

Chapter 2

Financial Statements, Cash Flow, and Taxes

ANSWERS TO SELECTED END-OF-CHAPTER QUESTIONS

- 2-1 a. The annual report is a report issued annually by a corporation to its stockholders. It contains basic financial statements, as well as management's opinion of the past year's operations and the firm's future prospects. A firm's balance sheet is a statement of the firm's financial position at a specific point in time. It specifically lists the firm's assets on the left-hand side of the balance sheet, while the right-hand side shows its liabilities and equity, or the claims against these assets. An income statement is a statement summarizing the firm's revenues and expenses over an accounting period. Net sales are shown at the top of each statement, after which various costs, including income taxes, are subtracted to obtain the net income available to common stockholders. The bottom of the statement reports earnings and dividends per share.
- b. Common Stockholders' Equity (Net Worth) is the capital supplied by common stockholders--capital stock, paid-in capital, retained earnings, and, occasionally, certain reserves. Paid-in capital is the difference between the stock's par value and what stockholders paid when they bought newly issued shares. Retained earnings is the portion of the firm's earnings that have been saved rather than paid out as dividends.
- c. The statement of retained earnings shows how much of the firm's earnings were retained in the business rather than paid out in dividends. Note that retained earnings represents a claim against assets, not assets per se. Firms retain earnings primarily to expand the business, not to accumulate cash in a bank account. The statement of cash flows reports the impact of a firm's operating, investing, and financing activities on cash flows over an accounting period.
- d. Depreciation is a non-cash charge against tangible assets, such as buildings or machines. It is taken for the purpose of showing an asset's estimated dollar cost of the capital equipment used up in the production process. Amortization is a non-cash charge against intangible assets, such as goodwill. EBITDA is earnings before interest, taxes, depreciation, and amortization.
- e. Operating current assets are the current assets used to support operations, such as cash, accounts receivable, and inventory. It does not include short-term investments. Operating current liabilities are the current liabilities that are a natural consequence of the firm's operations, such as accounts payable and accruals. It does not include notes payable or any other short-term debt that charges interest. Net

- operating working capital is operating current minus operating current liabilities. Operating capital is sum of net operating working capital and operating long-term assets, such as net plant and equipment. Operating capital also is equal to the net amount of capital raised from investors. This is the amount of interest-bearing debt plus preferred stock plus common equity minus short-term investments.
- f. Accounting profit is a firm's net income as reported on its income statement. Net cash flow, as opposed to accounting net income, is the sum of net income plus non-cash adjustments. Operating cash is defined as the difference between sales revenues and cash operating expenses, after taxes on operating income. NOPAT, net operating profit after taxes, is the amount of profit a company would generate if it had no debt and no financial assets. Free cash flow is the cash flow actually available for distribution to investors after the company has made all investments in fixed assets and working capital necessary to sustain ongoing operations.
 - g. Market value added is the difference between the market value of the firm (i.e., the sum of the market value of common equity, the market value of debt, and the market value of preferred stock) and the book value of the firm's common equity, debt, and preferred stock. If the book values of debt and preferred stock are equal to their market values, then MVA is also equal to the difference between the market value of equity and the amount of equity capital that investors supplied. Economic value added represents the residual income that remains after the cost of all capital, including equity capital, has been deducted.
 - i. Marginal tax rate is defined as the tax rate on the last unit of income. Average tax rate is calculated by taking the total amount of tax paid divided by taxable income.
 - k. Capital gain (loss) is the profit (loss) from the sale of a capital asset for more (less) than its purchase price.
 - l. Ordinary corporate operating losses can be carried backward for 2 years or forward for 20 years to offset taxable income in a given year.
 - n. An S corporation is a small corporation which, under Subchapter S of the Internal Revenue Code, elects to be taxed as a proprietorship or a partnership yet retains limited liability and other benefits of the corporate form of organization.
- 2-2 The four financial statements contained in most annual reports are the balance sheet, income statement, statement of retained earnings, and statement of cash flows.
- 2-3 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. Consequently, the \$20 million would be an investment in all of the firm's assets.

2-4 The balance sheet shows the firm's financial position on a specific date, for example, December 31, 2001. 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, 2001. 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, 2001, would represent the firm's sales over the period from January 1, 2001, through December 31, 2001, not just sales for December 31, 2001.

2-5 The emphasis in accounting is on the determination of accounting income, or net income, while the emphasis in finance is on net cash flow. Net cash flow is the actual net cash that a firm generates during some specified period. The value of an asset (or firm) is determined by the cash flows generated. Cash is necessary to purchase assets to continue operations and to pay dividends. Thus, financial managers should strive to maximize cash flows available to investors over the long run.

Although companies with relatively high accounting profits generally have a relatively high cash flow, the relationship is not precise. A business's net cash flow generally differs from net income because some of the expenses and revenues listed on the income statement are not paid out or received in cash during the year. The relationship between net cash flow and net income can be expressed as:

$$\text{Net cash flow} = \text{Net income} + \text{Non-cash charges} - \text{Non-cash revenues.}$$

The primary example of non-cash charges is depreciation. This item reduces net income but is not paid out in cash, so we add it back to net income when calculating net cash flow. Likewise, some revenues may not be collected in cash during the year, and these items must be subtracted from net income when calculating net cash flow. Typically, though, depreciation represents the largest non-cash item, and other items generally net to zero. Therefore, unless otherwise indicated, we will assume that non-cash items other than depreciation sum to zero. Given this assumption, net cash flow is equal to net income plus depreciation.

2-6 Operating cash flow arises from normal, ongoing operations, whereas net cash flow reflects both operating and financing decisions. Thus, operating cash flow is defined as the difference between sales revenues and operating expenses paid, after taxes on operating income. Operating cash flow can be calculated as follows:

$$\text{Operating cash flow} = \text{Operating income} (1 - T) + \text{Depreciation.}$$

Note that net cash flow also can be calculated as follows:

$$\text{Net cash flow} = \text{Operating cash flow} - (\text{Interest charges})(1 - T).$$

- 2-7 Accountants translate physical quantities into numbers when they construct the financial statements. The numbers shown on balance sheets generally represent historical costs. When examining a set of financial statements, one should keep in mind the physical reality that lies behind the numbers, and the fact that the translation from physical assets to numbers is far from precise.
- 2-8 Investors (both debt and equity investors) use financial statements to make intelligent decisions about what firms to invest in, managers need financial statements to operate their businesses, and taxing authorities need them to assess taxes.
- 2-9 Operating capital is the amount of interest bearing debt, preferred stock, and common equity used to acquire the company's net operating assets. Without this capital a firm cannot exist, as there is no source of funds with which to finance operations.
- 2-10 NOPAT is the amount of net income a company would generate if it had no debt and held no financial assets. NOPAT is a better measure of the performance of a company's operations because debt lowers income. In order to get a true reflection of a company's operating performance, one would want to take out debt to get a clearer picture of the situation.
- 2-11 Free cash flow is the cash flow actually available for distribution to investors after the company has made all the investments in fixed assets and working capital necessary to sustain ongoing operations. It is the most important measure of cash flows because it shows the exact amount available to all investors.
- 2-12 There are two principal ways that the tax code discourages corporations from paying high dividends to their shareholders. First, since corporations pay dividends out of earnings that have already been taxed, there is *double taxation* of corporate income--income is first taxed at the corporate rate, and when what is left is paid out as dividends, it is taxed again at the personal rate. Second, since capital gains are taxed only when they are received, the tax laws favor retention of earnings for an investor who doesn't need current income. In addition, capital gains are taxed at a maximum rate of 28 percent, so for taxpayers in the high tax brackets the tax law again favors retention of earnings.
- 2-13 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.
- 2-14 If the business were organized as a partnership or a proprietorship, its income could be taken out by the owners without being subject to double taxation. Also, if you expected to have losses for a few years while the company was getting started, if you were *not* incorporated, and if you had outside income, the business losses could be used to offset your other income and reduce your total tax bill. These factors would lead you to *not* incorporate the business. An alternative would be to organize as an S Corporation, if requirements are met.

- 2-15 Because interest paid is tax deductible but dividend payments are not, the after-tax cost of debt is lower than the after-tax cost of equity. This encourages the use of debt rather than equity. This point is discussed in detail in Chapters 10 and 15.
- 2-16 The appropriate tax rate depends on the owner's situation. If the owner has substantial other income, then the major concern would be the business's marginal contribution to taxes, so the marginal tax rate would be more relevant. Conversely, if there were no outside income, the average tax rate would be more relevant.

SOLUTIONS TO END-OF-CHAPTER PROBLEMS

- 2-1 NI = \$3,000,000; EBIT = \$6,000,000; T = 40%; I = ?
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	$EBT = \frac{\$3,000,000}{(1 - T)} = \frac{\$3,000,000}{0.6}$
Taxes (40%)	2,000,000	
NI	\$3,000,000	

$$\text{Interest} = \text{EBIT} - \text{EBT} = \$6,000,000 - \$5,000,000 = \$1,000,000.$$

- 2-2 NI = \$3,100,000; DEP = \$500,000
NCF = NI + DEP = \$3,100,000 + \$500,000 = \$3,600,000.

- 2-3 Corporate yield = 9%; T = 36%
AT yield = $9\%(1 - T)$
= $9\%(0.64) = 5.76\%$.

- 2-4 Married Taxable Income = \$97,000. Federal taxes = ?
Taxes = $\$6,577.5 + (\$97,000 - \$43,850)0.28$
= $\$6,577.5 + (\$53,150)0.28$
= \$21,459.5.

- 2-5 Corporate bond yields 8%. Municipal bond yields 6%.

$$\text{Equivalent pretax yield on taxable bond} = \frac{\text{Yield on muni}}{(1 - T)}$$

$$8\% = \frac{6\%}{(1 - T)}$$

$$0.08 - 0.08T = 0.06$$

$$- 0.08T = -0.02$$

$$T = 25\%$$

2-6	Income	\$365,000
	Less Interest deduction	(50,000)
	Plus: Dividends received ^a	<u>4,500</u>
	Taxable income	<u>\$319,500</u>

^aFor a corporation, 70% of dividends received are excluded from taxes; therefore, taxable dividends are calculated as $\$15,000(1 - 0.70) = \$4,500$.

Tax = $\$22,250 + (\$319,500 - \$100,000)(0.39) = \$22,250 + \$85,605 = \$107,855$.

After-tax income:

Taxable income	\$319,500
Taxes	(107,855)
Plus Non-taxable dividends received ^b	<u>10,500</u>
Net income	<u>\$222,145</u>

^bNon-taxable dividends are calculated as $\$15,000 \times 0.7 = \$10,500$.

The company's marginal tax rate is 39 percent. The company's average tax rate is $\$107,855/\$319,500 = 33.76\%$.

2-7 a. Tax = $\$3,400,000 + (\$10,500,000 - \$10,000,000)(0.35) = \$3,575,000$.

b. Tax = $\$1,000,000(0.35) = \$350,000$.

c. Tax = $(\$1,000,000)0.30(0.35) = \$105,000$.

2-8 A-T yield on FLA bond = 5%.

A-T yield on AT&T bond = $7.5\% - \text{Taxes} = 7.5\% - 7.5\%(0.35) = 4.875\%$.

Check: Invest $\$10,000 @ 7.5\% = \750 interest.

Pay 35% tax, so A-T income = $\$750(1 - T) = \$750(0.65) = \$487.50$.

A-T rate of return = $\$487.50/\$10,000 = 4.875\%$.

A-T yield on AT&T preferred stock:

$$A-T \text{ yield} = 6\% - \text{Taxes} = 6\% - 0.3(6\%)(0.35) = 6\% - 0.63\% = 5.37\%.$$

Therefore, invest in AT&T preferred stock. We could make this a harder problem by asking for the tax rate that would cause the company to prefer the Florida bond or the AT&T bond.

2-9 Compare the after-tax returns of the two investments:

$$\text{Corporate bond} = 0.09(1 - 0.36) = 0.0576 = 5.76\%.$$

Municipal bond = 0.07 = 7%; therefore, choose the municipal bond over the corporate bond.

2-10 EBIT = \$750,000; DEP = \$200,000; 100% Equity; T = 40%
 NI = ?; NCF = ?; OCF = ?

First, determine net income by setting up an income statement:

EBIT	\$750,000
Interest	<u>0</u>
EBT	\$750,000
Taxes (40%)	<u>300,000</u>
NI	<u><u>\$450,000</u></u>

$$NCF = NI + DEP = \$450,000 + \$200,000 = \$650,000.$$

$$OCF = EBIT(1 - T) + DEP = \$750,000(0.6) + \$200,000 = \$650,000.$$

Note that NCF = OCF because the firm is 100% equity financed.

2-11 Statements b, c, and d will all decrease the amount of cash on a company's balance sheet, while statement a will increase cash through the sale of common stock. This is a source of cash through financing activities.

2-12 a. Because we're interested in net cash flow available to common stockholders, we exclude common dividends paid.

$$\begin{aligned} CF_{01} &= \text{NI available to common stockholders} + \text{Depreciation} \\ &= \$364 + \$220 = \$584. \end{aligned}$$

The net cash flow number is larger than net income by the current year's depreciation expense, which is a noncash charge.

b. Balance of RE, December 31, 2000	\$1,302
Add: NI, 2001	364
Less: Div. paid to common stockholders	<u>(146)</u>
Balance of RE, December 31, 2001	<u><u>\$1,520</u></u>

c. \$1,520 million.

d. Cash + equivalents = \$15 million.

e. Total current liabilities = \$620 million.

2-17 2002 tax = \$0, since the firm had a loss. The \$95,000,000 loss will be used to offset future income.

2003 tax = \$0; \$70,000,000 income offset by \$70,000,000 of 2002 loss.

2004 taxable income is reduced by remaining \$25,000,000 of 2002 loss, so 2004 taxable income = \$55,000,000 - \$25,000,000 = \$30,000,000, and 2004 tax = (0.40)(\$30,000,000) = \$12,000,000.

2005 tax = \$80,000,000 x 0.4 = \$32,000,000.

2006 tax = \$0; \$110,000,000 of loss can be carried back to offset income from 2004 and 2005, reducing taxes in those years to \$0. The firm will get a refund of \$12,000,000 + \$32,000,000 = \$44,000,000 for taxes paid in those years. The remaining \$40,000,000 loss can be carried forward.

2-18 a.	<u>2002</u>	<u>2003</u>	<u>2004</u>
Taxes as a corporation:			
Income before salary & taxes	\$70,000	\$95,000	\$110,000
Less salary	<u>(52,000)</u>	<u>(52,000)</u>	<u>(52,000)</u>
Taxable income, corporate	<u>\$18,000</u>	<u>\$43,000</u>	<u>\$ 58,000</u>
Total corporate tax	<u>\$ 2,700</u>	<u>\$ 6,450</u>	<u>\$ 9,500</u>
Salary			
Less exemptions & deductions	<u>(19,800)</u>	<u>(19,800)</u>	<u>(19,800)</u>
Taxable personal income	<u>\$32,200</u>	<u>\$32,200</u>	<u>\$32,200</u>
Total personal tax	<u>\$ 4,830</u>	<u>\$ 4,830</u>	<u>\$ 4,830</u>
Combined corp. & personal tax	<u>\$ 7,530</u>	<u>\$11,280</u>	<u>\$ 14,330</u>
Taxes as a proprietorship:			
Total income	\$70,000.0	\$95,000.0	\$110,000.0
Less exemptions & deductions	<u>(19,800.0)</u>	<u>(19,800.0)</u>	<u>(19,800.0)</u>
Taxable personal income	<u>\$50,200.0</u>	<u>\$75,200.0</u>	<u>\$ 90,200.0</u>
Total proprietorship tax	<u>\$ 8,355.5</u>	<u>\$15,355.5</u>	<u>\$ 19,555.5</u>
Advantage to corporation	<u>\$ 825.5</u>	<u>\$ 4,075.5</u>	<u>\$ 5,225.5</u>

b. On the basis of these figures, Visscher should incorporate, since her expected tax liability is less each year as a corporation and since she plans to retain all income in excess of her salary in the business. However, if Visscher planned to withdraw earnings in the future, she would have to consider the effects of double taxation on dividends she would receive when she withdrew earnings. Of course, Visscher could avoid double taxation simply by raising her salary.

2-19 a. Calculation of gross income:

	<u>1998</u>
Salary	\$ 82,000
Dividend Income	12,000
Interest Income (corp. bonds only)	5,000
ST capital gains	<u>1,000</u>
Gross Income	
(excluding LT capital gains)	<u>\$100,000</u>
LT capital gains**	\$ 13,000
**Applicable tax rate = 20%.	

Calculation of taxable income:

Gross income	\$100,000
Exemption	(2,800)
Deductions	<u>(4,900)</u>
Taxable income	
(excluding LT capital gains)	<u>\$ 92,300</u>
Personal tax	<u>\$ 22,682</u>

$$\begin{aligned} \text{Tax} &= \$14,381.50 + (\$92,300 - \$63,550)(0.31) + \$13,000(0.20) \\ &= \$14,138.50 + \$8,912.50 + \$2,600 = \$25,894.00. \end{aligned}$$

b. Marginal tax rate = 31%.

Average tax rate = $\$25,894.00 / \$105,300^* = 24.6\%$. One could argue that the average rate is really lower, because the base should consider the deductions and exemptions.

*Includes \$13,000 long-term capital gain; $(\$92,300 + \$13,000 = \$105,300)$.

c. After-tax returns:

$$\begin{aligned} \text{Disney} &= (0.08)(\$5,000) - (0.31)(\$5,000)(0.08) = \$276. \\ \text{FLA} &= (0.06)(\$5,000) - 0 = \$300. \end{aligned}$$

Viewed another way, the Disney bonds provide an after-tax yield of

$$8\%(1 - T) = 8\%(1 - 0.31) = 8\%(0.69) = 5.52\%.$$

The Florida bonds provide an after-tax yield of 6 percent; hence they are better for her.

d. $6\% = 8\%(1 - T)$. Now solve for T:

$$\begin{aligned} 6 &= 8 - 8T \\ 8T &= 2 \\ T &= 2/8 = 25\%. \end{aligned}$$

At a tax rate less than 25%, Mary would be better off holding 8% taxable bonds, but at a tax rate over 25%, she would be better off holding tax-exempt municipal bonds. Given our progressive tax rate system, it makes sense for wealthy people to hold tax-exempt bonds, but not for those with lower incomes and consequently lower tax rates.