

# Corporate finance assignment

Business



End of Chapter Solutions Corporate Finance 8th edition Ross, Westerfield, and Jaffe Updated 11-21-2006 CHAPTER 1 INTRODUCTION TO CORPORATE FINANCE Answers to Concept Questions 1. In the corporate form of ownership, the shareholders are the owners of the firm. The shareholders elect the directors of the corporation, who in turn appoint the firm's management. This separation of ownership from control in the corporate form of organization is what causes agency problems to exist. Management may act in its own or someone else's best interests, rather than those of the shareholders.

If such events occur, they may contradict the goal of maximizing the share price of the equity of the firm. Such organizations frequently pursue social or political missions, so many different goals are conceivable. One goal that is often cited is revenue minimization; i. e. , provide whatever goods and services are offered at the lowest possible cost to society. A better approach might be to observe that even a not-for-profit business has equity. Thus, one answer is that the appropriate goal is to maximize the value of the equity.

Presumably, the current stock value reflects the risk, timing, and magnitude of all future cash flows, both short-term and long-term. If this is correct, then the statement is false. An argument can be made either way. At the one extreme, we could argue that in a market economy, all of these things are priced. There is thus an optimal level of, for example, ethical and/or illegal behavior, and the framework of stock valuation explicitly includes these. At the other extreme, we could argue that these are non-economic phenomena and are best handled through the political process.

A classic (and highly relevant) thought question that illustrates this debate goes something like this: " A firm has estimated that the cost of improving the safety of one of its products is \$30 million. However, the firm believes that improving the safety of the product will only save \$20 million in product liability claims. What should the firm do? " The goal will be the same, but the best course of action toward that goal may be different because of differing social, political, and economic institutions. The goal of management should be to maximize the share price for the current shareholders.

If management believes that it can improve the profitability of the firm so that the share price will exceed \$35, then they should fight the offer from the outside company. If management believes that this bidder or other unidentified bidders will actually pay more than \$35 per share to acquire the company, then they should still fight the offer. However, if the current management cannot increase the value of the firm beyond the bid price, and no other higher bids come in, then management is not acting in the interests of the shareholders by fighting the offer.

Since current managers often lose their jobs when the corporation is acquired, poorly monitored managers have an incentive to fight corporate takeovers in situations such as this. 2. 3. 4. 5. 6. B-2 7. SOLUTIONS We would expect agency problems to be less severe in other countries, primarily due to the relatively small percentage of individual ownership. Fewer individual owners should reduce the number of diverse opinions concerning corporate goals. The high percentage of institutional ownership might lead to a higher degree of agreement between owners and managers on decisions concerning risky projects.

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In addition, institutions may be better able to implement effective monitoring mechanisms on managers than can individual owners, based on the institutions' deeper resources and experiences with their own management. The increase in institutional ownership of stock in the United States and the growing activism of these large shareholder groups may lead to a reduction in agency problems for U. S. corporations and a more efficient market for corporate control. However, this may not always be the case. If the managers of the mutual fund or pension plan are not concerned with the interests of the investors, the agency problem could potentially remain the same, or even increase since there is the possibility of agency problems between the fund and its investors. How much is too much? Who is worth more, Jack Welch or Tiger Woods? The simplest answer is that there is a market for executives just as there is for all types of labor. Executive compensation is the price that clears the market. The same is true for athletes and performers. Having said that, one aspect of executive compensation deserves comment.

A primary reason executive compensation has grown so dramatically is that companies have increasingly moved to stock-based compensation. Such movement is obviously consistent with the attempt to better align stockholder and management interests. In recent years, stock prices have soared, so management has cleaned up. It is sometimes argued that much of this reward is simply due to rising stock prices in general, not managerial performance. Perhaps in the future, executive compensation will be designed to reward only differential performance, i. e. , stock price increases in excess of general market increases. 8. 9. 0. Maximizing the current share price is

the same as maximizing the future share price at any future period. The value of a share of stock depends on all of the future cash flows of company. Another way to look at this is that, barring large cash payments to shareholders, the expected price of the stock must be higher in the future than it is today. Who would buy a stock for \$100 today when the share price in one year is expected to be \$80? CHAPTER 2 ACCOUNTING STATEMENTS, TAXES, AND CASH FLOW Answers to Concepts Review and Critical Thinking Questions 1. True. Every asset can be converted to cash at some price.

However, when we are referring to a liquid asset, the added assumption that the asset can be converted cash at or near market value is important. The recognition and matching principles in financial accounting call for revenues, and the costs associated with producing those revenues, to be “booked” when the revenue process is essentially complete, not necessarily when the cash is collected or bills are paid. Note that this way is not necessarily correct; it’s the way accountants have chosen to do it. The bottom line number shows the change in the cash balance on the balance sheet.

As such, it is not a useful number for analyzing a company. The major difference is the treatment of interest expense. The accounting statement of cash flows treats interest as an operating cash flow, while the financial cash flows treat interest as a financing cash flow. The logic of the accounting statement of cash flows is that since interest appears on the income statement, which shows the operations for the period, it is an operating cash flow. In reality, interest is a financing expense, which results from the company’s choice of debt and equity. We will have more to say about this in a later chapter.

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When comparing the two cash flow statements, the financial statement of cash flows is a more appropriate measure of the company's performance because of its treatment of interest. Market values can never be negative. Imagine a share of stock selling for  $\$20$ . This would mean that if you placed an order for 100 shares, you would get the stock along with a check for  $\$2,000$ . How many shares do you want to buy? More generally, because of corporate and individual bankruptcy laws, net worth for a person or a corporation cannot be negative, implying that liabilities cannot exceed assets in market value.

For a successful company that is rapidly expanding, for example, capital outlays will be large, possibly leading to negative cash flow from assets. In general, what matters is whether the money is spent wisely, not whether cash flow from assets is positive or negative. It's probably not a good sign for an established company to have negative cash flow from assets, but it would be fairly ordinary for a start-up, so it depends. 2. 3. 4. 5. 6. 7. B-4 8.

**SOLUTIONS** For example, if a company were to become more efficient in inventory management, the amount of inventory needed would decline.

The same might be true if the company becomes better at collecting its receivables. In general, anything that leads to a decline in ending NWC relative to beginning would have this effect. Negative net capital spending would mean more long-lived assets were liquidated than purchased. If a company raises more money from selling stock than it pays in dividends in a particular period, its cash flow to stockholders will be negative. If a company borrows more than it pays in interest and principal, its cash flow to creditors will be negative. 9. 10.

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The adjustments discussed were purely accounting changes; they had no cash flow or market value consequences unless the new accounting information caused stockholders to revalue the derivatives. Solutions to Questions and Problems NOTE: All end-of-chapter problems were solved using a spreadsheet. Many problems require multiple steps. Due to space and readability constraints, when these intermediate steps are included in this solutions manual, rounding may appear to have occurred. However, the final answer for each problem is found without rounding during any step in the problem. Basic 1.

To find owner's equity, we must construct a balance sheet as follows:

CA	NFA	TA
Balance Sheet	CL LTD	OE
\$28,000	\$5,000	\$23,000
\$4,300	\$13,000	?? \$28,000

We know that total liabilities and owner's equity (TL & OE) must equal total assets of \$28,000. We also know that TL & OE is equal to current liabilities plus long-term debt plus owner's equity, so owner's equity is:

$$OE = \$28,000 - \$13,000 - \$4,300 = \$10,700$$

NWC = CA - CL = \$5,000 - \$4,300 = \$700

2. The income statement for the company is:

Income Statement	Sales	Costs	Depreciation	EBIT	Interest	EBT	Taxes (35%)	Net income
	\$527,000	280,000	38,000	\$209,000	15,000	\$194,000	67,900	\$126,100

CHAPTER 2 B-5 One equation for net income is: Net income = Dividends + Addition to retained earnings Rearranging, we get: Addition to retained earnings = Net income - Dividends Addition to retained earnings = \$126,100 - 48,000 Addition to retained earnings = \$78,100

3. To find the book value of current assets, we use: NWC = CA - CL. Rearranging to solve for current assets, we get: CA = NWC + CL = \$900K + 2.2M = \$3.1M

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market value of current assets and fixed assets is given, so: Book value CA = \$3.1M Book value NFA = \$4.0M Book value assets = \$3.1M + 4.0M = \$7.1M 4. Market value CA = \$2.8M Market value NFA = \$3.2M Market value assets = \$2.8M + 3.2M = \$6.0M Taxes = 0.15(\$50K) + 0.25(\$25K) + 0.34(\$25K) + 0.39(\$273K - 100K) Taxes = \$89,720 The average tax rate is the total tax paid divided by net income, so: Average tax rate = \$89,720 / \$273,000 Average tax rate = 32.86% The marginal tax rate is the tax rate on the next \$1 of earnings, so the marginal tax rate = 39%. 5. To calculate OCF, we first need the income statement: Income Statement

Sales	Costs	Depreciation	EBIT	Interest	Taxable income	Taxes (35%)	Net income
5,400	1,200	\$6,900	680	\$6,220	2,177	\$4,043	

OCF = EBIT + Depreciation - Taxes OCF = \$6,900 + 1,200 - 2,177 OCF = \$5,923 6. Net capital spending = NFA<sub>end</sub> - NFA<sub>beg</sub> + Depreciation Net capital spending = \$4,700,000 - 4,200,000 + 925,000 Net capital spending = \$1,425,000 B-6 7. SOLUTIONS The long-term debt account will increase by \$8 million, the amount of the new long-term debt issue. Since the company sold 10 million new shares of stock with a \$1 par value, the common stock account will increase by \$10 million. The capital surplus account will increase by \$16 million, the value of the new stock sold above its par value.

Since the company had a net income of \$7 million, and paid \$4 million in dividends, the addition to retained earnings was \$3 million, which will increase the accumulated retained earnings account. So, the new long-term debt and stockholders' equity portion of the balance sheet will be: Long-term debt Total long-term debt Shareholders equity Preferred stock Common



stock (\$1 par value) Accumulated retained earnings Capital surplus Total  
 equity Total Liabilities & Equity \$ 68, 000, 000 \$ 68, 000, 000 \$ 18, 000, 000  
 35, 000, 000 92, 000, 000 65, 000, 000 \$ 210, 000, 000 \$ 278, 000, 000 8.

Cash flow to creditors = Interest paid ??? Net new borrowing Cash flow to  
 creditors = \$340, 000 ??? (LTDend ??? LTDbeg) Cash flow to creditors =  
 \$340, 000 ??? (\$3, 100, 000 ??? 2, 800, 000) Cash flow to creditors = \$340,  
 000 ??? 300, 000 Cash flow to creditors = \$40, 000 Cash flow to stockholders  
 = Dividends paid ??? Net new equity Cash flow to stockholders = \$600,  
 000 ??? [(Commonend + APISend) ??? (Commonbeg + APISbeg)] Cash flow  
 to stockholders = \$600, 000 ??? [(\$855, 000 + 7, 600, 000) ??? (\$820, 000 +  
 6, 800, 000)] Cash flow to stockholders = \$600, 000 ??? (\$8, 455, 000 ??? 7,  
 620, 000) Cash flow to stockholders = ???\$235, 000 Note, APIS is the  
 additional paid-in surplus. . 10. Cash flow from assets = Cash flow to  
 creditors + Cash flow to stockholders = \$40, 000 ??? 235, 000 = ???\$195,  
 000 = ???\$195, 000 = OCF ??? Change in NWC ??? Net capital spending =  
 OCF ??? (???\$165, 000) ??? 760, 000 = ???\$195, 000 + 165, 000 + 760, 000  
 = \$730, 000 Cash flow from assets ???\$195, 000 Operating cash flow  
 Operating cash flow CHAPTER 2 B-7 Intermediate 11. a. The accounting  
 statement of cash flows explains the change in cash during the year.

The accounting statement of cash flows will be: Statement of cash flows  
 Operations Net income Depreciation Changes in other current assets Total  
 cash flow from operations Investing activities Acquisition of fixed assets Total  
 cash flow from investing activities Financing activities Proceeds of long-term  
 debt Current liabilities Dividends Total cash flow from financing activities

Change in cash (on balance sheet) b. \$125 75 (25) \$175 \$(175) \$(175) \$90  
10 (65) \$35 \$35

Change in NWC = NWC<sub>end</sub> - NWC<sub>beg</sub> = (CA<sub>end</sub> - CL<sub>end</sub>) - (CA<sub>beg</sub> - CL<sub>beg</sub>) = [(\$45 + 145) - 70] - [(\$10 + 120) - 60] = \$120 - 70 = \$50

To find the cash flow generated by the firm's assets, we need the operating cash flow, and the capital spending. So, calculating each of these, we find:

Operating cash flow Net income Depreciation Operating cash flow c. \$125 75

\$200 Note that we can calculate OCF in this manner since there are no

taxes. B-8 SOLUTIONS Capital spending Ending fixed assets Beginning fixed assets Depreciation Capital spending \$250 (150) 75 \$175 Now we can

calculate the cash flow generated by the firm's assets, which is:

Cash flow from assets Operating cash flow Capital spending Change in NWC

Cash flow from assets \$200 (175) (50) \$(25) Notice that the accounting

statement of cash flows shows a positive cash flow, but the financial cash

flows show a negative cash flow. The cash flow generated by the firm's

assets is a better number for analyzing the firm's performance. 12. With the

information provided, the cash flows from the firm are the capital spending

and the change in net working capital, so: Cash flows from the firm Capital

spending Additions to NWC Cash flows from the firm \$(3, 000) (1, 000) \$(4, 000)

And the cash flows to the investors of the firm are: Cash flows to investors of

the firm Sale of short-term debt Sale of long-term debt Sale of common stock

Dividends paid Cash flows to investors of the firm \$(7, 000) (18, 000) (2,

000) 23, 000 \$(4, 000) CHAPTER 2 B-9 13. a. The interest expense for the

company is the amount of debt times the interest rate on the debt. So, the income statement for the company is:

	Sales	Cost of goods sold	Selling costs	Depreciation	EBIT	Interest	Taxable income	Taxes (35%)	Net income
a.	\$1,000,000	300,000	200,000	100,000	\$400,000	100,000	\$300,000	105,000	\$195,000

And the operating cash flow is:  $OCF = EBIT + Depreciation - Taxes$   
 $OCF = \$400,000 + 100,000 - 105,000 = \$395,000$

14. To find the OCF, we first calculate net income.

	Sales	Costs	Depreciation	Other expenses	EBIT	Interest	Taxable income	Taxes (40%)	Net income
	\$145,000	86,000	7,000	4,900	\$47,100	15,000	\$32,100	12,840	\$19,260

Dividends Additions to RE a. \$8,700 \$10,560

$OCF = EBIT + Depreciation - Taxes$   
 $OCF = \$47,100 + 7,000 - 12,840 = \$41,260$

$CFC = Interest - Net\ new\ LTD$   
 $CFC = \$15,000 - (\$6,500) = \$8,500$

Note that the net new long-term debt is negative because the company repaid part of its longterm debt.

c.  $CFS = Dividends - Net\ new\ equity$   
 $CFS = \$8,700 - 6,450 = \$2,250$

B-10 SOLUTIONS d. We know that  $CFA = CFC + CFS$ , so:  
 $CFA = \$8,500 + 2,250 = \$10,750$

$CFA$  is also equal to  $OCF - Net\ capital\ spending - Change\ in\ NWC$ . We already know  $OCF$ . Net capital spending is equal to:  
 $Net\ capital\ spending = Increase\ in\ NFA + Depreciation$   
 $Net\ capital\ spending = \$5,000 + 7,000 = \$12,000$

Now we can use:  $CFA = OCF - Net\ capital\ spending - Change\ in\ NWC$   
 $\$10,750 = \$41,260 - 12,000 - Change\ in\ NWC$

Solving for the change in NWC gives \$5,510, meaning the company increased its NWC by \$5,510.

15. The solution to this question works the income statement backwards. Starting at the bottom: Net income =

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Dividends + Addition to ret. earnings Net income = \$900 + 4,500 Net income = \$5,400 Now, looking at the income statement: EBT ??? (EBT ? Tax rate) = Net income Recognize that EBT ? tax rate is simply the calculation for taxes. Solving this for EBT yields:  $EBT = NI / (1 - \text{Tax rate})$   $EBT = \$5,400 / 0.5$   $EBT = \$8,308$  Now we can calculate:  $EBIT = EBT + \text{Interest}$   $EBIT = \$8,308 + 1,600$   $EBIT = \$9,908$  The last step is to use:  $EBIT = \text{Sales} - \text{Costs} - \text{Depreciation}$   $\$9,908 = \$29,000 - \text{Depreciation}$   $\text{Depreciation} = \$6,092$  Solving for depreciation, we find that depreciation = \$6,092

CHAPTER 2 B-11 16. The balance sheet for the company looks like this:

Assets	Liabilities & Equity
Cash	Accounts payable
Accounts receivable	Notes payable
Inventory	Current liabilities
Current assets	\$580,000
Tangible net fixed assets	Long-term debt
Intangible net fixed assets	Total liabilities
Total assets	\$2,900,000
Balance Sheet	Common stock
\$175,000	Accumulated ret. earnings
	\$4,200,000
	Total liab. & owners' equity
	\$430,000
	180,000
	\$610,000
	1,430,000
	\$2,040,000
	?? 1,240,000
	\$4,200,000

Total liabilities and owners' equity is:  $TL \& OE = CL + LTD + \text{Common stock}$

Solving for this equation for equity gives us:  $\text{Common stock} = \$4,200,000 - 1,240,000 - 2,040,000$   $\text{Common stock} = \$920,000$

17. The market value of shareholders' equity cannot be zero. A negative market value in this case would imply that the company would pay you to own the stock.

The market value of shareholders' equity can be stated as:  $\text{Shareholders' equity} = \text{Max}[(\text{TA} - \text{TL}), 0]$ . So, if TA is \$4,300, equity is equal to \$800, and if TA is \$3,200, equity is equal to \$0. We should note here that while the market value of equity cannot be negative, the book value of shareholders'

equity can be negative. 18. a. Taxes Growth =  $0.15(\$50K) + 0.25(\$25K) + 0.34(\$10K) = \$17,150$  Taxes Income =  $0.15(\$50K) + 0.25(\$25K) + 0.34(\$25K) + 0.39(\$235K) + 0.34(\$8.65M) = \$2,890,000$  Each firm has a marginal tax rate of 34% on the next \$10,000 of taxable income, despite their different average tax rates, so both firms will pay an additional \$3,400 in taxes.

Income Statement Sales \$850,000 COGS 630,000 A&S expenses 120,000 Depreciation 130,000 EBIT (\$30,000) Interest 85,000 Taxable income (\$115,000) Taxes (35%) 0 Net income (\$115,000) b. 19. a. B-12 SOLUTIONS b.  $OCF = EBIT + Depreciation - Taxes$   $OCF = (-\$30,000) + 130,000 - 0 = \$100,000$ . Net income was negative because of the tax deductibility of depreciation and interest expense. However, the actual cash flow from operations was positive because depreciation is a non-cash expense and interest is a financing expense, not an operating expense. 20. A firm can still pay out dividends if net income is negative; it just has to be sure there is sufficient cash flow to make the dividend payments. Change in  $NWC = Net\ capital\ spending = Net\ new\ equity = 0$ . Given) Cash flow from assets =  $OCF - Change\ in\ NWC - Net\ capital\ spending$  Cash flow from assets =  $\$100,000 - 0 - 0 = \$100,000$  Cash flow to stockholders = Dividends - Net new equity Cash flow to stockholders =  $\$30,000 - 0 = \$30,000$  Cash flow to creditors = Cash flow from assets - Cash flow to stockholders Cash flow to creditors =  $\$100,000 - 30,000 = \$70,000$  Cash flow to creditors is also: Cash flow to creditors = Interest - Net new LTD So: Net new LTD = Interest - Cash flow to creditors Net new LTD =  $\$85,000 - 70,000 = \$15,000$  21. . The income statement is: Income Statement Sales \$12,800 Cost of good sold 10,400 Depreciation 1,900 EBIT \$ 500 Interest 450 Taxable income \$

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50 Taxes (34%) 17 Net income \$33 b.  $OCF = EBIT + Depreciation - Taxes$   
 $OCF = \$500 + 1,900 - 170 = \$2,330$  CHAPTER 2 B-13 c.

Change in NWC =  $NWC_{end} - NWC_{beg} = (CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$   
 $= (\$3,850 - 2,100) - (\$3,200 - 1,800) = \$1,750 - 1,400 = \$350$   
 Net capital spending =  $NFA_{end} - NFA_{beg} + Depreciation = \$9,700 - 9,100 + 1,900 = \$2,500$   
 $CFA = OCF - \text{Change in NWC} - \text{Net capital spending} = \$2,330 - 350 - 2,500 = -\$467$   
 The cash flow from assets can be positive or negative, since it represents whether the firm raised funds or distributed funds on a net basis.

In this problem, even though net income and OCF are positive, the firm invested heavily in both fixed assets and net working capital; it had to raise a net \$467 in funds from its stockholders and creditors to make these investments. d.

Cash flow to creditors =  $Interest - \text{Net new LTD} = \$450 - 0 = \$450$   
 Cash flow to stockholders =  $\text{Cash flow from assets} - \text{Cash flow to creditors} = -\$467 - 450 = -\$917$   
 We can also calculate the cash flow to stockholders as:  
 Cash flow to stockholders =  $\text{Dividends} - \text{Net new equity}$   
 Solving for net new equity, we get:  $\text{Net new equity} = \$500 - (-\$917) = \$1,417$   
 The firm had positive earnings in an accounting sense ( $NI > 0$ ) and had positive cash flow from operations. The firm invested \$350 in new net working capital and \$2,500 in new fixed assets.

The firm had to raise \$467 from its stakeholders to support this new investment. It accomplished this by raising \$1,417 in the form of new equity. After paying out \$500 of this in the form of dividends to shareholders  
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and \$450 in the form of interest to creditors, \$467 was left to meet the firm's cash flow needs for investment.

22. a. Total assets 2006 = \$650 + 2,900 = \$3,550  
 Total liabilities 2006 = \$265 + 1,500 = \$1,765  
 Owners' equity 2006 = \$3,550 - \$1,765 = \$1,785  
 Total assets 2007 = \$705 + 3,400 = \$4,105  
 Total liabilities 2007 = \$290 + 1,720 = \$2,010  
 Owners' equity 2007 = \$4,105 - \$2,010 = \$2,095

B-14 SOLUTIONS b. NWC 2006 NWC 2007 Change in NWC = CA06 - CL06 = \$650 - 265 = \$385 = CA07 - CL07 = \$705 - 290 = \$415 = NWC07 - NWC06 = \$415 - 385 = \$30

c. We can calculate net capital spending as: Net capital spending = Net fixed assets 2007 - Net fixed assets 2006 + Depreciation  
 Net capital spending = \$3,400 - 2,900 + 800 = \$1,300  
 So, the company had a net capital spending cash flow of \$1,300.

We also know that net capital spending is: Net capital spending = Fixed assets bought - Fixed assets sold  
 \$1,300 = \$1,500 - Fixed assets sold  
 Fixed assets sold = \$1,500 - 1,300 = \$200

To calculate the cash flow from assets, we must first calculate the operating cash flow. The operating cash flow is calculated as follows (you can also prepare a traditional income statement):  
 EBIT = Sales - Costs - Depreciation = \$8,600 - 4,150 - 800 = \$3,650  
 EBT = EBIT - Interest = \$3,650 - 216 = \$3,434  
 Taxes = EBT . 35 = \$3,434 . 35 = \$1,202  
 OCF = EBIT + Depreciation - Taxes = \$3,650 + 800 - 1,202 = \$3,248

Cash flow from assets = OCF - Change in NWC - Net capital spending  
 Cash flow from assets = \$3,248 - 30 - 1,300 = \$1,918

d. Net new borrowing = LTD07 - LTD06

borrowing = \$1, 720 ??? 1, 500 Net new borrowing = \$220 Cash flow to  
 creditors = Interest ??? Net new LTD Cash flow to creditors = \$216 ??? 220  
 Cash flow to creditors = ???\$4 Net new borrowing = \$220 = Debt issued ???  
 Debt retired Debt retired = \$300 ??? 220 = \$80 CHAPTER 2 B-15 23.

Cash Accounts receivable Inventory Current assets Net fixed assets Total  
 assets Balance sheet as of Dec. 31, 2006 \$2, 107 Accounts payable 2, 789  
 Notes payable 4, 959 Current liabilities \$9, 855 Long-term debt Owners'  
 equity \$17, 669 \$27, 524 Total liab. & equity Balance sheet as of Dec. 31,  
 2007 \$2, 155 Accounts payable 3, 142 Notes payable 5, 096 Current  
 liabilities \$10, 393 Long-term debt Owners' equity \$18, 091 \$28, 484 Total  
 liab. & equity \$2, 213 407 \$2, 620 \$7, 056 \$17, 848 \$27, 524 Cash Accounts  
 receivable Inventory Current assets Net fixed assets Total assets 2, 146 382  
 \$2, 528 \$8, 232 \$17, 724 \$28, 484 2006 Income Statement Sales \$4, 018. 00  
 COGS 1, 382. 00 Other expenses 328. 00 Depreciation 577. 00 EBIT \$1, 731.  
 00 Interest 269. 00 EBT \$1, 462. 00 Taxes (34%) 497. 08 Net income \$ 964.  
 92 Dividends Additions to RE \$490. 00 \$474. 92 2007 Income Statement  
 Sales \$4, 312. 00 COGS 1, 569. 00 Other expenses 274. 00 Depreciation 578.  
 00 EBIT \$1, 891. 00 Interest 309. 00 EBT \$1, 582. 00 Taxes (34%) 537. 88  
 Net income \$1, 044. 12 Dividends Additions to RE \$539. 00 \$505. 12 24.

OCF = EBIT + Depreciation ??? Taxes OCF = \$1, 891 + 578 ??? 537. 88 OCF  
 = \$1, 931. 12 Change in NWC = NWCend ??? NWCbeg = (CA ??? CL) end ???  
 (CA ??? CL) beg Change in NWC = (\$10, 393 ??? 2, 528) ??? (\$9, 855 ??? 2,  
 620) Change in NWC = \$7, 865 ??? 7, 235 = \$630 Net capital spending =  
 NFAend ??? NFAbeg + Depreciation Net capital spending = \$18, 091 ??? 17,  
 669 + 578 Net capital spending = \$1, 000 B-16 SOLUTIONS Cash flow from  
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$\text{assets} = \text{OCF} - \Delta \text{NWC} - \text{Net capital spending}$   
 $\text{Cash flow from assets} = \$1,931.12 - 630 - 1,000 = \$301.12$   
 $\text{Cash flow to creditors} = \text{Interest} - \Delta \text{LTD}$   
 $\text{Cash flow to creditors} = \$309 - (\$8,232 - 7,056) = \$867$   
 $\text{Net new equity} = \text{Common stock end} - \text{Common stock beg} + \text{Retained earnings}$   
 $\text{Net new equity} = (\text{OE} - \text{RE})_{\text{end}} - (\text{OE} - \text{RE})_{\text{beg}} = \text{OE}_{\text{end}} - \text{OE}_{\text{beg}} + \text{RE}_{\text{end}} - \text{RE}_{\text{beg}}$   
 $\text{Net new equity} = \text{OE}_{\text{end}} - \text{OE}_{\text{beg}} + \text{Additions to RE} - \text{Dividends}$   
 $\text{Net new equity} = \$17,724 - 17,848 + 505.12 - 629.12 = \$539$   
 $\text{Cash flow to stockholders} = \text{Dividends} - \text{Net new equity}$   
 $\text{Cash flow to stockholders} = \$1,168.12$   
 As a check,  $\text{cash flow from assets} = \text{cash flow to creditors} + \text{cash flow to stockholders}$   
 $\text{Cash flow from assets} = \$867 + 1,168.12 = \$301.12$   
**Challenge 25.** We will begin by calculating the operating cash flow. First, we need the EBIT, which can be calculated as:  $\text{EBIT} = \text{Net income} + \text{Current taxes} + \text{Deferred taxes} + \text{Interest}$   
 $\text{EBIT} = \$192 + 110 + 21 + 57 = \$380$   
 Now we can calculate the operating cash flow as:  
 $\text{Operating cash flow} = \text{Earnings before interest and taxes} - \text{Depreciation} - \text{Current taxes}$   
 $\text{Operating cash flow} = 380 - 105 - 110 = \$165$   
**CHAPTER 2 B-17** The cash flow from assets is found in the investing activities portion of the accounting statement of cash flows, so:  $\text{Cash flow from assets} = \text{Acquisition of fixed assets} - \text{Sale of fixed assets} - \text{Capital spending}$   
 $\text{Cash flow from assets} = 198 - 25 - 173 = -\$100$   
 The net working capital cash flows are all found in the operations cash flow section of the accounting statement of cash flows. However, instead of calculating the net working

capital cash flows as the change in net working capital, we must calculate each item individually.

Doing so, we find: Net working capital cash flow

	Cash	Accounts receivable	Inventories	Accounts payable	Accrued expenses	Notes payable	Other NWC
cash flow	\$140	31	(24)	(19)	10	(6)	(2)
	\$130						

Except for the interest expense and notes payable, the cash flow to creditors is found in the financing activities of the accounting statement of cash flows. The interest expense from the income statement is given, so: Cash flow to creditors

	Interest	Retirement of debt	Debt service	Proceeds from sale of long-term debt	Total
	57	84	\$141	(129)	\$12

And we can find the cash flow to stockholders in the financing section of the accounting statement of cash flows. The cash flow to stockholders was:

	Cash flow to stockholders	Dividends	Repurchase of stock	Cash to stockholders	Proceeds from new stock issue	Total
	\$94	15	\$109	(49)	\$60	

B-18 SOLUTIONS 26. Net capital spending = NFAend ??? NFAbeg + Depreciation = (NFAend ??? NFAbeg) + (Depreciation + ADbeg) ??? ADbeg = (NFAend ??? NFAbeg) + ADend ??? ADbeg = (NFAend + ADend) ??? (NFAbeg + ADbeg) = FAend ??? FAbeg 27. a.

The tax bubble causes average tax rates to catch up to marginal tax rates, thus eliminating the tax advantage of low marginal rates for high income corporations. Assuming a taxable income of \$100, 000, the taxes will be:

$$\text{Taxes} = 0.15(\$50\text{K}) + 0.25(\$25\text{K}) + 0.34(\$25\text{K}) + 0.39(\$235\text{K}) = \$113.9\text{K}$$

Average tax rate =  $\$113.9\text{K} / \$335\text{K} = 34\%$  The marginal tax rate on the next dollar of income is 34 percent. For corporate taxable income levels of \$335K to \$10M, average tax rates are equal to marginal tax rates. Taxes =  $0.34(\$10\text{M}) + 0.35(\$5\text{M}) + 0.38(\$3.33\text{M}) = \$6,416,667$  Average tax rate

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=  $\$6,416,667 / \$18,333,334 = 35\%$  The marginal tax rate on the next dollar of income is 35 percent. For corporate taxable income levels over  $\$18,333,334$ , average tax rates are again equal to marginal tax rates. c. Taxes  $X(\$100K) + X = 0.34(\$200K) = \$68K = 0.15(\$50K) + 0.25(\$25K) + 0.34(\$25K) + X(\$100K); = \$68K$  ???  $22.25K = \$45.75K = \$45.75K / \$100K = 45.75\%$

#### 45.75% b. CHAPTER 3 LONG-TERM FINANCIAL PLANNING AND GROWTH

Answers to Concepts Review and Critical Thinking Questions 1. Time trend analysis gives a picture of changes in the company's financial situation over time.

Comparing a firm to itself over time allows the financial manager to evaluate whether some aspects of the firm's operations, finances, or investment activities have changed. Peer group analysis involves comparing the financial ratios and operating performance of a particular firm to a set of peer group firms in the same industry or line of business. Comparing a firm to its peers allows the financial manager to evaluate whether some aspects of the firm's operations, finances, or investment activities are out of line with the norm, thereby providing some guidance on appropriate actions to take to adjust these ratios if appropriate.

Both allow an investigation into what is different about a company from a financial perspective, but neither method gives an indication of whether the difference is positive or negative. For example, suppose a company's current ratio is increasing over time. It could mean that the company had been facing liquidity problems in the past and is rectifying those problems, or it could mean the company has become less efficient in managing its current accounts. Similar arguments could be made for a peer group comparison.

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A company with a current ratio lower than its peers could be more efficient at managing its current accounts, or it could be facing liquidity problems. Neither analysis method tells us whether a ratio is good or bad, both simply show that something is different, and tells us where to look. If a company is growing by opening new stores, then presumably total revenues would be rising. Comparing total sales at two different points in time might be misleading. Same-store sales control for this by only looking at revenues of stores open within a specific period. The reason is that, ultimately, sales are the driving force behind a business.

A firm's assets, employees, and, in fact, just about every aspect of its operations and financing exist to directly or indirectly support sales. Put differently, a firm's future need for things like capital assets, employees, inventory, and financing are determined by its future sales level. Two assumptions of the sustainable growth formula are that the company does not want to sell new equity, and that financial policy is fixed. If the company raises outside equity, or increases its debt-equity ratio, it can grow at a higher rate than the sustainable growth rate.

Of course, the company could also grow faster than its profit margin increases, if it changes its dividend policy by increasing the retention ratio, or its total asset turnover increases. 2. 3. 4. B-20 SOLUTIONS 5. The sustainable growth rate is greater than 20 percent, because at a 20 percent growth rate the negative EFN indicates that there is excess financing still available. If the firm is 100 percent equity financed, then the sustainable and internal growth rates are equal and the internal growth rate would be greater than 20 percent.

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However, when the firm has some debt, the internal growth rate is always less than the sustainable growth rate, so it is ambiguous whether the internal growth rate would be greater than or less than 20 percent. If the retention ratio is increased, the firm will have more internal funding sources available, and it will have to take on more debt to keep the debt/equity ratio constant, so the EFN will decline. Conversely, if the retention ratio is decreased, the EFN will rise. If the retention rate is zero, both the internal and sustainable growth rates are zero, and the EFN will rise to the change in total assets. . Common-size financial statements provide the financial manager with a ratio analysis of the company. The common-size income statement can show, for example, that cost of goods sold as a percentage of sales is increasing. The common-size balance sheet can show a firm's increasing reliance on debt as a form of financing. Common-size statements of cash flows are not calculated for a simple reason: There is no possible denominator. It would reduce the external funds needed. If the company is not operating at full capacity, it would be able to increase sales without a commensurate increase in fixed assets.

ROE is a better measure of the company's performance. ROE shows the percentage return for the year earned on shareholder investment. Since the goal of a company is to maximize shareholder wealth, this ratio shows the company's performance in achieving this goal over the period. The EBITD/Assets ratio shows the company's operating performance before interest, taxes, and depreciation. This ratio would show how a company has controlled costs. While taxes are a cost, and depreciation and amortization

can be considered costs, they are not as easily controlled by company management.

Conversely, depreciation and amortization can be altered by accounting choices. This ratio only uses costs directly related to operations in the numerator. As such, it gives a better metric to measure management performance over a period than does ROA. 7. 8. 9. 10. Long-term liabilities and equity are investments made by investors in the company, either in the form of a loan or ownership. Return on investment is intended to measure the return the company earned from these investments. Return on investment will be higher than the return on assets for a company with current liabilities.

To see this, realize that total assets must equal total debt and equity, and total debt and equity is equal to current liabilities plus long-term liabilities plus equity. So, return on investment could be calculated as net income divided by total assets minus current liabilities. 11. Presumably not, but, of course, if the product had been much less popular, then a similar fate would have awaited due to lack of sales. 12. Since customers did not pay until shipment, receivables rose. The firm's NWC, but not its cash, increased. At the same time, costs were rising faster than cash revenues, so operating cash flow declined.

The firm's capital spending was also rising. Thus, all three components of cash flow from assets were negatively impacted. 13. Financing possibly could have been arranged if the company had taken quick enough action. Sometimes it becomes apparent that help is needed only when it is too late,

again emphasizing the need for planning. CHAPTER 3 B-21 14. All three were important, but the lack of cash or, more generally, financial resources ultimately spelled doom. An inadequate cash resource is usually cited as the most common cause of small business failure. 5. Demanding cash upfront, increasing prices, subcontracting production, and improving financial resources via new owners or new sources of credit are some of the options. When orders exceed capacity, price increases may be especially beneficial. Solutions to Questions and Problems NOTE: All end-of-chapter problems were solved using a spreadsheet. Many problems require multiple steps. Due to space and readability constraints, when these intermediate steps are included in this solutions manual, rounding may appear to have occurred.

However, the final answer for each problem is found without rounding during any step in the problem. Basic 1.  $ROE = (PM)(TAT)(EM)$   $ROE = (.085)(1.30)(1.75) = 19.34\%$  The equity multiplier is:  $EM = 1 + D/E$   $EM = 1 + 1.40 = 2.40$  One formula to calculate return on equity is:  $ROE = (ROA)(EM)$   $ROE = .087(2.40) = 20.88\%$  ROE can also be calculated as:  $ROE = NI / TE$  So, net income is:  $NI = ROE(TE)$   $NI = (.2088)(\$520,000) = \$108,576$  3. This is a multi-step problem involving several ratios. The ratios given are all part of the Du Pont Identity. The only Du Pont Identity ratio not given is the profit margin.

If we know the profit margin, we can find the net income since sales are given. So, we begin with the Du Pont Identity:  $ROE = 0.16 = (PM)(TAT)(EM)$   $= (PM)(S / TA)(1 + D/E)$  Solving the Du Pont Identity for profit margin, we get:  $PM = [(ROE)(TA)] / [(1 + D/E)(S)]$   $PM = [(0.16)(\$1,185)] / [(1 + 1)(\$2,700)] = .0351$  2. B-22 SOLUTIONS Now that we have the profit margin, we <https://assignbuster.com/corporate-finance-assignment/>

can use this number and the given sales figure to solve for net income:  $PM = .0351 = NI / S$   $NI = .0351(\$2,700) = \$94.80$

4. An increase of sales to \$23,040 is an increase of:  $Sales\ increase = (\$23,040 - \$19,200) / \$19,200$

$Sales\ increase = .20$  or 20% Assuming costs and assets increase

proportionally, the pro forma financial statements will look like this: Pro

forma income statement Sales \$23,040.00 Costs 18,660.00 EBIT 4,380.

00 Taxes (34%) 1,489.20 Net income \$ 2,890.80 Assets Total Pro forma

balance sheet \$ 111,600 Debt Equity \$ 111,600 Total \$ 20,400.00 74,334.

48 \$ 94,734.48 The payout ratio is constant, so the dividends paid this year

is the payout ratio from last year times net income, or:  $Dividends = (\$963.$

$60 / \$2,409)(\$2,890.80)$   $Dividends = \$1,156.32$  The addition to retained

earnings is:  $Addition\ to\ retained\ earnings = \$2,890.80 - \$1,156.32$

$Addition\ to\ retained\ earnings = \$1,734.48$  And the new equity balance is:

$Equity = \$72,600 + \$1,734.48$   $Equity = \$74,334.48$  So the EFN is:  $EFN =$

$Total\ assets - Total\ liabilities\ and\ equity$   $EFN = \$111,600 - \$74,334.48$

$EFN = \$37,265.52$  CHAPTER 3 B-23 5. The maximum percentage sales

increase is the sustainable growth rate. To calculate the sustainable growth

rate, we first need to calculate the ROE, which is:  $ROE = NI / TE$   $ROE = \$12,$

$672 / \$73,000$   $ROE = .1736$  The plowback ratio,  $b$ , is one minus the payout

ratio, so:  $b = 1 - .30$   $b = .70$  Now we can use the sustainable growth rate

equation to get:  $Sustainable\ growth\ rate = (ROE \cdot b) / [1 + (ROE \cdot b)]$

$Sustainable\ growth\ rate = [.1736(.70)] / [1 + .1736(.70)]$  Sustainable

growth rate = .1383 or 13.83% So, the maximum dollar increase in sales is:

$Maximum\ increase\ in\ sales = \$54,000(.1383)$   $Maximum\ increase\ in\ sales =$

$\$7,469.27$  6. We need to calculate the retention ratio to calculate the

sustainable growth rate. The retention ratio is:  $b = 1 - .25$   $b = .75$  Now

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we can use the sustainable growth rate equation to get: Sustainable growth rate =  $(ROE \cdot b) / [1 - (ROE \cdot b)]$  Sustainable growth rate =  $[\cdot 19(\cdot 75)] / [1 - \cdot 19(\cdot 75)]$  Sustainable growth rate =  $\cdot 1662$  or 16.62% 7. We must first calculate the ROE using the Du Pont ratio to calculate the sustainable growth rate. The ROE is:  $ROE = (PM)(TAT)(EM)$   $ROE = (\cdot 076)(1.40)(1.50)$   $ROE = 15.96\%$  The plowback ratio is one minus the dividend payout ratio, so:  $b = 1 - \cdot 40$   $b = \cdot 60$  B-24 SOLUTIONS Now, we can use the sustainable growth rate equation to get: Sustainable growth rate =  $(ROE \cdot b) / [1 - (ROE \cdot b)]$  Sustainable growth rate =  $[\cdot 1596(\cdot 60)] / [1 - \cdot 1596(\cdot 60)]$  Sustainable growth rate = 10.59% 8.

An increase of sales to \$5,192 is an increase of: Sales increase =  $(\$5,192 - \$4,400) / \$4,400$  Sales increase =  $\cdot 18$  or 18% Assuming costs and assets increase proportionally, the pro forma financial statements will look like this: Pro forma income statement  

	Sales	Costs	Net income
	\$ 5,192	3,168	2,024

 Pro forma balance sheet  

	Assets	Total	Debt	Equity
	\$ 15,812	\$ 15,812	9,100	6,324

 If no dividends are paid, the equity account will increase by the net income, so:  $Equity = \$4,300 + 2,024$   $Equity = \$6,324$  So the EFN is:  $EFN = Total\ assets - Total\ liabilities\ and\ equity$   $EFN = \$15,812 - 15,424 = \$388$  9. a.

First, we need to calculate the current sales and change in sales. The current sales are next year's sales divided by one plus the growth rate, so:  $Current\ sales = Next\ year's\ sales / (1 + g)$   $Current\ sales = \$440,000,000 / (1 + \cdot 10)$   $Current\ sales = \$400,000,000$  And the change in sales is:  $Change\ in\ sales = \$440,000,000 - 400,000,000$   $Change\ in\ sales = \$40,000,000$  CHAPTER 3 B-25 We can now complete the current balance sheet. The current assets, <https://assignbuster.com/corporate-finance-assignment/>

fixed assets, and short-term debt are calculated as a percentage of current sales. The long-term debt and par value of stock are given. The plug variable is the additions to retained earnings.

So: Assets Current assets Liabilities and equity Short-term debt Long-term debt Common stock Accumulated retained earnings Total equity Total liabilities and equity \$80,000,000 \$60,000,000 \$145,000,000 \$60,000,000 375,000,000 \$435,000,000 \$640,000,000 Fixed assets 560,000,000 Total assets b. \$640,000,000 We can use the equation from the text to answer this question. The assets/sales and debt/sales are the percentages given in the problem, so:  $EFN = \frac{\text{Assets}}{\text{Sales}} \times \text{Sales} - \frac{\text{Debt}}{\text{Sales}} \times \text{Sales} - (\text{p} \times \text{Projected sales}) + (1 - \text{d}) \times \text{Sales}$   $EFN = (.20 + 1.40) \times \$40,000,000 - (.15 \times \$40,000,000) + [(1 - .12) \times \$440,000,000] - (1 - .40) \times \$440,000,000$   $EFN = \$26,320,000$  c.

The current assets, fixed assets, and short-term debt will all increase at the same percentage as sales. The long-term debt and common stock will remain constant. The accumulated retained earnings will increase by the addition to retained earnings for the year. We can calculate the addition to retained earnings for the year as:  $\text{Net income} = \text{Profit margin} \times \text{Sales}$   $\text{Net income} = .12(\$440,000,000)$   $\text{Net income} = \$52,800,000$  The addition to retained earnings for the year will be the net income times one minus the dividend payout ratio, which is:  $\text{Addition to retained earnings} = \text{Net income} \times (1 - \text{d})$   $\text{Addition to retained earnings} = \$52,800,000 \times (1 - .40)$   $\text{Addition to retained earnings} = \$31,680,000$  So, the new accumulated retained earnings will be:  $\text{Accumulated retained earnings} = \$375,000,000 + 31,680,000$   $\text{Accumulated retained earnings} = \$406,680,000$  B-26 SOLUTIONS The <https://assignbuster.com/corporate-finance-assignment/>

pro forma balance sheet will be: Assets Current assets Liabilities and equity  
 Short-term debt Long-term debt Common stock Accumulated retained  
 earnings Total equity Total liabilities and equity \$88, 000, 000 \$66, 000, 000  
 \$145, 000, 000 \$60, 000, 000 406, 680, 000 \$466, 680, 000 \$677, 680, 000  
 Fixed assets 616, 000, 000 Total assets The EFN is: \$704, 000, 000

EFN = Total assets - Total liabilities and equity EFN = \$704, 000, 000

677, 680, 000 EFN = \$26, 320, 000 10. a. The sustainable growth is:

Sustainable growth rate = ROE  $\times$  (1 - ROE  $\times$  b) where: b = Retention ratio =

1 - Payout ratio = .65 So: Sustainable growth rate = .0850  $\times$  .65 / (1 - .0850

$\times$  .65) Sustainable growth rate = .0585 or 5.85% b. It is possible for the

sustainable growth rate and the actual growth rate to differ. If any of the actual parameters in the sustainable growth rate equation differs from those used to compute the sustainable growth rate, the actual growth rate will differ from the sustainable growth rate.

Since the sustainable growth rate includes ROE in the calculation, this also implies that changes in the profit margin, total asset turnover, or equity multiplier will affect the sustainable growth rate. The company can increase its growth rate by doing any of the following: Increase the debt-to-equity ratio by selling more debt or repurchasing stock Increase the profit margin, most likely by better controlling costs. Decrease its total assets/sales ratio; in other words, utilize its assets more efficiently. Reduce the dividend payout ratio. c. CHAPTER 3 B-27 Intermediate 11.

The solution requires substituting two ratios into a third ratio. Rearranging D/TA: Firm A  $D / TA = .60$  (TA  $\times$  E) / TA = .60 (TA / TA)  $\times$  (E / TA) = .60

$ROA = \frac{E}{TA} = .60$   $E / TA = .40$   $E = .40(TA)$  Rearranging ROA, we find:  $NI / TA = .20$   $NI = .20(TA)$  Firm B  $D / TA = .40$   $(TA - E) / TA = .40$   $(TA - TA) / TA = .40$   $0 = .40$   $1 - (E / TA) = .40$   $1 - (E / TA) = .60$   $E = .60(TA)$   $NI / TA = .30$   $NI = .30(TA)$  Since  $ROE = NI / E$ , we can substitute the above equations into the ROE formula, which yields:  $ROE = .20(TA) / .40(TA) = .20 / .40 = 50\%$  12.  $PM = NI / S = 13,156 / 147,318 = 8.93\%$   $ROE = .0(TA) / .60(TA) = .30 / .60 = 50\%$  As long as both net income and sales are measured in the same currency, there is no problem; in fact, except for some market value ratios like EPS and BVPS, none of the financial ratios discussed in the text are measured in terms of currency. This is one reason why financial ratio analysis is widely used in international finance to compare the business operations of firms and/or divisions across national economic borders. The net income in dollars is:  $NI = PM \times Sales$   $NI = 0.0893(\$267,661) = \$23,903$  13. a. The equation for external funds needed is:  $EFN =$

$Assets - Sales \times \text{Debt/Sales} - (PM \times \text{Projected sales}) \times (1 + \text{Sales growth rate})$  d) where:  $Assets/Sales = \$31,000,000 / \$38,000,000 = 0.82$   $Sales = \text{Current sales} \times (1 + \text{Sales growth rate}) = \$38,000,000(1.20) = \$45,600,000$   $Debt/Sales = \$8,000,000 / \$38,000,000 = .2105$   $p = \text{Net income/Sales} = \$2,990,000 / \$38,000,000 = .0787$   $\text{Projected sales} = \text{Current sales} \times (1 + \text{Sales growth rate}) = \$38,000,000(1.20) = \$45,600,000$   $d = \text{Dividends/Net income} = \$1,196,000 / \$2,990,000 = .40$  so:  $EFN = (.82 \times \$45,600,000) - (.2105 \times \$45,600,000) - (.0787 \times \$45,600,000) - (1 - .40) \times \$45,600,000$   $EFN = \$2,447,200$  B-28 SOLUTIONS b.

The current assets, fixed assets, and short-term debt will all increase at the same percentage as sales. The long-term debt and common stock will remain constant. The accumulated retained earnings will increase by the addition to retained earnings for the year. We can calculate the addition to retained earnings for the year as:  $\text{Net income} = \text{Profit margin} \times \text{Sales}$   
 $\text{Net income} = .0787(\$45,600,000) = \$3,588,000$   
 The addition to retained earnings for the year will be the net income times one minus the dividend payout ratio, which is:  $\text{Addition to retained earnings} = \text{Net income}(1 - \text{Dividend payout ratio})$   
 $\text{Addition to retained earnings} = \$3,588,000(1 - .0) = \$3,588,000$   
 So, the new accumulated retained earnings will be:  $\text{Accumulated retained earnings} = \$13,000,000 + 2,152,800 = \$15,152,800$   
 The pro forma balance sheet will be:

Assets	Current assets	Liabilities and equity	Short-term debt	Long-term debt	Common stock	Accumulated retained earnings	Total equity
Total liabilities and equity	\$10,800,000	\$9,600,000	\$6,000,000	\$4,000,000	15,152,800	\$19,152,800	\$34,752,800
Fixed assets	26,400,000						
Total assets							

The EFN is: \$37,200,000

$\text{EFN} = \text{Total assets} - \text{Total liabilities and equity} = \$37,200,000 - 34,752,800 = \$2,447,200$   
 CHAPTER 3 B-29 c. The sustainable growth rate is:  $\text{Sustainable growth rate} = \text{ROE} \times \text{Retention ratio}$   
 where:  $\text{ROE} = \frac{\text{Net income}}{\text{Total equity}} = \frac{\$2,990,000}{\$17,000,000} = .1759$   
 $\text{Retention ratio} = \frac{\text{Retained earnings}}{\text{Net income}} = \frac{\$1,794,000}{\$2,990,000} = .60$   
 So:  $\text{Sustainable growth rate} = .1759 \times .60 = .10554$  or 10.55%  
 11.80% ROE b 1 - ROE b d. The company cannot just cut its dividends to

achieve the forecast growth rate. As shown below, even with a zero dividend policy, the EFN will still be \$1, 012, 000.

Assets	Current assets	Liabilities and equity	Short-term debt	Long-term debt
Common stock	Accumulated retained earnings	Total equity	Total liabilities	
and equity	\$10, 800, 000	\$9, 600, 000	\$6, 000, 000	\$4, 000, 000
		16, 588, 000		
	\$20, 588, 000	\$36, 188, 000	Fixed assets	26, 400, 000
			Total assets	The
EFN is:	\$37, 200, 000	EFN = Total assets	???	Total liabilities and equity
		EFN = \$37, 200, 000	???	36, 188, 000
			EFN = \$1, 012, 000	The company does

have several alternatives. It can increase its asset utilization and/or its profit margin. The company could also increase the debt in its capital structure.

This will decrease the equity account, thereby increasing ROE. 14. This is a multi-step problem involving several ratios. It is often easier to look backward to determine where to start. We need receivables turnover to find days' sales in receivables. To calculate receivables turnover, we need credit sales, and to find credit sales, we need total sales. Since we are given the profit margin and net income, we can use these to calculate total sales as:

$$PM = 0.086 = NI / Sales = \$173,000 / Sales; \text{ Sales} = \$2,011,628$$

Credit sales are 75 percent of total sales, so: Credit sales =  $\$2,011,628(0.75) = \$1,508,721$

B-30 SOLUTIONS Now we can find receivables turnover by: Receivables turnover = Sales / Accounts receivable =  $\$1,508,721 / \$143,200 = 10.54$  times Days' sales in receivables =  $365 \text{ days} / \text{Receivables turnover} = 365 / 10.54 = 34.64$  days 15. The solution to this problem requires a number of steps. First, remember that CA + NFA = TA. So, if we find the CA and the TA,

we can solve for NFA. Using the numbers given for the current ratio and the current liabilities, we solve for CA:  $CR = CA / CL$   $CA = CR(CL) = 1.20(\$850) = \$1,020$  To find the total assets, we must first find the total debt and equity from the information given.

So, we find the net income using the profit margin:  $PM = NI / Sales$   $NI = Profit\ margin \times Sales = .095(\$4,310) = \$409.45$  We now use the net income figure as an input into ROE to find the total equity:  $ROE = NI / TE$   $TE = NI / ROE = \$409.45 / .215 = \$1,904.42$  Next, we need to find the long-term debt. The long-term debt ratio is:  $Long\text{-}term\ debt\ ratio = 0.70 = LTD / (LTD + TE)$  Inverting both sides gives:  $1 / 0.70 = (LTD + TE) / LTD = 1 + (TE / LTD)$  Substituting the total equity into the equation and solving for long-term debt gives the following:  $1 + \$1,904.42 / LTD = 1.429$   $LTD = \$1,904.2 / .429 = \$4,443.64$  Now, we can find the total debt of the company:  $TD = CL + LTD = \$850 + 4,443.64 = \$5,293.64$  And, with the total debt, we can find the TD&E, which is equal to TA:  $TA = TD + TE = \$5,293.64 + 1,904.42 = \$7,198.06$  And finally, we are ready to solve the balance sheet identity as:  $NFA = TA - CA = \$7,198.06 - 1,020 = \$6,178.06$  CHAPTER 3 B-31

16. This problem requires you to work backward through the income statement. First, recognize that  $Net\ income = (1 - t_c)EBT$ . Plugging in the numbers given and solving for EBT, we get:  $EBT = \$7,850 / 0.66 = \$11,893.4$  Now, we can add interest to EBIT to get EBIT as follows:  $EBIT = EBT + Interest\ paid = \$11,893.94 + 2,108 = \$14,001.94$  To get EBITD (earnings before interest, taxes, and depreciation), the numerator in the cash coverage ratio, add depreciation to EBIT:  $EBITD = EBIT + Depreciation = \$14,001.94 + 1,687 = \$15,688.94$  Now, simply plug the numbers into the cash

coverage ratio and calculate: Cash coverage ratio = EBITD / Interest = \$15,688.94 / \$2,108 = 7.44 times. The only ratio given which includes cost of goods sold is the inventory turnover ratio, so it is the last ratio used.

Since current liabilities are given, we start with the current ratio: Current ratio = 3.3 = CA / CL = CA / \$340,000 CA = \$1,122,000 Using the quick ratio, we solve for inventory: Quick ratio = 1.8 = (CA - Inventory) / CL = (\$1,122,000 - Inventory) / \$340,000 Inventory = CA - (Quick ratio \* CL) Inventory = \$1,122,000 - (1.8 \* \$340,000) Inventory = \$510,000 Inventory turnover = 4.2 = COGS / Inventory = COGS / \$510,000 COGS = \$2,142,000

B-32 SOLUTIONS 18. 2005 Assets Current assets Cash Accounts receivable Inventory Total Fixed assets Net plant and equipment Total assets \$ 10,168 27,145 59,324 \$ 96,637 304,165 \$400,802

Common size 2.54% 6.77% 14.80% 24.11% 75.89% 100% 2006 \$ 10,683 28,613 64,853 \$104,419 347,168 \$451,317 Common Commonsized base year 2.37% 6.34% 14.37% 23.08% 76.92% 100% 1.0506 1.0541 1.0932 1.0777 1.1414 1.1260 Liabilities and Owners' Equity Current liabilities Accounts payable \$ 73,185 Notes payable 39,125 Total \$112,310 Long-term debt \$ 50,000 Owners' equity Common stock & paid-in surplus \$ 80,000 Accumulated retained earnings 158,492 Total \$238,492 Total liabilities and owners' equity \$400,802 18.26% 9.76% 28.02% 12.47% 19.6% 39.54% 59.50% 100% \$ 59,309 48,168 \$107,477 \$ 62,000 \$ 80,000 201,840 \$281,840 \$451,317 13.14% 10.67% 23.81% 13.74% 17.73% 44.72% 62.45% 100% 0.8104 1.2311 0.9570 1.2400 1.0000 1.2735 1.1818 1.1260

The common-size balance sheet answers are found by dividing each category by total assets. For example, the cash percentage for 2005 is: \$10,168 / \$400,802 = 2.54%

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$168 / \$400,802 = .0254$  or 2.54% This means that cash is 2.54% of total assets. The common-base year answers are found by dividing each category value for 2006 by the same category value for 2005.

For example, the cash common-base year number is found by:  $\$10,683 / \$10,168 = 1.050619$ . To determine full capacity sales, we divide the current sales by the capacity the company is currently using, so: Full capacity sales =  $\$510,000 / .85$  Full capacity sales =  $\$600,000$  So, the dollar growth rate in sales is: Sales growth =  $\$600,000 - \$510,000$  Sales growth =  $\$90,000$  CHAPTER 3 B-33 20. To find the new level of fixed assets, we need to find the current percentage of fixed assets to full capacity sales. Doing so, we find:

Fixed assets / Full capacity sales =  $\$415,000 / \$600,000$  Fixed assets / Full capacity sales =  $.6917$  Next, we calculate the total dollar amount of fixed assets needed at the new sales figure. Total fixed assets =  $.6917(\$680,000)$  Total fixed assets =  $\$470,333.33$  The new fixed assets necessary is the total fixed assets at the new sales figure minus the current level of fixed assets. New fixed assets =  $\$470,333.33 - \$415,000$  New fixed assets =  $\$55,333.33$  21. Assuming costs vary with sales and a 20 percent increase in sales, the pro forma income statement will look like this:

MOOSE TOURS INC. Pro Forma Income Statement  
 Sales \$ 1,086,000  
 Costs 852,000  
 Other expenses 14,400  
 EBIT \$ 219,600  
 Interest 19,700  
 Taxable income \$ 199,900  
 Taxes(35%) 69,965  
 Net income \$ 129,935  
 The payout ratio is constant, so the dividends paid this year is the payout ratio from last year times net income, or: Dividends =  $(\$42,458 / \$106,145)(\$129,935)$

Dividends = \$51,974 And the addition to retained earnings will be: Addition to retained earnings = \$129,935 - 51,974 Addition to retained earnings = \$77,961 The new accumulated retained earnings on the pro forma balance sheet will be: New accumulated retained earnings = \$257,000 + 77,961 New accumulated retained earnings = \$334,961 B-34 SOLUTIONS The pro forma balance sheet will look like this: MOOSE TOURS INC.

Pro Forma Balance Sheet

Assets	Current assets	Cash	Accounts receivable	Inventory	Total Fixed assets	Net plant and equipment	\$	\$	30,000	51,600	91,200	172,800	436,800								
Liabilities and Owners' Equity	Current liabilities	Accounts payable	Notes payable	Total Long-term debt	Owners' equity	Common stock and paid-in surplus	Retained earnings	Total	Total liabilities and owners' equity	\$	\$	78,000	9,000	87,000	156,000	\$	\$	21,000	334,961	355,961	598,961

Total assets So, the EFN is: \$ 609,600

EFN = Total assets - Total liabilities and equity EFN = \$609,600 - 598,961 EFN = \$10,639

22. First, we need to calculate full capacity sales, which is: Full capacity sales = \$905,000 / .80 Full capacity sales = \$1,131,250

The capital intensity ratio at full capacity sales is: Capital intensity ratio = Fixed assets / Full capacity sales Capital intensity ratio = \$364,000 / \$1,131,250 Capital intensity ratio = .32177

The fixed assets required at full capacity sales is the capital intensity ratio times the projected sales level: Total fixed assets = .2177(\$1,086,000) = \$349,440 So, EFN is: EFN = (\$172,800 + 349,440) - \$598,961 = -\$76,721

Note that this solution assumes that fixed assets are decreased (sold) so the company has a 100 percent fixed asset utilization. If we assume fixed assets are not sold, the answer becomes: EFN = (\$172,800 + 364,000) - \$598,961 = -\$62,161

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161 CHAPTER 3 B-35 23. The D/E ratio of the company is:  $D/E = (\$156,000 + 74,000) / \$278,000$   $D/E = .82734$  So the new total debt amount will be:  $\text{New total debt} = .82734(\$355,961)$   $\text{New total debt} = \$294,500.11$  So, the EFN is:  $\text{EFN} = \$609,600 - (\$294,500.11 + 355,961) = -\$40,861.1$  An interpretation of the answer is not that the company has a negative EFN.

Looking back at Problem 21, we see that for the same sales growth, the EFN is \$10,639. The negative number in this case means the company has too much capital. There are two possible solutions. First, the company can put the excess funds in cash, which has the effect of changing the current asset growth rate. Second, the company can use the excess funds to repurchase debt and equity. To maintain the current capital structure, the repurchase must be in the same proportion as the current capital structure.

Challenge 24. The pro forma income statements for all three growth rates will be:

	Sales	Costs	Other expenses	EBIT	Interest	Taxable income	Taxes (35%)	Net income	Dividends	Add to RE
MOOSE TOURS INC. Pro Forma Income Statement	15 % Sales	20% Sales	Growth	Growth						
	\$1,040,750	\$1,086,000	816,500	852,000	13,800	14,400	\$210,450	\$219,600	19,700	19,700
	\$190,750	\$199,900	66,763	69,965	\$123,988	\$129,935	\$49,595	74,393	\$51,974	77,961
	25% Sales	Growth								
	\$1,131,250	887,500	15,000	\$228,750	19,700	\$209,050	73,168	\$135,883	\$54,353	81,530

We will calculate the EFN for the 15 percent growth rate first. Assuming the payout ratio is constant, the dividends paid will be:  $\text{Dividends} = (\$42,458 / \$106,145)(\$123,988)$   $\text{Dividends} = \$49,595$  B-36 SOLUTIONS And the addition to retained earnings will be:  $\text{Addition to retained earnings} = \$123,988 - \$49,595$   $\text{Addition to retained earnings} = \$74,393$  The new

accumulated retained earnings on the pro forma balance sheet will be: New accumulated retained earnings = \$257,000 + 74,393 New accumulated retained earnings = \$331,393 The pro forma balance sheet will look like this: 15% Sales Growth:

MOOSE TOURS INC. Pro Forma Balance Sheet

Assets	Current assets	Cash	Accounts receivable	Inventory	Total Fixed assets	Net plant and equipment	\$
		\$ 28,750	49,450	87,400	165,600	418,600	
Liabilities and Owners' Equity	Current liabilities	Accounts payable	Notes payable	Total Long-term debt	Owners' equity	Common stock and paid-in surplus	Retained earnings
Total liabilities and owners' equity	\$	\$	74,750	9,000	83,750	156,000	\$ \$ \$
		21,000	331,393	352,393	592,143	Total assets	So, the EFN is: \$ 584,200

EFN = Total assets - Total liabilities and equity EFN = \$584,200 - 592,143 EFN = -\$7,943 At a 20 percent growth rate, and assuming the payout ratio is constant, the dividends paid will be: Dividends = (\$42,458/\$106,145)(\$129,935) Dividends = \$51,974 And the addition to retained earnings will be: Addition to retained earnings = \$129,935 - 51,974 Addition to retained earnings = \$77,961 CHAPTER 3 B-37 The new accumulated retained earnings on the pro forma balance sheet will be: New accumulated retained earnings = \$257,000 + 77,961 New accumulated retained earnings = \$334,961 The pro forma balance sheet will look like this: 20% Sales Growth:

MOOSE TOURS INC. Pro Forma Balance Sheet

Assets	Current assets	Cash	Accounts receivable	Inventory	Total Fixed assets	Net plant and equipment	\$
		\$ 30,000	51,600	91,200	172,800	436,800	
Liabilities and Owners' Equity							

Current liabilities Accounts payable Notes payable Total Long-term debt  
 Owners' equity Common stock and paid-in surplus Retained earnings Total  
 Total liabilities and owners' equity \$ \$ 78,000 9,000 87,000 156,000 \$ \$ \$  
 21,000 334,961 355,961 598,961 Total assets So, the EFN is: \$ 609,600

EFN = Total assets - Total liabilities and equity EFN = \$609,600 - 598,961  
 EFN = \$10,639 At a 25 percent growth rate, and assuming the payout  
 ratio is constant, the dividends paid will be: Dividends = (\$42,458/\$106,  
 145)(\$135,883) Dividends = \$54,353 And the addition to retained earnings  
 will be: Addition to retained earnings = \$135,883 - 54,353 Addition to  
 retained earnings = \$81,530 The new accumulated retained earnings on the  
 pro forma balance sheet will be: New accumulated retained earnings = \$257,  
 000 + 81,530 New accumulated retained earnings = \$338,530 B-38

SOLUTIONS The pro forma balance sheet will look like this: 25% Sales  
 Growth:

MOOSE TOURS INC. Pro Forma Balance Sheet Assets Current assets Cash  
 Accounts receivable Inventory Total Fixed assets Net plant and equipment \$  
 \$ 31,250 53,750 95,000 180,000 455,000 Liabilities and Owners' Equity  
 Current liabilities Accounts payable Notes payable Total Long-term debt  
 Owners' equity Common stock and paid-in surplus Retained earnings Total  
 Total liabilities and owners' equity \$ \$ 81,250 9,000 90,250 156,000 \$ \$ \$  
 21,000 338,530 359,530 605,780 Total assets So, the EFN is: \$ 635,000  
 EFN = Total assets - Total liabilities and equity EFN = \$635,000 - 605,  
 780 EFN = \$29,221.25.

The pro forma income statements for all three growth rates will be:

	20%	30%	35%
Sales	\$1,086,000	\$1,176,500	\$1,221,750
Costs	852,000	923,000	958,500
Other expenses	15,600	14,400	16,200
EBIT	\$219,600	\$237,900	\$247,050
Interest	\$19,700	\$19,700	\$19,700
Taxable income	\$199,900	\$218,200	\$227,350
Taxes (35%)	\$69,965	\$76,370	\$79,573
Net income	\$129,935	\$141,830	\$147,778
Dividends	\$51,974	\$56,732	\$59,111
Add to RE	\$77,961	\$85,098	\$88,667

MOOSE TOURS INC. Pro Forma Income Statement

CHAPTER 3 B-39 Under the sustainable growth rate assumption, the company maintains a constant debt-equity ratio. The D/E ratio of the company is:  $D/E = (\$156,000 + 74,000) / \$278,000$   $D/E = .82734$  At a 20 percent growth rate, and assuming the payout ratio is constant, the dividends paid will be:  $Dividends = (\$42,458 / \$106,145) (\$129,935)$   $Dividends = \$51,974$  And the addition to retained earnings will be:  $Addition\ to\ retained\ earnings = \$129,935 - 51,974$   $Addition\ to\ retained\ earnings = \$77,961$  The total equity on the pro forma balance sheet will be:  $New\ total\ equity = \$21,000 + 257,000 + 77,961$   $New\ total\ equity = \$355,961$  The new total debt will be:  $New\ total\ debt = .2734(\$355,961)$   $New\ total\ debt = \$294,500$  So, the new long-term debt will be the new total debt minus the new short-term debt, or:  $New\ long-term\ debt = \$294,500 - 87,000$   $New\ long-term\ debt = \$207,500$

B-40 SOLUTIONS The pro forma balance sheet will look like this: Sales growth rate = 20% and Debt/Equity ratio = .82734: MOOSE TOURS INC.

Pro Forma Balance Sheet

Assets	Current assets	Net plant and equipment
Cash	\$30,000	\$91,200
Accounts receivable	51,600	172,800
Inventory	436,800	436,800
Total Fixed assets		
Liabilities and Owners' Equity		
Current liabilities		

Accounts payable Notes payable Total Long-term debt Owners' equity  
 Common stock and paid-in surplus Retained earnings Total Total liabilities  
 and owners' equity \$ \$ 78, 000 9, 000 87, 000 207, 500 \$ \$ \$ 21, 000 334,  
 961 355, 961 650, 461 Total assets So, the EFN is: \$ 609, 600

EFN = Total assets - Total liabilities and equity EFN = \$609, 600  
 650, 461 EFN = \$40, 861 At a 30 percent growth rate, and assuming the  
 payout ratio is constant, the dividends paid will be: Dividends = (\$42,  
 458/\$106, 145)(\$141, 830) Dividends = \$56, 732 And the addition to  
 retained earnings will be: Addition to retained earnings = \$141, 830 - 56,  
 732 Addition to retained earnings = \$85, 098 The new total equity on the pro  
 forma balance sheet will be: New total equity = \$21, 000 + 257, 000 + 85,  
 098 New total equity = \$363, 098 The new total debt will be: New total debt  
 = . 2734(\$363, 098) New tota