

## Chapter 2

### Financial Statements, Cash Flow, and Taxes

#### ANSWERS TO END-OF-CHAPTER QUESTIONS

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- 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 stockholders' equity shows how much of the firm's earnings were retained in the business rather than paid out in dividends. It also shows the resulting balance of the retained earnings account and the stockholders' equity account. 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 assets minus operating current liabilities. Total net 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. 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.
- h. A progressive tax means the higher one's income, the larger the percentage paid in taxes. Taxable income is defined as gross income less a set of exemptions and deductions which are spelled out in the instructions to the tax forms individuals must file. 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.
- i. Capital gain (loss) is the profit (loss) from the sale of a capital asset for more (less) than its purchase price. Ordinary corporate operating losses can be carried backward for 2 years or forward for 20 years to offset taxable income in a given year.

- j. Improper accumulation is the retention of earnings by a business for the purpose of enabling stockholders to avoid personal income taxes on dividends. 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 stockholders' equity, and statement of cash flows.
- 2-3 No, because the \$20 million of retained earnings doesn't mean the company has \$20 million in cash. The retained earnings figure represents cumulative amount of net income that the firm has not paid out as dividends during its entire history. Thus, most of the reinvested earnings were probably spent on the firm's operating assets, such as buildings and equipment.
- 2-5 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.
- 2-6 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.
- 2-7 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.
- 2-8 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.

## SOLUTIONS TO END-OF-CHAPTER PROBLEMS

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- 2-1 Corporate yield = 9%; T = 35.5%  
 AT yield =  $9\%(1 - T)$   
 $= 9\%(0.645) = 5.76\%$ .

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

$$\begin{aligned} \text{Equivalent pretax yield on taxable bond} &= \frac{\text{Yield on muni}}{(1 - T)} \\ 8\% &= \frac{6\%}{(1 - T)} \\ 0.08 - 0.08T &= 0.06 \\ -0.08T &= -0.02 \\ T &= 25\%. \end{aligned}$$

- 2-3 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    | <u>1,000,000</u>   |                                                               |
| EBT         | \$5,000,000        | $EBT = \frac{\$3,000,000}{(1 - T)} = \frac{\$3,000,000}{0.6}$ |
| Taxes (40%) | <u>2,000,000</u>   |                                                               |
| NI          | <u>\$3,000,000</u> |                                                               |

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

- 2-4 EBITDA = \$7,500,000; NI = \$1,800,000; Int = \$2,000,000; T = 40%; DA = ?

|             |                    |                                                                 |
|-------------|--------------------|-----------------------------------------------------------------|
| EBITDA      | \$7,500,000        |                                                                 |
| DA          | <u>2,500,000</u>   | EBITDA - DA = EBIT; DA = EBITDA - EBIT                          |
| EBIT        | \$5,000,000        | EBIT = EBT + Int = \$3,000,000 + \$2,000,000                    |
| Int         | <u>2,000,000</u>   | (Given) $\frac{\$1,800,000}{(1 - T)} = \frac{\$1,800,000}{0.6}$ |
| EBT         | \$3,000,000        |                                                                 |
| Taxes (40%) | <u>1,200,000</u>   |                                                                 |
| NI          | <u>\$1,800,000</u> | (Given)                                                         |

2-5 NI = \$3,100,000; DEP = \$500,000; AMORT = 0; NCF = ?  
 NCF = NI + DEP and AMORT = \$3,100,000 + \$500,000 = \$3,600,000.

2-6 NI = \$50,000,000; R/E<sub>Y/E</sub> = \$810,000,000; R/E<sub>B/Y</sub> = \$780,000,000; Dividends = ?

$$\begin{aligned} R/E_{B/Y} + NI - \text{Div} &= R/E_{Y/E} \\ \$780,000,000 + \$50,000,000 - \text{Div} &= \$810,000,000 \\ \$830,000,000 - \text{Div} &= \$810,000,000 \\ \$20,000,000 &= \text{Div}. \end{aligned}$$

|     |                                       |                  |
|-----|---------------------------------------|------------------|
| 2-7 | Income                                | \$365,000        |
|     | Less Interest deduction               | (50,000)         |
|     | Plus: Dividends received <sup>a</sup> | <u>4,500</u>     |
|     | Taxable income                        | <u>\$319,500</u> |

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

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

After-tax income:

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

<sup>b</sup>Non-taxable dividends are calculated as \$15,000 x 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%.

2-8 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.

2-9 A-T yield on FLA bond = 5%.

A-T yield on AT&T bond = 7.5% - 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 yield = 6% - 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.

2-10 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>\$450,000</u> |

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

2-11 a. Income Statement

|                           |                     |
|---------------------------|---------------------|
| Sales revenues            | \$12,000,000        |
| Costs except depreciation | 9,000,000           |
| Depreciation              | <u>1,500,000</u>    |
| EBT                       | \$ 1,500,000        |
| Taxes (40%)               | <u>600,000</u>      |
| Net income                | \$ 900,000          |
| Add back depreciation     | <u>1,500,000</u>    |
| Net cash flow             | <u>\$ 2,400,000</u> |

- b. If depreciation doubled, taxable income would fall to zero and taxes would be zero. Thus, net income would decrease to zero, but net cash flow would rise to \$3,000,000. Menendez would save \$600,000 in taxes, thus increasing its cash flow:

$$\Delta CF = T(\Delta \text{Depreciation}) = 0.4(\$1,500,000) = \$600,000.$$

- c. If depreciation were halved, taxable income would rise to \$2,250,000 and taxes to \$900,000. Therefore, net income would rise to \$1,350,000, but net cash flow would fall to \$2,100,000.
- d. You should prefer to have higher depreciation charges and higher cash flows. Net cash flows are the funds that are available to the owners to withdraw from the firm and, therefore, cash flows should be more important to them than net income.

2-12 a.

|                                          |              |
|------------------------------------------|--------------|
| EBIT                                     | \$1,260      |
| x (1-Tax rate)                           | <u>60.0%</u> |
| Net operating profit after taxes (NOPAT) | \$756        |

b.

|                                        | <b>2010</b>  | <b>2009</b>  |
|----------------------------------------|--------------|--------------|
| Cash                                   | \$550        | \$500        |
| + Accounts receivable                  | 2,750        | 2,500        |
| + <u>Inventories</u>                   | <u>1,650</u> | <u>1,500</u> |
| Operating current assets               | \$4,950      | \$4,500      |
| Accounts payable                       | \$1,100      | \$1,000      |
| + <u>Accruals</u>                      | <u>550</u>   | <u>500</u>   |
| Operating current liabilities          | \$1,650      | \$1,500      |
| Operating current assets               | \$4,950      | \$4,500      |
| - <u>Operating current liabilities</u> | <u>1,650</u> | <u>1,500</u> |
| Net operating working capital (NOWC)   | \$3,300      | \$3,000      |

c.

|                                      | <b>2010</b>  | <b>2009</b>  |
|--------------------------------------|--------------|--------------|
| Net operating working capital (NOWC) | \$3,300      | \$3,000      |
| + <u>Net plant and equipment</u>     | <u>3,850</u> | <u>3,500</u> |
| Total net operating capital          | \$7,150      | \$6,500      |

d.

|                                                    | <b>2010</b> |
|----------------------------------------------------|-------------|
| NOPAT                                              | \$756       |
| - <u>Investment in total net operating capital</u> | <u>650</u>  |
| Free cash flow                                     | \$106       |

e.

|                                      | <b>2010</b>  |
|--------------------------------------|--------------|
| NOPAT                                | \$756        |
| ÷ <u>Total net operating capital</u> | <u>7,150</u> |
| Return on invested capital (ROIC)    | 10.57%       |



f.

| <b>Uses of FCF</b>                          | <b>2010</b> |
|---------------------------------------------|-------------|
| After-tax interest payment =                | \$72        |
| Reduction (increase) in debt =              | -\$284      |
| Payment of dividends =                      | \$220       |
| Repurchase (Issue) stock =                  | \$88        |
| Purchase (Sale) of short-term investments = | <u>\$10</u> |
| Total uses of FCF =                         | \$106       |

|      |                                   |                  |                  |
|------|-----------------------------------|------------------|------------------|
| 2-13 | <u>Prior Years</u>                | <u>2008</u>      | <u>2009</u>      |
|      | Profit earned                     | \$150,000        | \$150,000        |
|      | Carry-back credit                 | <u>150,000</u>   | <u>150,000</u>   |
|      | Adjusted profit                   | \$ 0             | \$ 0             |
|      | Tax previously paid (40%)         | <u>60,000</u>    | <u>60,000</u>    |
|      | Tax refund: Taxes previously paid | <u>\$ 60,000</u> | <u>\$ 60,000</u> |

Total check from U.S. Treasury = \$60,000 + \$60,000 = \$120,000.

|  |                      |                |                |                  |                  |                  |
|--|----------------------|----------------|----------------|------------------|------------------|------------------|
|  | <u>Future Years</u>  | <u>2011</u>    | <u>2012</u>    | <u>2013</u>      | <u>2014</u>      | <u>2015</u>      |
|  | Estimated profit     | \$150,000      | \$150,000      | \$150,000        | \$150,000        | \$150,000        |
|  | Carry-forward credit | <u>150,000</u> | <u>150,000</u> | <u>50,000</u>    | <u>0</u>         | <u>0</u>         |
|  | Adjusted profit      | \$ 0           | \$ 0           | \$100,000        | \$150,000        | \$150,000        |
|  | Tax (at 40%)         | <u>0</u>       | <u>0</u>       | <u>\$ 40,000</u> | <u>\$ 60,000</u> | <u>\$ 60,000</u> |

## **SOLUTION TO SPREADSHEET PROBLEM**

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- 2-14 The detailed solution for the spreadsheet problem, ***Solution for Ch02 P14 Build a Model.xls*** is available at the textbook's Web site.
- 2-15 The detailed solution for the spreadsheet problem, ***Solution for Ch02 P15 Build a Model.xls*** is available at the textbook's Web site.

## MINI CASE

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Donna Jamison, a recent graduate of the University of Tennessee with four years of banking experience, was recently brought in as assistant to the chairman of the board of Computron Industries, a manufacturer of electronic calculators.

The company doubled its plant capacity, opened new sales offices outside its home territory, and launched an expensive advertising campaign. Computron's results were not satisfactory, to put it mildly. Its board of directors, which consisted of its president and vice-president plus its major stockholders (who were all local business people), was most upset when directors learned how the expansion was going. Suppliers were being paid late and were unhappy, and the bank was complaining about the deteriorating situation and threatening to cut off credit. As a result, Al Watkins, Computron's president, was informed that changes would have to be made, and quickly, or he would be fired. Also, at the board's insistence Donna Jamison was brought in and given the job of assistant to Fred Campo, a retired banker who was Computron's chairman and largest stockholder. Campo agreed to give up a few of his golfing days and to help nurse the company back to health, with Jamison's help.

Jamison began by gathering financial statements and other data. Assume that you are Jamison's assistant, and you must help her answer the following questions for Campo.

## Balance Sheets

| <b><u>Assets</u></b>                 | 2009                | 2010                |
|--------------------------------------|---------------------|---------------------|
| Cash                                 | \$ 9,000            | \$ 7,282            |
| Short-term investments.              | 48,600              | 20,000              |
| Accounts receivable                  | 351,200             | 632,160             |
| Inventories                          | 715,200             | 1,287,360           |
| total current assets                 | \$ 1,124,000        | \$ 1,946,802        |
| Gross fixed assets                   | 491,000             | 1,202,950           |
| Less: accumulated depreciation       | 146,200             | 263,160             |
| net fixed assets                     | \$ 344,800          | \$ 939,790          |
| Total assets                         | <u>\$ 1,468,800</u> | <u>\$ 2,886,592</u> |
|                                      |                     |                     |
| <b><u>Liabilities and equity</u></b> | 2009                | 2010                |
| Accounts payable                     | \$ 145,600          | \$ 324,000          |
| Notes payable                        | 200,000             | 720,000             |
| Accruals                             | 136,000             | 284,960             |
| total current liabilities            | \$ 481,600          | \$ 1,328,960        |
| Long-term debt                       | 323,432             | 1,000,000           |
| Common stock (100,000 shares)        | 460,000             | 460,000             |
| Retained earnings                    | 203,768             | 97,632              |
| total equity                         | \$ 663,768          | \$ 557,632          |
| Total liabilities and equity         | <u>\$ 1,468,800</u> | <u>\$ 2,886,592</u> |

### Income Statements

|                       | 2009         | 2010         |
|-----------------------|--------------|--------------|
| Sales                 | \$ 3,432,000 | \$ 5,834,400 |
| Cost of goods sold    | 2,864,000    | 4,980,000    |
| Other expenses        | 340,000      | 720,000      |
| Depreciation          | 18,900       | 116,960      |
| total operating costs | \$ 3,222,900 | \$ 5,816,960 |
| EBIT                  | \$ 209,100   | \$ 17,440    |
| Interest expense      | 62,500       | 176,000      |
| EBT                   | \$ 146,600   | \$ (158,560) |
| Taxes (40%)           | 58,640       | (63,424)     |
| Net income            | \$ 87,960    | \$ (95,136)  |

| Other data         | 2009     | 2010       |
|--------------------|----------|------------|
| Stock price        | \$ 8.50  | \$ 6.00    |
| Shares outstanding | 100,000  | 100,000    |
| EPS                | \$ 0.880 | \$ (0.951) |
| DPS                | \$ 0.220 | \$ 0.110   |

## Statement of Cash Flows

### **Operating activities**

|                                           |              |
|-------------------------------------------|--------------|
| Net income                                | \$ (95,136)  |
| Adjustments:                              |              |
| noncash adjustments:                      |              |
| depreciation                              | 116,960      |
| changes in working capital:               |              |
| change in accounts receivable             | (280,960)    |
| change in inventories                     | (572,160)    |
| change in accounts payable                | 178,400      |
| change in accruals                        | 148,960      |
| Net cash provided by operating activities | \$ (503,936) |

### **Investing activities**

|                                              |              |
|----------------------------------------------|--------------|
| Cash used to acquire fixed assets            | \$ (711,950) |
| Cash due to change in short term investments | \$ 28,600    |
| Net cash provided by operating activities    | \$ (683,350) |

### **Financing activities**

|                                           |                     |
|-------------------------------------------|---------------------|
| change in notes payable                   | \$ 520,000          |
| change in long-term debt                  | \$ 676,568          |
| change in common stock                    | \$ -                |
| payment of cash dividends                 | \$ (11,000)         |
| Net cash provided by financing activities | <u>\$ 1,185,568</u> |

### **Summary**

|                           |                        |
|---------------------------|------------------------|
| Net change in cash        | \$ (1,718)             |
| Cash at beginning of year | <u>9,000</u>           |
| Cash at end of year       | <u><u>\$ 7,282</u></u> |

- a. What effect did the expansion have on sales and net income? What effect did the expansion have on the asset side of the balance sheet? What effect did it have on liabilities and equity?**

**Answer:** Sales increased by over \$2.4 million, but net income fell by over \$190,000. Assets almost doubled. Debt and funds provided by suppliers increased, but retained earnings fell due to the year's loss.

|                                                                  |
|------------------------------------------------------------------|
| <b>b. What do you conclude from the statement of cash flows?</b> |
|------------------------------------------------------------------|

**Answer:** Net CF from operations = -\$503,936, because of negative net income and increases in working capital. The firm spent \$711,950 on FA. The firm borrowed heavily and sold some short-term investments to meet its cash requirements. Even after borrowing, the cash account fell by \$1,718.



|                                                                                            |
|--------------------------------------------------------------------------------------------|
| <b>c.      What is free cash flow? Why is it important? What are the five uses of FCF?</b> |
|--------------------------------------------------------------------------------------------|

**Answer:** FCF is the amount of cash available from operations for distribution to all investors (including stockholders and debtholders) after making the necessary investments to support operations. A company's value depends upon the amount of FCF it can generate.

1. Pay interest on debt.
2. Pay back principal on debt.
3. Pay dividends.
4. Buy back stock.
5. Buy nonoperating assets (e.g., marketable securities, investments in other companies, etc.)

**d. What is Computron's net operating profit after taxes (NOPAT)? What are operating current assets? What are operating current liabilities? How much net operating working capital and total net operating capital does Computron have?**

**Answer:**  $\text{NOPAT} = \text{EBIT}(1 - \text{TAX RATE})$

$$\begin{aligned}\text{NOPAT}_{10} &= \$17,440(1 - 0.4) \\ &= \$10,464.\end{aligned}$$

$$\text{NOPAT}_{09} = \$125,460.$$

Operating current assets are the CA needed to support operations. OP CA include: cash, inventory, receivables. OP CA exclude: short-term investments, because these are not a part of operations. Operating current liabilities are the CL resulting as a normal part of operations. OP CL include: accounts payable and accruals. OP CA exclude: notes payable, because this is a source of financing, not a part of operations.

$\text{NOWC} = \text{operating CA} - \text{operating CL}$

$$\begin{aligned}\text{NOWC}_{10} &= (\$7,282 + \$632,160 + \$1,287,360) - (\$324,000 + \$284,960) \\ &= \$1,317,842.\end{aligned}$$

$$\text{NOWC}_{09} = \$793,800.$$

$\text{Total operating working capital} = \text{NOWC} + \text{net fixed assets}.$

$$\begin{aligned}\text{Operating capital in 2010} &= \$1,317,842 + \$939,790 \\ &= \$2,257,632.\end{aligned}$$

$$\text{Operating capital in 2009} = \$1,138,600.$$

**e. What is Computron's free cash flow (FCF)? What are Computron's "net uses" of its FCF?**

**Answer:**  $FCF = NOPAT - \text{Net investment in capital}$   
 $= \$10,464 - (\$2,257,632 - \$1,138,600)$   
 $= \$10,464 - \$1,119,032$   
 $= -\$1,108,568.$

| <b>Uses of FCF:</b>                                | <b><u>2010</u></b> |
|----------------------------------------------------|--------------------|
| After-tax interest payment =                       | \$105,600          |
| Reduction (increase) in debt =                     | -\$1,196,568       |
| Payment of dividends =                             | \$11,000           |
| Repurchase (Issue) stock =                         | \$0                |
| <u>Purchase (Sale) of short-term investments =</u> | <u>-\$28,600</u>   |
| Total uses of FCF =                                | -\$1,108,568       |

**f. Calculate Computron's return on invested capital. Computron has a 10% cost of capital (WACC). Do you think Computron's growth added value?**

**ANSWER:**  $ROIC = NOPAT / \text{TOTAL NET OPERATING CAPITAL}.$

$$ROIC_{10} = \$10,464 / \$2,257,632 \\ = 0.5\%.$$

$$ROIC_{09} = 11.0\%.$$

The ROIC of 0.5% is less than the WACC of 10%. Investors did not get the return they require. Note: high growth usually causes negative FCF (due to investment in capital), but that's OK if  $ROIC > WACC$ . For example, home depot has high growth, negative FCF, but a high ROIC.

**g. Jamison also has asked you to estimate Computron's EVA. She estimates that the after-tax cost of capital was 10 percent in both years.**

**ANSWER:**  $EVA = NOPAT - (WACC)(CAPITAL)$ .

$$\begin{aligned} EVA_{10} &= \$10,464 - (0.1)(\$2,257,632) \\ &= \$10,464 - \$225,763 \\ &= -\$215,299. \end{aligned}$$

$$\begin{aligned} EVA_{09} &= \$125,460 - (0.10)(\$1,138,600) \\ &= \$125,460 - \$113,860 \\ &= \$11,600. \end{aligned}$$

**h. What happened to Computron's market value added (MVA)?**

**Answer:**  $MVA = \text{market value of the firm} - \text{book value of the firm}$ .

Market value = (# shares of stock)(price per share) + value of debt.

Book value = total common equity + value of debt.

If the market value of debt is close to the book value of debt, then MVA is market value of equity minus book value of equity. Assume market value of debt equals book value of debt.

$$\text{Market value of equity 2007} = (100,000)(\$6.00) = \$600,000.$$

$$\text{Book value of equity 2007} = \$557,632.$$

$$MVA_{10} = \$600,000 - \$557,632 = \$42,368.$$

$$MVA_{09} = \$850,000 - \$663,768 = \$186,232.$$

- i. Assume that a corporation has \$100,000 of taxable income from operations plus \$5,000 of interest income and \$10,000 of dividend income. What is the company's tax liability?**

**Answer:** Calculation of the company's tax liability:

|                                                   |                  |
|---------------------------------------------------|------------------|
| Taxable operating income                          | \$100,000        |
| Taxable interest income                           | 5,000            |
| Taxable dividend income ( $0.3 \times \$10,000$ ) | <u>3,000</u>     |
| Total taxable income                              | <u>\$108,000</u> |

$$\text{Tax} = \$22,250 + (\$108,000 - \$100,000)0.39 = \$25,370.$$

$$\begin{aligned}\text{taxable dividend income} &= \text{dividends} - \text{exclusion} \\ &= \$10,000 - 0.7(\$10,000) \\ &= \$3,000.\end{aligned}$$

- j.** Assume that you are in the 25 percent marginal tax bracket and that you have \$5,000 to invest. You have narrowed your investment choices down to California bonds with a yield of 7 percent or equally risky ExxonMobil bonds with a yield of 10 percent. Which one should you choose and why? At what marginal tax rate would you be indifferent to the choice between California and ExxonMobil bonds?

**Answer:** After-tax return income at  $t = 25\%$ :

$$\text{ExxonMobil} = 0.10(\$5,000) - (0.10)(\$5,000)(0.25) = \$375.$$

$$\text{California} = 0.07(\$5,000) - \$0 = \$350.$$

Alternatively, calculate after-tax yields:

$$\text{A-T yield}_{\text{ExxonMobil}} = 10.0\%(1 - t) = 10\%(1 - 0.25) = 7.5\%.$$

$$\text{A-T yield}_{\text{Calif.}} = 7.0\%.$$

At what marginal tax rate would you be indifferent?

$$7.0\% = 10.0\%(1 - t). \text{ Solve for } t.$$

$$7.0\% = 10.0\% - 10.0\%(t)$$

$$10.0\%(t) = 3\%$$

$$t = 30\%.$$