

Chapter 2

Financial Statements, Cash Flow, and Taxes

ANSWERS TO END-OF-CHAPTER QUESTIONS

- 2-1
- a. The annual report is a report issued annually by a corporation to its shareholders. 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 shareholders. The bottom of the statement reports earnings per share.
 - b. Common shareholders' equity (net worth) is the capital supplied by common shareholders—capital stock, paid-in capital, retained earnings, and, occasionally, certain reserves. Paid-in capital is the amount that the shareholders 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 copyrights. 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 incurs interest charges. Net operating working capital is operating current assets minus operating current liabilities. Total net operating capital is the 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 shares 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 shares) and the book value of the firm's common equity, debt, and preferred shares. If the book values of debt and preferred shares 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 that 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 back for 3 years or forward for 20 years to offset taxable income in a given year.
- 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 Operating capital is the amount of interest-bearing debt, preferred shares, 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.
- 2-5 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.
- 2-6 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.
- 2-7 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.

SOLUTIONS TO END-OF-CHAPTER PROBLEMS

2-1 Corporate yield = 5%; T = 30%
 AT yield = 5%(1 - T)
 = 5%(0.70) = 3.5%.

2-2 NI = \$3,500,000; EBIT = \$7,000,000; T = 30%; Interest = ?
 Need to set up an income statement and work from the bottom up.

EBIT	\$7,000,000	
Interest	<u>2,000,000</u>	
EBT	5,000,000	$EBT = \frac{\$3,500,000}{(1 - T)} = \frac{\$3,500,000}{0.7}$
Taxes (30%)	<u>1,500,000</u>	
NI	<u>\$3,500,000</u>	

Interest = EBIT - EBT = \$7,000,000 - \$5,000,000 = \$2,000,000.

2-3 EBITDA = \$7,500,000; NI = \$1,600,000; Int = \$2,000,000; T = 30%; DA = ?

EBITDA	\$7,500,000	
DA	<u>3,214,286</u>	EBITDA - DA = EBIT; DA = EBITDA - EBIT
EBIT	4,285,714	EBIT = EBT + Int = \$2,285,714 + \$2,000,000
Int	<u>2,000,000</u>	(Given)
EBT	2,285,714	$\frac{\$1,600,000}{(1 - T)} = \frac{\$1,600,000}{0.7}$
Taxes (30%)	<u>685,714</u>	
NI	<u>\$1,600,000</u>	(Given)

2-4 NI = \$3,100,000; DEP = \$250,000; AMORT = 0; NCF = ?
 NCF = NI + DEP + AMORT = \$3,100,000 + \$250,000 = \$3,350,000.

2-5 NI = \$50,000,000; R/E_{Y/E} = \$810,000,000; R/E_{B/Y} = \$780,000,000; Dividends = ?

$$R/E_{B/Y} + NI - Div = R/E_{Y/E}$$

$$\$780,000,000 + \$50,000,000 - Div = \$810,000,000$$

$$\$830,000,000 - Div = \$810,000,000$$

$$Div = \$20,000,000.$$

2-6

Cash Provided (Used)

Operating Activities

Net Income	\$18,000
Adjustments:	
Noncash adjustments:	
Amortization	4,000
Due to changes in working capital	
Increase in accounts receivable	(4,000)
Decrease in inventories	8,000
Increase in accounts payable	<u>4,000</u>
Net cash provided by operating activities	<u>\$30,000</u>

2-7

Interest Income = \$400

Capital Gain = \$10,000/\$50 = 200 shares × \$2.00/share = \$400

Interest Income

$\$400 \times 16.67\% =$	\$66.68
$\$400 \times 22\% =$	<u>88.00</u>
Total tax =	\$154.68

$$\$400 - \$154.68 = \underline{\underline{\$245.32}}$$

Capital Gain

$\$400 \times 16.67\% \times 0.5 =$	\$33.34
$\$400 \times 22\% \times 0.5 =$	<u>44.00</u>
Total tax =	\$77.34

$$\$400 - \$77.34 = \underline{\underline{\$322.66}}$$

2-8

	X	Y
Sales	\$5,000,000	\$5,000,000
COGS (65%)	<u>3,250,000</u>	<u>3,250,000</u>
Gross Profit	1,750,000	1,750,000
Operating Expense	700,000	700,000
Depreciation	<u>60,000</u>	<u>120,000</u>
EBT	990,000	930,000
Taxes (26%)	<u>257,400</u>	<u>241,800</u>
Earnings After Tax	732,600	688,200
+ Depreciation	<u>60,000</u>	<u>120,000</u>
Cash Flow	\$ 792,600	\$ 808,200

The difference between the cash flows is \$15,600 (\$808,200 – \$792,600). Company Y has larger cash flows because it claimed higher depreciation expense. Since depreciation is a tax deductible item, it creates a tax shield. The depreciation tax shield for Y is \$31,200 ($\$120,000 \times 0.26$), while the depreciation tax shield for Company X is \$15,600 ($\$60,000 \times 0.26$). The difference in tax shields of \$15,600 accounts for the difference in cash flows.

2-9 EBIT = \$750,000; DEP = \$200,000; 100% Equity; T = 40%
 NI = ?; NCF = ?

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.

2-10 a. Income Statement

Sales revenues	\$20,000,000
Costs except CCA	15,000,000
CCA	<u>2,500,000</u>
EBT	2,500,000
Taxes (30%)	<u>750,000</u>
Net income	1,750,000
Add back CCA	<u>2,500,000</u>
Net cash flow	<u>\$ 4,250,000</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 \$5,000,000. Berndt would save \$750,000 in taxes, thus increasing its cash flow:

$$\Delta CF = T(\Delta \text{Depreciation}) = 0.30(\$2,500,000) = \$750,000.$$

- c. If depreciation were halved, taxable income would rise to \$3,750,000 and taxes to \$1,125,000. Therefore, net income would rise to \$2,625,000, but net cash flow would fall to \$3,875,000.
- 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.

2-11 $\text{NOPAT} = \text{EBIT}(1 - \text{Tax rate})$

$$= \$80 \text{ million}(1 - 0.30) = \$56 \text{ million}$$

$$\text{FCF} = \text{NOPAT} - \text{Net investment in operating capital}$$

$$\text{FCF} = \$56 \text{ million} - \$30 \text{ million}$$

$$\text{FCF} = \$26 \text{ million}$$

$$\text{Market Value of 10\% of shares} = 0.10(\$22 \times 10 \text{ million}) = \$22 \text{ million}$$

\$26 million is the free cash flow available to investors. The after-tax cost of paying \$10 million to creditors in interest is \$7 million ($\$10 \text{ million} \times (1 - 0.30)$) and therefore \$19 million is available to repurchase shares. Since \$22 million is needed to repurchase 10% of its shares, Marine Tech will not be able to fully carry out its repurchase plan.

2-12 a.

EBIT	\$1,260
x (1 – Tax rate)	<u>× 0.60</u>
Net operating profit after taxes (NOPAT)	\$ 756

b.

	2015	2014
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.

	2015	2014
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.

	2015
NOPAT	\$756
<u>– Investment in total net operating capital</u>	<u>650</u>
Free cash flow	\$106

e.

	2015
NOPAT	\$ 756
<u>÷ Total net operating capital</u>	<u>7,150</u>
Return on invested capital (ROIC)	10.57%

f.

Uses of FCF	<u>2015</u>
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

a. MVA = Market Value of Stock – Equity capital supplied by shareholders
= (\$60)(120,000,000 shares) – (\$4,312,000,000 + \$1,464,000,000) = \$1,424,000,000.

b. EVA = (Operating capital)(ROIC – WACC) = (\$7,150,000,000)(0.1057 – 0.12)
= -\$102,245,000.

2-14 Rhodes Corporation: Statement of Cash Flows for 2015 (Millions of Dollars)

	Cash Provided or (Used)
<i>Operating Activities</i>	
Net income	\$684
Adjustments:	
Noncash adjustments:	
Depreciation	380
Due to changes in working capital	
Increase in accounts receivable	(250)
Increase in inventories	(150)
Increase in accounts payable	100
Increase in accruals	<u>50</u>
Net cash provided by operating activities	814
<i>Investing Activities</i>	
Cash used to acquire fixed assets	(730)
Change in short-term investments	<u>(10)</u>
Net cash used by investing activities	(740)
<i>Financing Activities</i>	
Increase in notes payable	184
Increase in long-term debt	100
Purchase of shares	(88)
Payment of dividends	<u>(220)</u>
Net cash used by financing activities	<u>(24)</u>
<i>Summary</i>	
Increase in cash	50
Cash at beginning of year	<u>500</u>
Cash at end of year	<u>\$550</u>

2-15	<u>Prior Years</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
	Profit earned	\$150,000	\$150,000	\$150,000
	Carry-back credit	<u>150,000</u>	<u>150,000</u>	<u>150,000</u>
	Adjusted profit	0	0	0
	Tax previously paid (40%)	<u>60,000</u>	<u>60,000</u>	<u>60,000</u>
	Tax refund: Taxes previously paid	<u>\$ 60,000</u>	<u>\$ 60,000</u>	<u>\$ 60,000</u>

Total cheque from the Canada Revenue Agency = \$60,000 + \$60,000 + \$60,000 = \$180,000.

<u>Future Years</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Estimated profit	\$(650,000)	\$150,000	\$150,000	\$150,000	\$150,000
Carryforward credit	<u>0</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>

2-16 a. $\text{NOPAT} = \text{EBIT}(1 - T)$
 $= \$1,750,000(0.75)$
 $= \$1,312,500.$

$$\begin{aligned} \text{NOWC}_{15} &= \text{Operating CA} - \text{Operating CL} \\ &= (\$4,830,000 - \$380,000) - (\$3,700,000 - \$1,050,000) \\ &= \$1,800,000. \end{aligned}$$

$$\begin{aligned} \text{NOWC}_{16} &= \$4,980,000 - (\$3,878,000 - \$903,000) \\ &= \$2,005,000. \end{aligned}$$

$$\begin{aligned} \text{Operating Capital}_{15} &= \text{Net plant \& equipment} + \text{NOWC} \\ &= \$3,670,000 + \$1,800,000 \\ &= \$5,470,000. \end{aligned}$$

$$\begin{aligned} \text{Operating Capital}_{16} &= \text{Net plant \& equipment} + \text{NOWC} \\ &= \$4,320,000 + \$2,005,000 \\ &= \$6,325,000. \end{aligned}$$

$$\begin{aligned} \text{FCF} &= \text{NOPAT} - \text{Net investment in operating capital} \\ &= \$1,312,500 - (\$6,325,000 - \$5,470,000) \\ &= \underline{\$457,500}. \end{aligned}$$

b. $\text{ROIC} = \frac{\text{NOPAT}}{\text{Operating Capital}} = \frac{\$1,312,500}{\$6,325,000} = 0.2075 = 20.75\%$

c. $\text{EVA} = (\text{Operating capital})(\text{ROIC} - \text{WACC}) = (\$6,325,000)(0.2075 - 0.13) = \underline{\$490,188}.$

$$\begin{aligned} \text{MVA} &= \text{Market Value of Stock} - \text{Equity Capital supplied by shareholders} \\ &= \$20 \times 400,000 - \$4,922,000 = \underline{\$3,078,000}. \end{aligned}$$

2-17 Bristle Brush-Off Corporation: Statement of Cash Flows, Year Ended December 31, 2016(\$000s)

	Cash Provided or (Used)
<i>Operating Activities</i>	
Net income	\$ 822
Adjustments:	
Noncash adjustments:	
Depreciation	750
Due to changes in working capital	
Increase in accounts receivable	(190)
Increase in inventory	(360)
Increase in accounts payable	310
Increase in accruals	<u>15</u>
Net cash provided by operating activities	1,347
<i>Investing Activities</i>	
Cash used to acquire fixed assets	(1,400)
Proceed from sale of short-term investments	<u>380</u>
Net cash used by investing activities	(1,020)
<i>Financing Activities</i>	
Repayment of notes payable	(147)
Payment of cash dividends	<u>(200)</u>
Net cash used by financing activities	(347)
<i>Summary</i>	
Decrease in cash	(20)
Cash at beginning of year	<u>60</u>
Cash at end of year	<u>\$ 40</u>

SOLUTIONS TO SPREADSHEET PROBLEMS

2-18 and 2-19

The detailed solutions for the spreadsheet problems are in the file *Ch 02 Build a Model Solution.xlsx* and are available on the textbook's website.

MINI CASE

The detailed solution for the Mini Case is also available in spreadsheet format, in the file *Brigham3Ce_MiniCase_Ch02.xlsx* and is available on the textbook's website.

Jenny Cochran, a graduate of the University of Ottawa with 4 years of banking experience, was recently brought in as assistant to the chairman of the board of Computron Industries, a manufacturer of computer components.

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 shareholders (who were all local businesspeople), 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, Jenny Cochran was brought in and given the job of assistant to Gary Meissner, a retired banker who was Computron's chairman and largest shareholder. Meissner agreed to give up a few of his golfing days and to help nurse the company back to health, with Cochran's help.

Cochran began by gathering financial statements and other data. Note: these are available in the file *Ch02 Tool Kit.xlsx*.

Balance Sheets

<u>Assets</u>	2015	2014
Cash	\$ 7,282	\$ 9,000
Short-term investments	20,000	48,600
Accounts receivable	632,160	351,200
Inventories	<u>1,287,360</u>	<u>715,200</u>
Total current assets	1,946,802	1,124,000
Gross fixed assets	1,202,950	491,000
Less: accumulated depreciation	<u>263,160</u>	<u>146,200</u>
Net fixed assets	<u>939,790</u>	<u>344,800</u>
Total assets	<u>\$ 2,886,592</u>	<u>\$ 1,468,800</u>
<u>Liabilities and Equity</u>	2015	2014
Accounts payable	\$ 324,000	\$ 145,600
Notes payable	720,000	200,000
Accruals	<u>284,960</u>	<u>136,000</u>
Total current liabilities	1,328,960	481,600
Long-term debt	1,000,000	323,432
Common stock (100,000 shares)	460,000	460,000
Retained earnings	<u>97,632</u>	<u>203,768</u>
Total equity	<u>557,632</u>	<u>663,768</u>
Total liabilities and equity	<u>\$ 2,886,592</u>	<u>\$ 1,468,800</u>

Income Statements

	2015	2014
Sales	<u>\$ 5,834,400</u>	<u>\$ 3,432,000</u>
Cost of goods sold	4,980,000	2,864,000
Other expenses	720,000	340,000
Depreciation	<u>116,960</u>	<u>18,900</u>
Total operating costs	<u>5,816,960</u>	<u>3,222,900</u>
EBIT	17,440	209,100
Interest expense	<u>176,000</u>	<u>62,500</u>
EBT	(158,560)	146,600
Taxes (40%)	<u>(63,424)</u>	<u>58,640</u>
Net income	<u>\$ (95,136)</u>	<u>\$ 87,960</u>

Other Data	2015	2014
Stock price	<u>\$ 6.00</u>	<u>\$ 8.50</u>
Shares outstanding	100,000	100,000
EPS	\$ (0.95)	\$ 0.88
DPS	\$ 0.11	\$ 0.22

Statement of Cash Flows, 2015

Operating activities

Net income	\$ (95,136)
Adjustments:	
Noncash adjustments:	
Depreciation	116,960
Changes in working capital:	
Increase in accounts receivable	(280,960)
Increase in inventories	(572,160)
Increase in accounts payable	178,400
Increase in accruals	<u>148,960</u>
Net cash used by operating activities	<u>(503,936)</u>

Investing activities

Cash used to acquire fixed assets	(711,950)
Proceed from sale of short-term investments	<u>28,600</u>
Net cash used by operating activities	<u>(683,350)</u>

Financing activities

Issue of notes payable	520,000
Issue of long-term debt	676,568
Payment of cash dividends	<u>(11,000)</u>
Net cash provided by financing activities	<u>1,185,568</u>

Summary

Decrease in cash	(1,718)
Cash at beginning of year	<u>9,000</u>
Cash at end of year	<u>\$ 7,282</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 by over \$2.4 million, but net income fell by over \$180,000. Assets almost doubled. Debt and funds provided by suppliers increased, but retained earnings fell due to the year's loss and dividend payments.

b. What do you conclude from the statement of cash flows?

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

c. What is free cash flow? Why is it important? What are the five uses of FCF?

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

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

d. What is Computron's net operating profit (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: Operating current assets are the current assets needed to support operations. Operating current assets include cash, inventory, and receivables. Operating current assets exclude short-term investments, because these are not a part of operations. Operating current liabilities are the current liabilities resulting as a normal part of operations. Operating current liabilities include accounts payable and accruals. Operating current liabilities exclude notes payable, because this is a source of financing, not a part of operations.

$$\text{NOPAT} = \text{EBIT}(1 - \text{Tax rate})$$

$$\begin{aligned}\text{NOPAT}_{15} &= \$17,440(1 - 0.4) \\ &= \$10,464.\end{aligned}$$

$$\text{NOPAT}_{14} = \$125,460.$$

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

$$\begin{aligned}\text{NOWC}_{15} &= (\$7,282 + \$632,160 + \$1,287,360) - (\$324,000 + \$284,960) \\ &= \$1,317,842.\end{aligned}$$

$$\text{NOWC}_{14} = \$793,800.$$

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

$$\begin{aligned}\text{Operating capital in 2015} &= \$1,317,842 + \$939,790 \\ &= \$2,257,632.\end{aligned}$$

$$\text{Operating capital in 2014} = \$1,138,600.$$

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

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

Computron's uses of FCF include making interest payments on its debt, and dividend payments to common shareholders.

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: $ROIC = NOPAT / \text{Operating capital}$

$$ROIC_{15} = \$10,464 / \$2,257,632$$
$$= 0.5\%.$$

$$ROIC_{14} = 11.0\%.$$

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 all right if $ROIC > WACC$.

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

Answer: $EVA = NOPAT - (WACC)(CAPITAL).$

$$EVA_{15} = \$10,464 - (0.1)(\$2,257,632)$$
$$= \$10,464 - \$225,763$$
$$= -\$215,299.$$

$$EVA_{14} = \$125,460 - (0.10)(\$1,138,600)$$
$$= \$125,460 - \$113,860$$
$$= \$11,600.$$

h. What happened to Computron's Market Value Added (MVA)?

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

$\text{Market value} = (\# \text{ shares})(\text{price per share}) + \text{value of debt}.$

$\text{Book value} = \text{total common equity} + \text{value of debt}.$

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.

$\text{Market value of equity 2015} = (100,000)(\$6.00) = \$600,000.$

$\text{Book value of equity 2015} = \$557,632.$

$MVA_{15} = \$600,000 - \$557,632 = \$42,368.$

$MVA_{14} = \$850,000 - \$663,768 = \$186,232.$

i. Given that Computron could have issued preferred shares yielding 6% net of costs, why did the company decide to borrow more from the bank at a rate of 7.5%?

Answer: Although the pre-tax cost of debt is more expensive than the preferred shares, interest costs are tax deductible whereas dividends are not. Therefore, on an after-tax basis the debt would cost Computron $7.5\% \times (1 - 0.4) = 4.5\%$, which is cheaper than the 6% preferred share cost.