

## Chapter 2

### Financial Statements, Cash Flows, 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. Return on invested capital is equal to NOPAT divided by total net operating capital. It shows the rate of return that is generated by assets.
- 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 forward for indefinitely and used to offset future taxable income.

*Answers and Solutions: 2 - 2*

- 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 passed to the owners without being subject to taxation at the business level. 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.

*Answers and Solutions: 2 - 3*

## SOLUTIONS TO END-OF-CHAPTER PROBLEMS

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2-1 Corporate yield = 7.68%; T = 25%  
 AT yield = (Pre-tax yield)(1 - T)  
 = 7.68%(0.75) = 5.76%.

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

$$\begin{aligned} \text{Equivalent pretax yield} &= \frac{\text{Yield on muni}}{(1-T)} \\ \text{on taxable bond} & \\ 8\% &= \frac{5.5\%}{(1-T)} \\ 0.08 - 0.08T &= 0.055 \\ -0.08T &= -0.025 \\ T &= .3125 = 31.25\%. \end{aligned}$$

2-3 NI = \$7,900,000; EBIT = \$13,000,000; T = 21%; Interest = ?  
 Set up an income statement, plug in the given values, and work in the order of the steps shown below. (As with most problems, there are alternative ways of solving the problem.)

$$\begin{aligned} \text{EBIT} &= \$13,000,000 \quad (\text{Given}) \\ (3) \quad -\text{Interest} &= \underline{\underline{3,000,000}} \quad = \text{EBIT} - \text{EBT} = \$13,000,000 - \$10,000,000 = \$3,000,000. \\ (1) \quad \text{EBT} &= \$10,000,000 \quad \text{NI} = \text{EBT}(1-T) \Rightarrow \text{EBT} = \frac{\text{NI}}{(1-T)} = \frac{\$7,900,000}{0.79} = \$10,000,000 \\ (2) \quad -\text{Taxes (21\%)} &= \underline{\underline{2,100,000}} \quad = \text{EBT}(T) = \$10,000,000(0.21) = \$2,100,000. \\ \text{NI} &= \underline{\underline{\$7,900,000}} \quad (\text{Given}) \end{aligned}$$

More directly, use algebra to determine: Interest = EBIT - [NI/(1 - T)] = \$13,000,000 - \$7,900,000/(1 - 0.21) = \$3,000,000.

*Answers and Solutions: 2 - 4*

- 2-4 EBITDA = \$25,000,000; NI = \$15,800,000; Int = \$2,000,000; T = 21%; D&A = ?  
Set up an income statement, plug in the given values, and work in the order of the steps shown below. (As with most problems, there are alternative ways of solving the problem.)

$$\begin{aligned} \text{EBITDA} &= \$25,000,000 \quad (\text{Given}) \\ (4) \quad \frac{-\text{D\&A}}{\text{EBIT}} &= \frac{3,000,000}{\$22,000,000} \quad \text{EBITDA} - \text{D\&A} = \text{EBIT} \Rightarrow \text{D\&A} = \text{EBITDA} - \text{EBIT} \\ (3) \quad \frac{-\text{Int}}{\text{EBT}} &= \frac{2,000,000}{\$20,000,000} \quad (\text{Given}) \quad \text{EBIT} = \text{EBT} + \text{Int} = \$20,000,000 + \$2,000,000 \\ (1) \quad \text{EBT} &= \$20,000,000 \quad \text{NI} = \text{EBT}(1 - T) \Rightarrow \text{EBT} = \frac{\text{NI}}{(1-T)} = \frac{\$15,800,000}{0.79} = \$20,000,000 \\ (2) \quad \frac{-\text{Taxes (21\%)}}{\text{NI}} &= \frac{4,200,000}{\$15,800,000} \quad (\text{Given}) \end{aligned}$$

$$\begin{aligned} \text{More directly, D\&A} &= \text{EBITDA} - \text{Int} - (\text{NI}/(1 - T)) \\ &= \$25,000,000 - \$2,000,000 - (\$15,800,000/(1 - 0.21)) \\ &= \$3,000,000. \end{aligned}$$

- 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 = \$70,000,000; R/E<sub>Y/E</sub> = \$900,000,000; R/E<sub>B/Y</sub> = \$855,000,000; Dividends = ?

$$\begin{aligned} \text{R/E}_{\text{B/Y}} + \text{NI} - \text{Div} &= \text{R/E}_{\text{Y/E}} \\ \$855,000,000 + \$70,000,000 - \text{Div} &= \$900,000,000 \\ \$925,000,000 - \text{Div} &= \$900,000,000 \\ \$25,000,000 &= \text{Div}. \end{aligned}$$

- 2-7 NOPAT = EBIT(1 - T) = \$4,000,000(1 - 0.25) = \$3,000,000.

- 2-8 Total net operating capital = Net fixed assets + net operating working capital  
= Net fixed assets + (Operating CA - Operating CL)  
= \$15,000,000 + (\$10,000,000 - \$3,000,000)  
= \$22,000,000.

- 2-9 Free cash flow = NOPAT - net investment in total operating capital  
= NOPAT - (Total net operating capital in current year  
- total net operating capital in previous year)  
= \$16,000,000 - (\$12,000,000 - \$10,000,000)  
= \$14,000,000.

*Answers and Solutions: 2 - 5*

2-10	Pre-tax operating earnings	\$365,000
	Less Interest deduction	50,000
	Plus: Taxable dividends received <sup>a</sup>	<u>7,500</u>
	Taxable income	<u>\$322,500</u>

<sup>a</sup>For a corporation, 50% of dividends received are excluded from taxes; therefore, taxable dividends are calculated as  $\$15,000(1 - 0.5) = \$7,500$ .

$$\text{Tax expense} = 21\%(\$322,500) = \$67,725.00.$$

After-tax income:

Taxable income	\$322,500.00
Minus taxes	<u>67,725.00</u>
Net income before non-taxable dividends	\$254,775.00
Plus taxable dividends received <sup>b</sup>	<u>7,500.00</u>
Net income	<u>\$262,275.00</u>

<sup>b</sup>Non-taxable dividends are calculated as  $\$15,000 - \$7,500 = \$7,500$ .

2-11 a.  $\text{Tax} = \$50,000,000(0.21) = \$10,500,000.$

b.  $\text{Tax} = \$1,000,000(0.21) = \$210,000.$

c.  $\text{Tax} = (\$1,000,000)(1 - 0.50)(0.21) = \$105,000.$

2-12 A-T yield on AT&T bond =  $6.6\% - \text{Taxes} = 6.6\% - 6.6\%(0.21) = 5.214\%.$

Check: Invest \$10,000 @ 6.6% = \$660 interest.

Pay 21% tax, so A-T income =  $\$660(1 - T) = \$660(0.79) = \$521.4.$

A-T rate of return =  $\$521.40/\$10,000 = 5.214\%.$

A-T yield on AT&T preferred stock:

$$\text{A-T yield} = 6\% - \text{Taxes} = 6\% - (50\%)(6\%)(0.21) = 6\% - 0.630\% = 5.370\%.$$

A-T yield on FLA bond = 5.000%.

Therefore, invest in AT&T preferred stock.

### Answers and Solutions: 2 - 6

- 2-13 EBIT = \$750,000; DEP = \$200,000; 100% Equity; T = 21%  
Set up an income statement, plug in the given values, and work in the order of the steps shown below. (As with most problems, there are alternative ways of solving the problem.)

EBIT	\$750,000	Given
Interest	<u>0</u>	No debt with 100% equity
EBT	\$750,000	
Taxes (21%)	<u>157,500</u>	
NI	<u>\$592,500</u>	

$$\text{NCF} = \text{NI} + \text{DEP} = \$592,500 + \$200,000 = \$792,500.$$

- 2-14 a.

	<u>Income Statement</u>	
Sales revenues	\$12,000,000	Given
Costs except depreciation	<u>9,000,000</u>	= 75%(\$12,000,000)
EBITDA	3,000,000	
Interest	<u>0</u>	
Depreciation	<u>1,500,000</u>	Given
EBT	\$ 1,500,000	= Sales – (cost except depr) – depr.
Taxes (21%)	<u>315,000</u>	
Net income	\$ 1,185,000	
Add back depreciation	<u>1,500,000</u>	
Net cash flow	<u>\$ 2,685,000</u>	

- b. If depreciation doubled, depreciation would increase to  $2(\$1,500,000) = \$3,000,000$ . Taxable income (EBT) would fall  $\text{EBITDA} - \text{Depr} = \$3,000,000 - \$3,000,000 = 0$ ; taxes would be zero. Thus, net income would decrease to zero, but net cash flow would rise to  $\text{NI} + \text{Depr} = \$0 + \$3,000,000$ . The company would save \$315,000 in taxes, thus increasing its cash flow.

Alternatively:

$$\Delta\text{CF} = T(\Delta\text{Depreciation}) = 0.21(\$1,500,000) = \$315,000.$$

$$\begin{aligned} \text{Net cash flow} &= \text{previous net cash flow} + \Delta\text{CF} \\ &= \$2,685,000 + \$315,000 = \$3,000,000. \end{aligned}$$

- c. If depreciation were halved, depreciation would fall to  $0.5(\$1,500,000) = \$750,000$ . Taxable income (EBT) would increase to  $EBITDA - \text{Depr} = \$3,000,000 - \$750,000 = \$2,250,000$ ; taxes would increase to  $T(\text{EBT}) = 0.21(\$2,250,000) = \$472,500$ . Therefore, net income would rise to  $EBT - \text{Tax} = \$2,250,000 - \$472,500 = \$1,777,500$ . However, net cash flow would fall to  $NI + \text{Depr} = \$1,177,500 + \$750,000 = \$2,527,500$ .
- 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.

2-15  $\text{NOPAT} = \text{EBIT}(1 - T) = \$80,000(1 - 0.25) = \$60,000$ .

2-16  $\text{NOWC} = \text{Operating CA} - \text{Operating CL}$   
 $= (\text{Cash} + \text{AR} + \text{INV}) - (\text{AP} + \text{Accruals})$   
 $= (\$90 + \$1,200 + \$900) - (\$600 + \$200)$   
 $= \$1,390 \text{ million.}$

2-17  $\text{Net investment in operating capital} = (\text{NOWC} + \text{Op LT assets})$   
 $- (\text{Total net Op Cap. in previous year})$   
 $= (\$13 + \$51) - (\$50) = \$14 \text{ million.}$



2-18 a.

	<b>2020</b>
EBIT	\$1,008
x (1-Tax rate)	<u>75.0%</u>
Net operating profit after taxes (NOPAT)	\$756

b.

	<b>2020</b>	<b>2019</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>2018</b>	<b>2017</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>2018</b>
NOPAT	\$756
<u>- Investment in total net operating capital</u>	<u>650</u>
Free cash flow	\$106

e.

	<b>2018</b>
NOPAT	\$756
<u>÷ Total net operating capital</u>	<u>7,150</u>

*Answers and Solutions: 2 - 9*

Return on invested capital (ROIC)	10.57%
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f.

<b>Uses of FCF</b>	<b>2018</b>
After-tax interest payment =	\$90
Reduction (increase) in debt =	-\$284
Payment of dividends =	\$202
Repurchase (Issue) stock =	\$88
Purchase (Sale) of short-term investments =	<u>\$10</u>
Total uses of FCF =	\$106

2-19 a. Last year:

$$\begin{aligned} \text{Taxable income} &= \text{Pre-tax earnings} \\ &\quad - \text{MIN}(\text{Pre-tax earnings, Remaining cumulative past losses}) \\ &= \$100,000 - \text{MIN}(\$100,000, \$500,000) \\ &= \$0. \end{aligned}$$

$$\begin{aligned} \text{Remaining loss} &= \text{MAX}(\text{Beginning cumulative loss} - \text{Pre-tax earnings}, 0) \\ &= \text{MAX}(\$500,000 - \$100,000, 0) = \$400,000. \end{aligned}$$

b. Current year:

$$\begin{aligned} \text{Taxable income} &= \$300,000 - \text{MIN}(\$300,000, \$400,000) \\ &= \$0. \end{aligned}$$

$$\text{Remaining loss} = \text{MAX}(\$400,000 - \$300,000, 0) = \$100,000.$$

c. Projections for next year:

$$\begin{aligned} \text{Taxable income} &= \$350,000 - \text{MIN}(\$350,000, \$100,000) \\ &= \$250,000. \end{aligned}$$

$$\text{Remaining loss} = \text{MAX}(\$100,000 - \$350,000, 0) = \$0.$$

## **SOLUTION TO SPREADSHEET PROBLEM**

- 2-20 The detailed solution for the spreadsheet problem, *Ch02 P20 Build a Model Solution.xlsx* is available at the textbook's Web site.
- 2-21 The detailed solution for the spreadsheet problem, *Ch02 P21 Build a Model Solution.xlsx* is available at the textbook's Web site.

## MINI CASE

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**Jenny Cochran, a graduate of The University of Tennessee with 4 years of experience as an equities analyst, was recently brought in as assistant to the chairman of the board of Computron Industries, a manufacturer of computer components.**

**During the previous year, Computron had doubled its plant capacity, opened new sales offices outside its home territory, and launched an expensive advertising campaign. Cochran was assigned to evaluate the impact of the changes. She began by gathering financial statements and other data. Note: these are available in the file *Ch02 Tool Kit.xlsx* in the *Mini Case* tab.**

<b>Balance Sheets</b>	<b>2018</b>	<b>2019</b>
<i>Assets</i>		
Cash and equivalents	\$ 60	\$ 50
Short-term investments	100	10
Accounts receivable	400	520
Inventories	<u>620</u>	<u>820</u>
Total current assets	\$ 1,180	\$ 1,400
Gross fixed assets	\$ 3,900	\$ 4,820
Less: Accumulated depreciation	<u>1,000</u>	<u>1,320</u>
Net plant and equipment	\$ 2,900	\$ 3,500
Total assets	<u>\$ 4,080</u>	<u>\$ 4,900</u>
<i>Liabilities and equity</i>		
Accounts payable	\$ 300	\$ 400
Notes payable	50	250
Accruals	<u>200</u>	<u>240</u>
Total current liabilities	\$ 550	\$ 890
Long-term bonds	<u>800</u>	<u>1,100</u>
Total liabilities	\$ 1,350	
Common stock	1,000	1,000
Retained earnings	<u>1,730</u>	<u>1,910</u>
Total equity	\$ 2,730	\$ 2,910
Total liabilities and equity	<u>\$ 4,080</u>	<u>\$ 4,900</u>

*Mini Case: 2 - 12*

<b>Income Statement</b>	<b>2018</b>	<b>2019</b>
Net sales	\$ 5,500	\$ 6,000
Cost of goods sold (Excluding depr. & amort.)	4,300	4,800
Depreciation and amortization <sup>a</sup>	290	320
Other operating expenses	<u>350</u>	<u>420</u>
Total operating costs	<u>\$ 4,940</u>	<u>\$ 5,540</u>
Earnings before interest and taxes (EBIT)	\$ 560	\$ 460
Less interest	<u>68</u>	<u>108</u>
Pre-tax earnings	\$ 492	\$ 352
Taxes (25%)	<u>123</u>	<u>88</u>
Net Income	<u>\$ 369</u>	<u>\$ 264</u>

*Notes:*

<sup>a</sup>Computron has no amortization charges.

<b>Other Data</b>	<b>2018</b>	<b>2019</b>
Stock price	\$50.00	\$30.00
Shares outstanding	100	100
Common dividends	\$90	\$84
Tax rate	25%	25%
Weighted average cost of capital (WACC)	10.00%	10.00%

*Mini Case: 2 - 13*

<b>Statement of Cash Flows</b>	<b>2019</b>
<i>Operating Activities</i>	
Net Income before preferred dividends	\$ 264
<i>Noncash adjustments</i>	
Depreciation and amortization	320
<i>Due to changes in working capital</i>	
Change in accounts receivable	(120)
Change in inventories	(200)
Change in accounts payable	100
Change in accruals	<u>40</u>
Net cash provided by operating activities	\$ 404
<i>Investing activities</i>	
Cash used to acquire fixed assets	\$ (920)
Change in short-term investments	<u>90</u>
Net cash provided by investing activities	\$ (830)
<i>Financing Activities</i>	
Change in notes payable	\$ 200
Change in long-term debt	300
Payment of cash dividends	<u>(84)</u>
Net cash provided by financing activities	\$ 416
Net change in cash and equivalents	\$ (10)
Cash and securities at beginning of the year	<u>60</u>
Cash and securities at end of the year	<u>\$ 50</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 \$500 million (9% growth), but net income fell by \$105 million. Current assets and net plant & equipment each grew by over 20%. Large increases in debt funded the expansion, causing a 59% increase in interest payments.

*Mini Case: 2 - 14*

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

**Answer:** Net CF from operations was positive, but was dragged down by a large net increase in working capital. Net CF from investing was negative even though the firm sold short-term investments. This was because the expenditures in fixed assets were so high. Net CF from financing shows heavy borrowing. Even after borrowing, the cash account fell.

**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 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:**  $NOPAT = EBIT(1 - TAX RATE)$

Current year:

$$\begin{aligned}NOPAT &= 460(1 - 0.25) \\ &= \$345.\end{aligned}$$

Previous year:

$$NOPAT = \$420.$$

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:

*Mini Case: 2 - 15*

notes payable, because this is a source of financing, not a part of operations.

NOWC = operating CA – operating CL

Current year:

$$\begin{aligned}\text{NOWC} &= (\$50 + \$520 + 820) - (\$400 + \$240) \\ &= \$1,390 - \$640 \\ &= \$750.\end{aligned}$$

Previous year:

$$\text{NOWC} = \$580,$$

Total operating working capital = NOWC + net fixed assets.

Current year:

$$\begin{aligned}\text{Operating capital} &= \$750 + \$3,500 \\ &= \$4,250.\end{aligned}$$

Previous year:

$$\text{Operating capital} = \$3,480.$$

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

**Answer: FCF = NOPAT - Net investment in capital**

$$\begin{aligned}&= \$345 - (\$4,250 - \$3,480) \\ &= \$345 - \$770 \\ &= -\$425.\end{aligned}$$

**Uses of FCF:**

After-tax interest payment =	\$81
Reduction (increase) in debt =	-\$500
Payment of dividends =	\$84
Repurchase (Issue) stock =	\$0
<u>Purchase (Sale) of short-term investments =</u>	<u>-\$90</u>
Total uses of FCF =	-\$425

*Mini Case: 2 - 16*



**f. Calculate Computron's return on invested capital (ROIC). Computron has a 10% cost of capital (WACC). What caused the decline in the ROIC? Was it due to operating profitability or capital utilization? Do you think Computron's growth added value?**

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

Current year:

$$\begin{aligned} ROIC &= \$345 / \$4,250 \\ &= 8.1\%. \end{aligned}$$

Previous year:

$$ROIC = 12.1\%.$$

Current year:

$$\begin{aligned} OP &= \$345 / \$6,000 \\ &= 5.8\%. \end{aligned}$$

Previous year:

$$OP = 7.0\%.$$

Current year:

$$\begin{aligned} CR &= \$4,250 / \$6,000 \\ &= 70.8\%. \end{aligned}$$

Previous year:

$$CR = 58.0\%.$$

The current ROIC dropped from the previous year. This decline was due to worse operating profitability (5.8% versus 7.0%) and worse capital utilization (CR ratio of 70.8% versus a CR ratio of 58.0%). The ROIC 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  $ROIC > WACC$ .

*Mini Case: 2 - 17*

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

Current year:

$$\begin{aligned}EVA &= \$345 - (0.1)(\$4,250) \\ &= \$345 - \$425 \\ &= -\$80.\end{aligned}$$

Previous year:

$$\begin{aligned}EVA &= \$420 - (0.10)(\$3,480) \\ &= \$420 - \$348 \\ &= \$72.\end{aligned}$$

**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.

Current year:

$$\begin{aligned}\text{Market value of equity} &= (100)(\$30.00) = \$3,000. \\ \text{Book value of equity} &= \$2,910. \\ MVA &= \$3,000 - \$2,910 = \$90.\end{aligned}$$

Previous year:

$$MVA = 100(\$50.00) - \$2,730 = \$2,270.$$

*Mini Case: 2 - 18*

**i. The Tax Cut and Jobs Act (TCJA) was signed into law in 2017. Briefly describe its key provisions for corporate taxes.**

**Answer:** The Tax Cut and Jobs Act (TCJA) made major changes to corporate taxes. The changes will remain in place until Congress passes a new tax bill. Following are explanations for some of the TCJA's major changes and features.

Corporate tax code:

1. The U.S. corporate tax code has a 21% flat rate that is fixed for corporate payers. It does not go up as taxable income increases. The previous top rate was 35%.
2. Interest income received by a corporation is taxed at the 21% flat rate. A corporation may exclude from taxable income 50% of dividend income that it receives.
3. A company may indefinitely carry forward cumulative past operating losses to offset future taxable income, thereby reducing future taxes (the previous tax code's carry-forward provision limited the period to 20 years). A company may not carry back current losses to reduce taxes previously paid and thereby receive a tax refund.
4. A corporation may not deduct from pre-tax income the dividends it pays to its shareholder. In contrast, the company may deduct interest expenses paid to its creditors and investors. However, the amount of interest expense it may deduct is limited to 30% of EBITDA for 2019, 2020, and 2021. For subsequent years, the limit is 30% of EBIT.
5. Capital gains and losses are treated like other ordinary income.
6. U.S. firms with accumulated foreign deferred earnings between 1986 and 2017 must pay a tax of 15.5% on those earnings that are held in cash and cash equivalents; they must pay 8% on the remainder. The payments be spread out between 2018 and 2025. U.S. companies with foreign earnings in 2018 and subsequent years are not liable for tax on those earnings.

**j. Assume that a corporation has \$87 million of taxable income from operations. It also received interest income of \$8 million and dividend income of \$10 million. The federal tax rate is 21% and the dividend exclusion rate is 50%. What is its taxable income and federal tax liability?**

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

$$\begin{aligned}\text{Taxable dividend income} &= \text{Dividends}(1 - \text{Exclusion rate}) \\ &= \$10(1 - 0.5) \\ &= \$5.\end{aligned}$$

Taxable operating income =	\$87
Taxable interest income =	\$8
Taxable dividend income =	5
Total taxable income =	<u>\$100</u>

$$\text{Tax} = 21\%(\$100) = \$21.$$

*Mini Case: 2 - 20*

**k. Briefly describe the TCJA's key provisions for personal taxes.**

**Answer:** The TCJA specifies the previous tax code for personal taxes is suspended and that TCJA's changes to personal taxes are for 2018-2025, after which they expire and the personal tax code reverts to its pre-TCJA form. Following are explanations for some of the TCJA's major changes and features.

Personal tax code:

1. There are still seven brackets, but the bracket thresholds are reduced from previous levels. In addition, the marginal tax rates for some of the brackets have been reduced, with the top rate decreasing from 37% to 35%. The previous top rate was 39.6%
2. Personal exemptions are eliminated.
3. The standard deduction is increased to \$12,000 for individual filers and \$24,000 for married joint filers.
4. The amount of mortgage interest that may be deducted from federal taxable income is reduced.
5. The amount of state and local taxes (including income taxes, property taxes, and sales taxes) that may be deducted from federal taxable income is reduced.
6. The Act increases the amount of charitable contributions filers may deduct to 60% of Adjusted Gross Income, up from the previous 50% limit.
7. For those with high taxable income, there is now a 3.8% Net Investment Income Tax on total investment income in addition to ordinary taxes paid on investment income.
8. There is a progressive tax (three brackets) on the total net combination of dividends and capital gains on assets held for more than 1 year. The top rate is 20%. Note: the rules to determine the tax bracket and the taxable dividends & gains are very complicated.
9. Investors may deduct 20% of income earned by pass-through entities such as partnership, limited liability corporations, and S corporations.
10. There are no estate taxes due if the estate is worth less than \$11.2 million. Estates over that value are taxed at progressive rates up to 40%. The estate taxes are paid prior to disbursement to the inheritors.

*Mini Case: 2 - 21*

**1. Assume that you are in the 25% marginal tax bracket and that you have \$20,000 to invest. You have narrowed your investment choices down to municipal bonds yielding 7% or equally risky corporate bonds with a yield of 10%. Which one should you choose and why? At what marginal tax rate would you be indifferent?**

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

After-tax interest on corporate bond =  $0.10(\$20,000) - (0.25)(0.10)(\$20,000) = \$2,000 - \$500 = \$1,500$ .

After-tax interest on muni =  $0.07(\$20,000) - \$0 = \$1,400$ .

Alternatively, calculate after-tax yields:

A-T yield<sub>Corporate</sub> =  $10.0\%(1 - T) = 10\%(1 - 0.25) = 7.5\%$ .

A-T yield<sub>Muni</sub> =  $7.0\%$ .

At what marginal tax rate would you be indifferent?

Solve for T in this equation:

Muni yield = Corp Yield(1-T)

$T = 1 - (\text{Muni yield} / \text{Corp yield})$

$T = 1 - (7.00\% / 10.0\%) = 30.0\%$ .

*Mini Case: 2 - 22*