilities and equity	$200,000

Income Statement (in 000s)

Net sales (all credit)	$300,000
Less cost of goods sold	250,000
Earnings before interest and taxes	$ 50,000
Less interest	40,000
Earnings before taxes	$ 10,000
Less taxes (40%)	4,000
Net income	$ 6,000

Industry Averages for Key Ratios:

Net profit margin	6.4%
Average collection period (365 days)	30 days
Debt ratio	50%
P/E ratio	23
Inventory turnover ratio	12.0
ROE	18%
Average payment period (365 days)	20 days
Times interest earned ratio	8.5
Total asset turnover	1.4
Current ratio	1.5
Assets-to-equity ratio	2.0
ROA	9%
Quick ratio	1.25
Fixed asset turnover ratio	1.8

Assignment

Use the following guidelines to complete this job assignment. First, identify which ratios you need to use to evaluate Bradley Stores in terms of its (a) liquidity position, (b) business activity, (c) debt position, (d) profitability, and (e) market comparability. Next, calculate these ratios. Finally, compare these ratios to the industry average ratios provided in the problem and answer the following questions.

1. Based on the provided industry average information, discuss Bradley Stores' liquidity position. Discuss specific areas in which Bradley compares positively and negatively with the overall industry.
2. Based on the provided industry average information, what do Bradley Stores' activity ratios tell you? Discuss specific areas in which Bradley compares positively and negatively with the overall industry.
3. Based on the provided industry average information, discuss Bradley Stores' debt position. Discuss specific areas in which Bradley compares positively and negatively with the overall industry.
4. Based on the provided industry average information, discuss Bradley Stores' profitability position. As part of this investigation of firm profitability, include a DuPont analysis. Discuss specific areas in which Bradley compares positively and negatively with the overall industry.
5. Based on the provided industry average information, how is Bradley Stores viewed in the marketplace? Discuss specific areas in which Bradley compares positively and negatively with the overall industry.

6. Overall, what are Bradley's strong and weak points? Knowing that your boss will approve new loans only to companies in a better-than-average financial position, what is your final recommendation (approval or denial of loan)?

Answers
Ratios to calculate:

	Industry Averages	**Bradley**
Net profit margin	6.4%	2.0%
Average collection period (365 days)	30 days	24.33 days
Debt ratio	50%	67.5%
P/E ratio	23	15
Inventory turnover ratio	12.0	6.25
ROE	18%	9.2%
Average payment period (365 days)	20 days	26.1 days
Times interest earned ratio	8.5	5.0
Total asset turnover	1.4	1.5
Current ratio	1.5	1.86
Assets-to-equity ratio	2.0	3.08
ROA	9%	3.0%
Quick ratio	1.25	0.71
Fixed asset turnover ratio	1.8	2.22

1. Relative to the industry Bradley Stores has a strong current ratio indicating a better-than-average ability to meet cash obligations over the next year. However, Bradley Stores quick ratio is low compared to the industry indicating that perhaps inventory levels are high. This information provides an indication for further investigation into Bradley Stores' inventory. Bradley Stores may simply carry too much inventory. However, as a bigger concern, perhaps Bradley Stores carries an inordinate amount of obsolete inventory on their books.

2. The inventory turnover ratio confirms that Bradley Stores is carrying much greater levels of inventory than the industry average. Collections are good compared to the industry. However, Bradley Stores appears to stretch their payments. This is another area that calls for a more in-depth investigation. Perhaps Bradley Stores is not taking advantage of trade discounts. More seriously, perhaps Bradley Stores has cash flow problems that are masked with the high inventory levels and resulting strong current ratio. Bradley Stores appears to generate better-than-average sales for their level of fixed assets and total assets. The relatively higher fixed asset turnover compared to the total assets turnover can again be attributed to high inventory levels.

3. Bradley Stores has greater debt levels than the industry on average, indicating greater financial risk. Compounding this concern is a low times-interest-earned ratio. Bradley Stores buffer in covering their interest costs is less than the industry. This is another area that needs further investigation. Could Bradley Stores raise their sales price on certain items? Alternatively, does Bradley Stores need to better control costs?

4. Profitability is low compared to the industry. These ratios highlight that Bradley Stores needs to either increase revenues or reduce costs. A DuPont Analysis provides additional insight.

Industry	**Bradley Stores**
NPM × TAT × A/E = ROE	NPM × TAT × A/E = ROE
6.4% × 1.4 × 2.0 = 18.0%	2.0% × 1.5 × 3.08 = 9.0%

As seen in the DuPont Analysis, Bradley Stores' ROE is much lower due to a low net profit margin. This highlights the concern of revenues and costs. It is also important to point out that Bradley Stores has a low ROE despite having a high equity multiplier (asset to equity ratio). A greater equity multiplier indicates greater financial risk, where all else being equal, we would expect a higher ROE to compensate for this greater risk.

5. The PE ratio shows that investors value Bradley Stores at a lower multiple than they do other firms in the industry. It appears that market participants have also uncovered these operational problems associated with Bradley Stores.

6. The concerns with Bradley Stores include high inventory levels, slow payments to vendors, high debt levels, low interest coverage, and low profit margins. Further investigation is necessary, but based on this analysis Bradley Stores does not appear to be in a strong borrowing position.