Exam 1

**Answers to end-of chapter recommended questions**

**Chapter 1**

**1-1** A firm’s intrinsic value is an estimate of a stock’s “true” value based on accurate risk and return data. It can be estimated but not measured precisely. A stock’s current price is its market price—the value based on perceived but possibly incorrect information as seen by the marginal investor. From these definitions, you can see that a stock’s “true” long-run value is more closely related to its intrinsic value rather than its current price.

**1-2** Equilibrium is the situation where the actual market price equals the intrinsic value, so investors are indifferent between buying or selling a stock. If a stock is in equilibrium then there is no fundamental imbalance, hence no pressure for a change in the stock’s price. At any given time, most stocks are reasonably close to their intrinsic values and thus are at or close to equilibrium. However, at times stock prices and equilibrium values are different, so stocks can be temporarily undervalued or overvalued.

**1-3** If the three intrinsic value estimates for Stock X were different, you would have the most confidence in Company X’s CFO’s estimate. Intrinsic values are strictly estimates, and different analysts with different data and different views of the future will form different estimates of the intrinsic value for any given stock. However, a firm’s managers have the best information about the company’s future prospects, so managers’ estimates of intrinsic value are generally better than the estimates of outside investors.

**1-4** If a stock’s market price and intrinsic value are equal, then the stock is in equilibrium and there is no pressure (buying/selling) to change the stock’s price. So, theoretically, it is better that the two be equal; however, intrinsic value is a long-run concept. Management’s goal should be to maximize the firm’s intrinsic value, not its current price. So, maximizing the intrinsic value will maximize the average price over the long run but not necessarily the current price at each point in time. So, stockholders in general would probably expect the firm’s market price to be under the intrinsic value—realizing that if management is doing its job that current price at any point in time would not necessarily be maximized. However, the CEO would prefer that the market price be high—since it is the current price that he will receive when exercising his stock options. In addition, he will be retiring after exercising those options, so there will be no repercussions to him (with respect to his job) if the market price drops—unless he did something illegal during his tenure as CEO.

**1-6** The four forms of business organization are sole proprietorships, partnerships, corporations, and limited liability corporations and partnerships. The advantages of the first two include the ease and low cost of formation. The advantages of corporations include limited liability, indefinite life, ease of ownership transfer, and access to capital markets. Limited liability companies and partnerships have limited liability like corporations.

The disadvantages of a sole proprietorship are (1) difficulty in obtaining large sums of capital; (2) unlimited personal liability for business debts; and (3) limited life. The disadvantages of a partnership are (1) unlimited liability, (2) limited life, (3) difficulty of transferring ownership, and (4) difficulty of raising large amounts of capital. The disadvantages of a corporation are (1) double taxation of earnings and (2) setting up a corporation and filing required state and federal reports, which are complex and time-consuming. Among the disadvantages of limited liability corporations and partnerships are difficulty in raising capital and the complexity of setting them up.

**1-8** Useful motivational tools that will aid in aligning stockholders’ and management’s interests include: (1) reasonable compensation packages, (2) direct intervention by shareholders, including firing managers who don’t perform well, and (3) the threat of takeover.

The compensation package should be sufficient to attract and retain able managers but not go beyond what is needed. Also, compensation packages should be structured so that managers are rewarded on the basis of the stock’s performance over the long run, not the stock’s price on an option exercise date. This means that options (or direct stock awards) should be phased in over a number of years so managers will have an incentive to keep the stock price high over time. Since intrinsic value is not observable, compensation must be based on the stock’s market price—but the price used should be an average over time rather than on a specific date.

Stockholders can intervene directly with managers. Today, the majority of stock is owned by institutional investors and these institutional money managers have the clout to exercise considerable influence over firms’ operations. First, they can talk with managers and make suggestions about how the business should be run. In effect, these institutional investors act as lobbyists for the body of stockholders. Second, any shareholder who has owned $2,000 of a company’s stock for one year can sponsor a proposal that must be voted on at the annual stockholders’ meeting, even if management opposes the proposal. Although shareholder-sponsored proposals are non-binding, the results of such votes are clearly heard by top management.

If a firm’s stock is undervalued, then corporate raiders will see it to be a bargain and will attempt to capture the firm in a hostile takeover. If the raid is successful, the target’s executives will almost certainly be fired. This situation gives managers a strong incentive to take actions to maximize their stock’s price.

**1-10 a.** No, TIAA-CREF is not an ordinary shareholder. Because it is one of the largest institutional shareholders in the United States and it controls more than $350 billion in pension funds, its voice carries a lot of weight. This “shareholder” in effect consists of many individual shareholders whose pensions are invested with this group.

**b.** For TIAA-CREF to be effective in wielding its weight, it must act as a coordinated unit. In order to do this, the fund’s managers should solicit from the individual shareholders their “votes” on the fund’s practices, and from those “votes” act on the majority’s wishes. In so doing, the individual teachers whose pensions are invested in the fund have, in effect, determined the fund’s voting practices.

**1-11** Earnings per share in the current year will decline due to the cost of the investment made in the current year and no significant performance impact in the short run. However, the company’s stock price should increase due to the significant cost savings expected in the future.

**Chapter 2**

**2-1** The prices of goods and services must cover their costs. Costs include labor, materials, and capital. Capital costs to a borrower include a return to the saver who supplied the capital, plus a mark-up (called a “spread”) for the financial intermediary that brings the saver and the borrower together. The more efficient the financial system, the lower the costs of intermediation, the lower the costs to the borrower, and, hence, the lower the prices of goods and services to consumers.

**2-2** In a well-functioning economy, capital will flow efficiently from those who supply capital to those who demand it. This transfer of capital can take place in three different ways:

1. Direct transfers of money and securities occur when a business sells its stocks or bonds directly to savers, without going through any type of financial institution. The business delivers its securities to savers, who in turn give the firm the money it needs.

2. Transfers may also go through an investment banking house which underwrites the issue. An underwriter serves as a middleman and facilitates the issuance of securities. The company sells its stocks or bonds to the investment bank, which in turn sells these same securities to savers. The businesses’ securities and the savers’ money merely “pass through” the investment banking house.

3. Transfers can also be made through a financial intermediary. Here the intermediary obtains funds from savers in exchange for its own securities. The intermediary uses this money to buy and hold businesses’ securities. Intermediaries literally create new forms of capital. The existence of intermediaries greatly increases the efficiency of money and capital markets.

**2-3** A primary market is the market in which corporations raise capital by issuing new securities. An initial public offering is a stock issue in which privately held firms go public. Therefore, an IPO would be an example of a primary market transaction.

**2-4** A money market transaction occurs in the financial market in which funds are borrowed or loaned for short periods (less than one year). A capital market transaction occurs in the financial market in which stocks and intermediate—or long-term debt (one year or longer)—are issued.

**a.** A U.S. Treasury bill is an example of a money market transaction.

**b.** Long-term corporate bonds are examples of capital market transactions.

**c.** Common stocks are examples of capital market transactions.

**d.** Preferred stocks are examples of capital market transactions.

**e.** Dealer commercial paper is an example of a money market transaction.

**2-5** If people lost faith in the safety of financial institutions, it would be difficult for firms to raise capital. Thus, capital investment would slow down, unemployment would rise, the output of goods and services would fall, and, in general, our standard of living would decline.

**2-6** Financial markets have experienced many changes during the last two decades. Technological advances in computers and telecommunications, along with the globalization of banking and commerce, have led to deregulation, and this has increased competition throughout the world. The result is a much more efficient, internationally linked market, but one that is far more complex than existed a few years ago. While these developments have been largely positive, they have also created problems for policy makers. Large amounts of capital move quickly around the world in response to changes in interest and exchange rates, and these movements can disrupt local institutions and economies. The subprime mortgage crisis illustrates how problems in one country quickly affect the economies of other nations.

Globalization has exposed the need for greater cooperation among regulators at the international level. Factors that complicate coordination include (1) the differing structures among nations’ banking and securities industries, (2) the trend in Europe toward financial services conglomerates, and (3) reluctance on the part of individual countries to give up control over their national monetary policies. Regulators are unanimous about the need to close the gaps in the supervision of worldwide markets.

Another important trend in recent years has been the increased use of derivatives. The market for derivatives has grown faster than any other market in recent years, providing corporations with new opportunities but also exposing them to new risks. Derivatives can be used either to reduce risks or to speculate. It’s not clear whether recent innovations have “increased or decreased the inherent stability of the financial system.”

**2-7** The physical location exchanges are tangible physical entities. Each of the larger ones occupies its own building, has a limited number of members, and has an elected governing body. A dealer market is defined to include all facilities that are needed to conduct security transactions not made on the physical location exchanges. These facilities include (1) the relatively few dealers who hold inventories of these securities and who are said to “make a market” in these securities; (2) the thousands of brokers who act as agents in bringing the dealers together with investors; and (3) the computers, terminals, and electronic networks that provide a communication link between dealers and brokers.

**2-8** The two leading stock markets today are the New York Stock Exchange (NYSE) and the Nasdaq stock market. The NYSE is a physical location exchange, while the Nasdaq is an electronic dealer-based market.

**2-9** There is an “efficiency continuum,” with the market for some companies’ stocks being highly efficient and the market for other stocks being highly inefficient. The key factor is the size of the company—the larger the firm, the more analysts tend to follow it and thus the faster new information is likely to be reflected in the stock’s price. Also, different companies communicate better with analysts and investors; and the better the communications, the more efficient the market for the stock.

Highly Inefficient

Highly Efficient

Small companies not followed by many analysts. Not much contact with investors.

Large companies followed by many analysts. Good communications with investors.

**2-10** **a.** False; derivatives can be used either to reduce risks or to speculate.

**b.** True; hedge funds have large minimum investments and are marketed to institutions and individuals with high net worths. Hedge funds take on risks that are considerably higher than that of an average individual stock or mutual fund.

**c.** False; hedge funds are largely unregulated because hedge funds target sophisticated investors.

**d.** True; the NYSE is a physical location exchange with a tangible physical location that conducts auction markets in designated securities.

**e.** False; a larger bid-ask spread means the dealer will realize a higher profit.

**Chapter 3**

**3-1** The four financial statements contained in most annual reports are the balance sheet, income statement, statement of stockholders’ equity, and statement of cash flows.

**3-2** Bankers and investors use financial statements to make intelligent decisions about what firms to extend credit or in which to invest, managers need financial statements to operate their businesses efficiently, and taxing authorities need them to assess taxes in a reasonable way.

**3-3** No, because the $20 million of retained earnings would probably not be held as cash. The retained earnings figure represents the reinvestment of earnings by the firm over its life. Consequently, the $20 million would be an investment in all of the firm’s assets.

**3-4** The balance sheet shows the firm’s financial position on a specific date, for example, December 31, 2011. It shows each account balance at that particular point in time. For example, the cash account shown on the balance sheet would represent the cash the firm has on hand and in the bank on December 31, 2011. The income statement, on the other hand, reports on the firm’s operations over a period of time, for example, over the last 12 months. It reports revenues and expenses that the firm has incurred over that particular time period. For example, the sales figures reported on the income statement for the period ending December 31, 2011, would represent the firm’s sales over the period from January 1, 2011, through December 31, 2011, not just sales for December 31, 2011.

**3-5** Investors need to be cautious when they review financial statements. While companies are required to follow GAAP, managers still have quite a lot of discretion in deciding how and when to report certain transactions. Consequently, two firms in exactly the same operating situation may report financial statements that convey different impressions about their financial strength. Some variations may stem from legitimate differences of opinion about the correct way to record transactions. In other cases, managers may choose to report numbers in a way that helps them present either higher earnings or more stable earnings over time. As long as they follow GAAP, such actions are not illegal, but these differences make it harder for investors to compare companies and gauge their true performances.

Unfortunately, there have also been cases where managers overstepped the bounds and reported fraudulent statements. Indeed, a number of high-profile executives have faced criminal charges because of their misleading accounting practices.

**3-6** **a.** No, the average American household’s financial position has declined over 2004–2009. Over this period of time, mortgage and installment loan balances increased, total assets decreased due to the decline in cash in bank accounts and the values of retirement savings and personal homes, and income has declined slightly.

**b.** As this text is being written (March 2010) unemployment is still on the rise and the number of foreclosures and bank-owned properties have flooded the supply of homes so home prices are still on the decline. Consequently, one would expect the average household’s financial position not to have improved from the 2009 numbers. In fact, one might even estimate a further decline. However, there are markets like the Midwest with stronger economies (agriculture and energy) where the situation has improved, so some experts are anticipating a more rosy picture in 2011. Only time will tell…

**3-7** Free cash flow is the amount of cash that could be withdrawn from the firm without harming its ability to operate and to produce future cash flows. It is calculated as after-tax operating income plus depreciation less capital expenditures and the change in net operating working capital. It is more important than net income because it shows the exact amount available to all investors (stockholders and debtholders). The value of a company’s operations depends on expected future free cash flows. Therefore, managers make their companies more valuable by increasing their free cash flow. Net income, on the other hand, reflects accounting profit but not cash flow. Therefore, investors ought to focus on cash flow rather than accounting profit.

**3-8** Yes. Negative free cash flow is not necessarily bad. Most rapidly growing companies have negative free cash flows because the fixed assets and working capital needed to support rapid growth generally exceed cash flows from existing operations. This is not bad, provided the new investments will eventually be profitable and they contribute to free cash flow.

**3-9** MVA is the difference between a firm’s market value and the book value of its equity. The higher a firm’s MVA, the better the job management is doing for the firm’s shareholders. EVA is the difference between a firm’s after-tax net operating profit and the annual dollar cost of capital.

Companies (through their managers) create value and realize positive EVA if the benefits of their investments exceed the cost of raising the necessary capital. If EVA is positive, then after-tax operating income exceeds the cost of the capital needed to produce that income, and management’s actions are adding value for stockholders. Positive EVA on an annual basis will help ensure that MVA is also positive.

**3-10** This statement means that the higher one’s income, the larger the percentage paid in taxes.

**3-11** Double taxation refers to the fact that corporate income is subject to an income tax, and then stockholders are subject to a further personal tax on dividends received. In fact, because of double taxation Congress was motivated to reduce the tax rate on dividends to the same rate as long-term capital gains. Beginning in 2013, the maximum tax rate on qualified dividends and long-term capital gains increased to 20% for single taxpayers with incomes over $400,000 and married taxpayers with incomes over $450,000. However, for most tax payers the top tax rate on qualified dividends and long-term capital gains is 15%.

Income could even be subject to triple taxation. Triple taxation occurs when (1) the original corporation is first taxed, (2) the second corporation is then taxed on the dividends it received, and (3) the individuals who receive the final dividends are taxed again. Therefore, corporations that receive dividend income can exclude some of the dividends from its taxable income. This provision in the Tax Code minimizes the amount of triple taxation that would otherwise occur.

# Solutions to End-of-Chapter Problems

**3-1** From the data given in the problem, we know the following:

Current assets $ 500,000c Accounts payable and accruals $ 100,000e

Net plant and equipment 2,000,000 Notes payable 150,000

 Current liabilities $ 250,000d

 Long-term debt 750,000

                  Total common equity 1,500,000

Total assets $2,500,000 Total liabilities and equity $2,500,000b

Note: Superscripts correspond to parts below.

**a.** Total debt = Short-term debt + Long-term debt

Total debt = $150,000 + $750,000

Total debt = $900,000.

**b.** We are given that the firm’s total assets equal $2,500,000. Since both sides of the balance sheet must equal, total liabilities and equity must equal total assets = $2,500,000.

**c.** Total assets = Current assets + Net plant and equipment

 $2,500,000 = Current assets + $2,000,000

 Current assets = $2,500,000 – $2,000,000

 Current assets = $500,000.

**d.** Total liabilities and equity = Current liabilities + Long-term debt + Total common equity

 $2,500,000 = Current liabilities + $750,000 + $1,500,000

 $2,500,000 = Current liabilities + $2,250,000

 Current liabilities = $2,500,000 – $2,250,000

 Current liabilities = $250,000.

**e.** Current liabilities = Accounts payable and accruals + Notes payable

 $250,000 = Accounts payable and accruals + $150,000

 Accounts payable and accruals = $250,000 – $150,000

 Accounts payable and accruals = $100,000.

**f.** Net working capital = Current assets – Current liabilities

 Net working capital = $500,000 – $250,000

 Net working capital = $250,000.

**g.** Net operating working capital = Current assets – (Current liabilities – Notes payable)

 Net operating working capital = $500,000 – ($250,000 – $150,000)

 Net operating working capital = $400,000.

**h.** NOWC – NWC = $400,000 – $250,000

NOWC – NWC = $150,000.

 The difference between the two is equal to the notes payable balance.

**3-2** NI = $3,000,000; EBIT = $6,000,000; T = 40%; Interest = ?

Need to set up an income statement and work from the bottom up.

EBIT $6,000,000



Interest 1,000,000

EBT $5,000,000 EBT =

Taxes (40%) 2,000,000

NI $3,000,000

Interest = EBIT – EBT = $6,000,000 – $5,000,000 = $1,000,000.

**3-3** EBITDA $7,500,000 (Given)

Depreciation 2,500,000 Deprec. = EBITDA – EBIT = $7,500,000 – $5,000,000

EBIT $5,000,000 EBIT = EBT + Int = $3,000,000 + $2,000,000

Interest 2,000,000 (Given)



EBT $3,000,000

Taxes (40%) 1,200,000 Taxes = EBT × Tax rate

NI $1,800,000 (Given)

**3-4** NI = $50,000,000; R/EY/E = $810,000,000; R/EB/Y = $780,000,000; Dividends = ?

 R/EB/Y + NI – Div = R/EY/E

 $780,000,000 + $50,000,000 – Div = $810,000,000

 $830,000,000 – Div = $810,000,000

 $20,000,000 = Div.

**3-5** MVA = (P0 × Number of common shares) − BV of common equity

$130,000,000 = $60X − $500,000,000

$630,000,000 = $60X

 X = 10,500,000 common shares.

**3-6** Book value of equity = $35,000,000.

Price per share (P0) = $30.00.

Common shares outstanding = 2,000,000 shares.

Market value of equity = P0 × Common shares outstanding

 = $30 × 2,000,000

 = $60,000,000.

MVA = Market value of equity – Book value of equity

 = $60,000,000 – $35,000,000

 = $25,000,000.

**3-7** EVA = EBIT(1 – T) – 

EVA = $3,000,000(0.6) – [$20,000,000 × 0.08]

EVA = $1,800,000 – $1,600,000

EVA = $200,000.

**3-8** Statements b and d will decrease the amount of cash on a company’s balance sheet. Statement a will increase cash through the sale of common stock. Selling stock provides cash through financing activities. On one hand, Statement c would decrease cash; however, it is also possible that Statement c would increase cash, if the firm receives a tax refund for taxes paid in a prior year.

**3-10** Tax rate 35%

After-tax % cost of capital 9%

Total invested capital $15,000,000

Sales $22,500,000

Operating costs (including depreciation) 18,000,000

EBIT $ 4,500,000

EVA = (EBIT)(1 – T) − (Total invested capital)(After-tax % cost of capital)

 = $4,500,000(0.65) – ($15,000,000)(0.09)

 = $2,925,000 − $1,350,000

 = $1,575,000.

**3-13** **a.** NOWC2013 = Total CA – (Current liabilities – Notes payable)

 = $59,000 – ($20,150 – $5,150)

 = $44,000.

NOWC2014 = $72,125 – ($25,100 – $6,700)

 = $53,725.

**b.** FCF2014 = [EBIT(1 – T) + Deprec.] – [Capital expenditures + ΔNOWC]

 = [$39,000(1 – 0.4) + $5,000] – [$8,000 + $9,725]

 = $10,675.

 Note: To arrive at capital expenditures you add depreciation to the change in net FA, so
Capital expenditures = $5,000 + $3,000 = $8,000.

**c.**  Statement of Stockholders’ Equity, 2014

 Common Stock Retained Total Stockholders’

 Shares Amount Earnings Equity

Balances, 12/31/13 5,000 $50,000 $20,850 $70,850

2014 Net income 22,350

Cash dividends (11,175)

Addition (Subtraction)

 to retained earnings             11,175

Balances, 12/31/14 5,000 $50,000 $32,025 $82,025

**d.** From Bailey’s 2014 financial statements, you can determine EBIT = $39,000 and Tax rate = 40%. NOWC2014 was calculated in Part a.

Total invested capital2014 = Notes payable + Long-term debt + Common equity

 = $6,700 + $15,000 + $82,025

 = $103,725.

After-tax % cost of capital = 10% (given in problem)

EVA = EBIT(1 – T) – (Total invested capital)( After-tax % cost of capital)

 = $39,000(0.6) – ($103,725)(0.10)

 = $23,400 – $10,372.50

 = $13,027.50.

**e.** MVA = (P0 × Number of shares outstanding) – BV of common equity

MVA = ($20 × $5,000) – $82,025

MVA = $100,000 – $82,025

MVA = $17,975.

**Chapter 4**

**4-1** DSO = 40 days; S = $7,300,000; AR = ?

 DSO = 

 40 = 

 40 = AR/$20,000

 AR = $800,000.

**4-2** Since the firm’s M/B ratio = 1, then its total market value of equity is equal to its book value of equity.

Common equity = $14 × 5,000,000 shares = $70,000,000.

 Total invested capital = Debt + Equity

 $125,000,000 = Debt + $70,000,000

 Debt = $55,000,000.

 Total debt to total capital = 

 = 

 = 44%.

**4-3** ROA = 10%; PM = 2%; ROE = 15%; S/TA = ?; TA/E = ?

ROA = NI/TA; PM = NI/S; ROE = NI/E.

 ROA = PM × S/TA

 NI/TA = NI/S × S/TA

 10% = 2% × S/TA

 S/TA = 5.

 ROE = PM × S/TA × TA/E

 NI/E = NI/S × S/TA × TA/E

 15% = 2% × 5 × TA/E

 15% = 10% × TA/E

 TA/E = 1.5.

**4-4** TA = $10,000,000,000; CL = $1,000,000,000; LT debt = $3,000,000,000; CE = $6,000,000,000; Shares outstanding = 800,000,000; P0 = $32; M/B = ?

Book value =  = $7.50.

M/B =  = 4.2667.

**4-5** EPS = $2.00; BVPS = $20; M/B = 1.2×; P/E = ?

 M/B = 1.2×

 P/$20 = 1.2×

 P = $24.00.

P/E = $24.00/$2.00 = 12.0×.

**4-6** NI/S = 2%; TA/E = 2.0; Sales = $100,000,000; Assets = $50,000,000; ROE = ?

ROE = NI/S × S/TA × TA/E

 = 2% × $100,000,000/$50,000,000 × 2

 = 8%.

**4-7** Given: Net income = $25,000; Common equity = $250,000

ROE = 

 =  = 10%.

To calculate ROIC we need to find EBIT and total invested capital.

Step 1: To calculate EBIT, we use the income statement and calculate up the income statement beginning with net income as follows:

EBIT $46,667 EBT + Int = $41,677 + $5,000

Interest 5,000 Given

EBT $41,667 NI/(1 – T) = $25,000/0.6

Taxes (40%) 16,667 EBT × T = $41,667 × 0.4

Net income $25,000 Given

Step 2: Calculate total invested capital as follows:

Notes payable $ 25,000

Long-term debt 75,000

Common equity 250,000

Total invested capital $350,000

Step 3: Calculate ROIC as follows:

ROIC = 

 = 

  = 8%.

**4-8** Step 1: Calculate total assets from information given.

Sales = $6 million.

 3.2× = Sales/TA

 3.2× = 

 Assets = $1,875,000.

Step 2: Calculate net income.

Equity = 0.5 × Total assets = 0.5 × $1,875,000 = $937,500.

 ROE = NI/S × S/TA × TA/E

 0.12 = NI/$6,000,000 × 3.2 × $1,875,000/$937,500

 0.12 = 

 $720,000 = 6.4NI

 $112,500 = NI.

**4-9** *Calculate BEP:*

ROA = 8%; Net income = $600,000; TA = ?

ROA = 

 8% = 

 TA = $7,500,000.

To calculate BEP, we still need EBIT. To calculate EBIT construct a partial income statement:

EBIT $1,148,077 $225,000 + $923,077

Interest 225,000 (Given)

EBT $ 923,077 $600,000/0.65

Taxes (35%) 323,077

NI $ 600,000

BEP = 

 = 

 = 0.1531 = 15.31%.

*Calculate ROE:*

We need to determine common equity from total assets calculated above and the accounts payable and accrual balance given in the problem.

Accounts payable and accruals $1,000,000

Debt ?

Equity ?

 Total claims = Total assets $7,500,000

Therefore, Debt + Equity = $6,500,000 = Total invested capital.

Debt = 0.4 × Total invested capital

 = 0.4 × $6,500,000

 = $2,600,000.

Equity = 0.6 × Total invested capital

 = 0.6 × $6,500,000

 = $3,900,000.

Now, we can calculate ROE as follows:

ROE =  =  = 15.38%.

*Calculate ROIC:*

All the data needed in this calculation has already been determined, so just insert the numbers into the equation:

ROIC =  =  = 11.48%.

**4-10** Stockholders’ equity = $3,750,000,000; M/B = 1.9; P = ?

Total market value = $3,750,000,000(1.9) = $7,125,000,000.

Market value per share = $7,125,000,000/50,000,000 = $142.50.

Alternative solution:

Stockholders’ equity = $3,750,000,000; Shares outstanding = 50,000,000; P = ?

Book value per share = $3,750,000,000/50,000,000 = $75.

Market value per share = $75(1.9) = $142.50.

**4-11** We are given ROA = 3% and Sales/Total assets = 1.5×.

From the DuPont equation:

 ROA = Profit margin × Total assets turnover

 3% = Profit margin(1.5)

 Profit margin = 3%/1.5 = 2%.

Using the DuPont equation:

 ROE = ROA × TA/E

 5% = 3% × TA/E

 TA/E = 5%/3% = 5/3.

Take reciprocal:

E/TA = 3/5 = 60%; since total assets = total invested capital, Equity/Total capital = 60%.

Therefore, Debt/Total invested capital = 1 – 0.6 = 40%.

Thus, the firm’s profit margin = 2% and its debt-to-capital ratio = 40%.

**4-12** TA = $12,000,000,000; T = 40%; EBIT/TA = 15%; ROA = 5%; TIE = ?

 = 0.15

 EBIT = $1,800,000,000.

 = 0.05

 NI = $600,000,000.

Now use the income statement format to determine interest so you can calculate the firm’s TIE ratio.

INT = EBIT – EBT

 = $1,800,000,000 – $1,000,000,000

EBIT $1,800,000,000 See above.

INT 800,000,000

EBT $1,000,000,000 EBT = $600,000,000/0.6

Taxes (40%) 400,000,000

NI $ 600,000,000 See above.

TIE = EBIT/INT

 = $1,800,000,000/$800,000,000

 = 2.25×.

**4-13** *Calculate TIE:*

TIE = EBIT/INT, so find EBIT and INT.

Interest = $500,000 × 0.1 = $50,000.

Net income = $2,000,000 × 0.05 = $100,000.

Pre-tax income (EBT) = $100,000/(1 – T) = $100,000/0.7 = $142,857.

EBIT = EBT + Interest = $142,857 + $50,000 = $192,857.

TIE = $192,857/$50,000 = 3.86×.

*Calculate ROIC:*

Total invested capital = Debt + Equity

 = $500,000 + $700,000

 = $1,200,000.

ROIC = 

 = 

 = 11.25%.

Thus, the firm’s TIE = 3.86× and its ROIC = 11.25%.

**4-14** ROE = Profit margin × TA turnover × Equity multiplier

 = NI/Sales × Sales/TA × TA/Equity.

Now we need to determine the inputs for the DuPont equation from the data that were given. On the left we set up an income statement, and we substitute values on the right:

Sales (given) $10,000,000

– Cost na

EBIT (given) $ 1,000,000

– INT (given) 300,000

EBT $ 700,000

– Taxes (34%) 238,000

NI $ 462,000

Now we can use some ratios to get additional data:

Total assets turnover = 2 = S/TA; TA = S/2 = $10,000,000/2 = $5,000,000.

Since total assets = total invested capital, total invested capital = $5,000,000.

Debt/Total invested capital = 60%; so Equity/Total invested capital = Equity/Total assets = 40%; and therefore,

Equity multiplier = TA/E = 1/(E/A) = 1/0.4 = 2.5.

Now we can complete the DuPont equation to determine ROE:

ROE = $462,000/$10,000,000 × $10,000,000/$5,000,000 × 2.5 = 0.231 = 23.1%.

**4-23 a.** (Dollar amounts in thousands.)

 Industry

 Firm Average

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | = |  | = |  | = | 1.98× | 2.0× |
|  | = |  | = |  | = | 1.25× | 1.3× |
| DSO | = |  | = |  | = | 76.3 days | 35 days |
|  | = |  | = |  | = | 6.66× | 6.7× |
|  | = |  | = |  | = | 1.70× | 3.0× |
|  | = |  | = |  | = | 1.7% | 1.2% |
| ROA | = |  | = |  | = | 2.9% | 3.6% |
| ROE | = |  | = |  | = | 7.6% | 9.0% |
|  | = |  | = |  | = | 61.9% | 60.0% |

**b.** For the firm,

ROE = PM × T.A. turnover × EM = 1.7% × 1.7 ×  = 7.6%.

For the industry, ROE = 1.2% × 3 × 2.5 = 9%.

Note: To find the industry ratio of assets to common equity, recognize that 1 – (Total debt/Total assets) = Common equity/Total assets. So, Common equity/Total assets = 40%, and 1/0.40 = 2.5 = Total assets/Common equity.

**c.** The firm’s days sales outstanding ratio is more than twice as long as the industry average, indicating that the firm should tighten credit or enforce a more stringent collection policy. The total assets turnover ratio is well below the industry average so sales should be increased, assets decreased, or both. While the company’s profit margin is higher than the industry average, its other profitability ratios are low compared to the industry—net income should be higher given the amount of equity and assets. However, the company seems to be in an average liquidity position and financial leverage is similar to others in the industry.

**d.** If 2011 represents a period of supernormal growth for the firm, ratios based on this year will be distorted and a comparison between them and industry averages will have little meaning. Potential investors who look only at 2011 ratios will be misled, and a return to normal conditions in 2012 could hurt the firm’s stock price.