Solutions Manual

Fundamentals of Corporate Finance 2nd edition

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CHAPTER 1
INTRODUCTION TO CORPORATE FINANCE

Answers to Concepts Review and Critical Thinking Questions

1. Capital budgeting (deciding whether to expand a manufacturing plant), capital structure (deciding whether to issue new equity and use the proceeds to retire outstanding debt), and working capital management (modifying the firm's credit collection policy with its customers).

2. Disadvantages: unlimited liability, limited life, difficulty in transferring ownership, difficulty in raising capital funds. Some advantages: simpler, less regulation, the owners are also the managers, sometimes personal tax rates are better than corporate tax rates.

3. The primary disadvantage of the corporate form is the double taxation to shareholders of distributed earnings and dividends. Some advantages include: limited liability, ease of transferability, ability to raise capital, and unlimited life.

4. In response to Sarbanes-Oxley, small firms have elected to go dark because of the costs of compliance. The costs to comply with Sarbox can be several million dollars, which can be a large percentage of a small firm's profits. A major cost of going dark is less access to capital. Since the firm is no longer publicly traded, it can no longer raise money in the public market. Although the company will still have access to bank loans and the private equity market, the costs associated with raising funds in these markets are usually higher than the costs of raising funds in the public market.

5. The treasurer's office and the controller's office are the two primary organizational groups that report directly to the chief financial officer. The controller's office handles cost and financial accounting, tax management, and management information systems, while the treasurer's office is responsible for cash and credit management, capital budgeting, and financial planning. Therefore, the study of corporate finance is concentrated within the treasury group's functions.

6. To maximize the current market value (share price) of the equity of the firm (whether it's publicly traded or not).

7. 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.

8. A primary market transaction.

9. In auction markets like the NYSE, brokers and agents meet at a physical location (the exchange) to match buyers and sellers of assets. Dealer markets like NASDAQ consist of dealers operating at dispersed locales who buy and sell assets themselves, communicating with other dealers either electronically or literally over-the-counter.

10. Such organizations frequently pursue social or political missions, so many different goals are conceivable. One goal that is often cited is revenue minimization; that is, 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.

11. 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.

12. 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 noneconomic 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?"

13. 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.

14. 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.

15. We would expect agency problems to be less severe in countries with a 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. 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.

16. How much is too much? Who is worth more, Lawrence Ellison 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, that is, stock price increases in excess of general market increases.

CHAPTER 2
FINANCIAL STATEMENTS, TAXES, AND CASH FLOW

Answers to Concepts Review and Critical Thinking Questions

1. Liquidity measures how quickly and easily an asset can be converted to cash without significant loss in value. It's desirable for firms to have high liquidity so that they have a large factor of safety in meeting short-term creditor demands. However, since liquidity also has an opportunity cost associated with it—namely that higher returns can generally be found by investing the cash into productive assets—low liquidity levels are also desirable to the firm. It's up to the firm's financial management staff to find a reasonable compromise between these opposing needs.

2. 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.

3. Historical costs can be objectively and precisely measured whereas market values can be difficult to estimate, and different analysts would come up with different numbers. Thus, there is a trade-off between relevance (market values) and objectivity (book values).

4. Depreciation is a noncash deduction that reflects adjustments made in asset book values in accordance with the matching principle in financial accounting. Interest expense is a cash outlay, but it's a financing cost, not an operating cost.

5. 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.

6. 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.

7. It's probably not a good sign for an established company, but it would be fairly ordinary for a start-up, so it depends.

8. 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 it 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.

9. 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, its cash flow to creditors will be negative.

10. 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.

11. Enterprise value is the theoretical takeover price. In the event of a takeover, an acquirer would have to take on the company's debt but would pocket its cash. Enterprise value differs significantly from simple market capitalization in several ways, and it may be a more accurate representation of a firm's value. In a takeover, the value of a firm's debt would need to be paid by the buyer. Thus, enterprise value provides a much more accurate takeover valuation because it includes debt in its value calculation.

12. In general, it appears that investors prefer companies that have a steady earnings stream. If true, this encourages companies to manage earnings. Under GAAP, there are numerous choices for the way a company reports its financial statements. Although not the reason for the choices under GAAP, one outcome is the ability of a company to manage earnings, which is not an ethical decision. Even though earnings and cash flow are often related, earnings management should have little effect on cash flow (except for tax implications). If the market is "fooled" and prefers steady earnings, shareholder wealth can be increased, at least temporarily. However, given the questionable ethics of this practice, the company (and shareholders) will lose value if the practice is discovered.

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 owners' equity, we must construct a balance sheet as follows:

Balance Sheet			
CA	$ 5,300	CL	$ 4,600
NFA	24,900	LTD	10,300
		OE	??
TA	$30,200	TL & OE	$30,200

We know that total liabilities and owners' equity (TL & OE) must equal total assets of $30,200. We also know that TL & OE is equal to current liabilities plus long-term debt plus owners' equity, so owners' equity is:

Owner's equity = $30,200 – 10,300 – 4,600 = $15,300

NWC = CA – CL = $5,300 – 4,600 = $700

2. The income statement for the company is:

Income Statement	
Sales	$817,000
Costs	343,000
Depreciation	51,000
EBIT	$423,000
Interest	38,000
EBT	$385,000
Taxes (35%)	134,750
Net income	$250,250

3. One equation for net income is:

Net income = Dividends + Addition to retained earnings

Rearranging, we get:

Addition to retained earnings = Net income – Dividends = $250,250 – 95,000 = $155,250

4. EPS = Net income / Shares = $250,250 / 90,000 = $2.78 per share

DPS = Dividends / Shares = $95,000 / 90,000 = $1.06 per share

5. Taxes = .15($50,000) + .25($25,000) + .34($25,000) + .39($267,000 – 100,000) = $87,380

6. The average tax rate is the total tax paid divided by taxable income, so:

Average tax rate = $87,380 / $267,000 = .3273, or 32.73%

The marginal tax rate is the tax rate on the next $1 of earnings, so the marginal tax rate = 39%.

7. To calculate OCF, we first need the income statement:

Income Statement	
Sales	$43,800
Costs	22,700
Depreciation	2,100
EBIT	$19,000
Interest	1,600
Taxable income	$17,400
Taxes (35%)	6,090
Net income	$11,310

OCF = EBIT + Depreciation – Taxes = $19,000 + 2,100 – 6,090 = $15,010

8. Net capital spending = $NFA_{end} – NFA_{beg}$ + Depreciation
Net capital spending = $3,500,000 – 2,700,000 + 328,000
Net capital spending = $1,128,000

9. Change in NWC = $NWC_{end} - NWC_{beg}$
Change in NWC = $(CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
Change in NWC = ($5,180 – 2,830) – ($4,630 – 2,190)
Change in NWC = $2,350 – 2,440 = –$90

10. Cash flow to creditors = Interest paid – Net new borrowing
Cash flow to creditors = Interest paid – $(LTD_{end} - LTD_{beg})$
Cash flow to creditors = $235,000 – ($2,280,000 – 1,950,000)
Cash flow to creditors = –$95,000

11. Cash flow to stockholders = Dividends paid – Net new equity
Cash flow to stockholders = Dividends paid – $[(Common_{end} + APIS_{end}) - (Common_{beg} + APIS_{beg})]$
Cash flow to stockholders = $565,000 – [($825,000 + 4,400,000) – ($670,000 + 4,100,000)]
Cash flow to stockholders = $110,000

Note, APIS is the additional paid-in surplus.

12. Cash flow from assets = Cash flow to creditors + Cash flow to stockholders
= –$95,000 + 110,000 = $15,000

Cash flow from assets = $15,000 = OCF – Change in NWC – Net capital spending
= $15,000 = OCF – (–$45,000) – 1,250,000

Operating cash flow = $15,000 – 45,000 + 1,250,000
Operating cash flow = $1,220,000

Intermediate

13. To find the book value of current assets, we use: NWC = CA – CL. Rearranging to solve for current assets, we get:

CA = NWC + CL = $220,000 + 850,000 = $1,070,000

The market value of current assets and fixed assets is given, so:

Book value CA	= $1,070,000	NWC	= $1,050,000
Book value NFA	= $3,300,000	Market value NFA	= $4,800,000
Book value assets	= $4,370,000	Total	= $5,850,000

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

Income Statement	
Sales	$267,000
Costs	148,000
Other expenses	8,200
Depreciation	17,600
EBIT	$ 93,200
Interest	12,400
Taxable income	$ 80,800
Taxes	32,620
Net income	$ 48,180
Dividends	$15,500
Additions to RE	$32,680

a. OCF = EBIT + Depreciation – Taxes = $93,200 + 17,600 – 32,620 = $78,180

b. CFC = Interest – Net new LTD = $12,400 – (–4,900) = $17,300

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

c. CFS = Dividends – Net new equity = $15,500 – 6,400 = $9,100

d. We know that CFA = CFC + CFS, so:

CFA = $17,300 + 9,100 = $26,400

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 = $25,000 + 17,600 = $42,600

Now we can use:

CFA = OCF – Net capital spending – Change in NWC
$26,400 = $78,180 – 42,600 – Change in NWC
Change in NWC = $9,180

This means that the company increased its NWC by $9,180.

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

Net income = Dividends + Addition to retained earnings = $1,950 + 5,600 = $7,550

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– Tax rate) = $7,550 / (1 – .35) = $11,615

Now you can calculate:

EBIT = EBT + Interest = $11,615 + 4,300 = $15,915

The last step is to use:

EBIT = Sales – Costs – Depreciation
$15,915 = $61,000 – 29,600 – Depreciation
Depreciation = $15,485

16. The balance sheet for the company looks like this:

Balance Sheet			
Cash	$ 134,000	Accounts payable	$ 210,000
Accounts receivable	105,000	Notes payable	160,000
Inventory	293,000	Current liabilities	$ 370,000
Current assets	$ 532,000	Long-term debt	845,000
		Total liabilities	$1,215,000
Tangible net fixed assets	1,730,000		
Intangible net fixed assets	670,000	Common stock	??
		Accumulated ret. earnings	1,453,000
Total assets	$2,932,000	Total liab. & owners' equity	$2,932,000

Total liabilities and owners' equity is:

TL & OE = CL + LTD + Common stock + Retained earnings

Solving this equation for common stock gives us:

Common stock = $2,932,000 – 1,215,000 – 1,453,000 = $264,000

17. The market value of shareholders' equity cannot be negative. 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: Shareholders' equity = Max [(TA – TL), 0]. So, if TA are $8,7000, equity is equal to $1,900, and if TA are $5,900, equity is equal to $0. We should note here that the book value of shareholders' equity can be negative.

18. *a.* Taxes Growth = .15($50,000) + .25($25,000) + .34($14,500) = $18,680
Taxes Income = .15($50,000) + .25($25,000) + .34($25,000) + .39($235,000)
+ .34($8,950,000 – 335,000) = $3,043,000

b. 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.

19.

Income Statement	
Sales	$675,000
COGS	435,000
A&S expenses	85,000
Depreciation	125,000
EBIT	$30,000
Interest	70,000
Taxable income	–$40,000
Taxes (35%)	0
a. Net income	–$40,000

b. OCF = EBIT + Depreciation – Taxes = $30,000 + 125,000 – 0 = $155,000

c. 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 = $155,000 – 0 – 0 = $155,000
Cash flow to stockholders = Dividends – Net new equity = $102,000 – 0 = $102,000
Cash flow to creditors = Cash flow from assets – Cash flow to stockholders
Cash flow to creditors = $155,000 – 102,000 = $53,000
Cash flow to creditors = Interest – Net new LTD
Net new LTD = Interest – Cash flow to creditors = $70,000 – 53,000 = $17,000

21. *a.*

Income Statement	
Sales	$30,096
Cost of goods sold	21,476
Depreciation	5,341
EBIT	$ 3,279
Interest	2,409
Taxable income	$ 870
Taxes (35%)	305
Net income	$ 566

b. OCF = EBIT + Depreciation – Taxes
= $3,279 + 5,341 – 305 = $8,316

c. Change in NWC $= NWC_{end} - NWC_{beg}$
$= (CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
$= (\$7,829 - 4,159) - (\$6,336 - 3,564)$
$= \$3,670 - 2,772 = \$898$

Net capital spending $= NFA_{end} - NFA_{beg} + \text{Depreciation}$
$= \$22,176 - 18,018 + 5,341 = \$9,499$

CFA = OCF – Change in NWC – Net capital spending
= \$8,316 – 898 – 9,499 = –\$2,082

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 \$2,082 in funds from its stockholders and creditors to make these investments.

d. Cash flow to creditors = Interest – Net new LTD = \$2,409 – 0 = \$2,409

Cash flow to stockholders = Cash flow from assets – Cash flow to creditors
= –\$2,082 – 2,409 = –\$4,491

We can also calculate the cash flow to stockholders as:

Cash flow to stockholders = Dividends – Net new equity

Solving for net new equity, we get:

Net new equity = \$1,716 – (–4,491) = \$6,207

The firm had positive earnings in an accounting sense (NI > 0) and had positive cash flow from operations. The firm invested \$898 in new net working capital and \$9,499 in new fixed assets. The firm had to raise \$2,082 from its stakeholders to support this new investment. It accomplished this by raising \$6,207 in the form of new equity. After paying out \$1,716 of this in the form of dividends to shareholders and \$2,409 in the form of interest to creditors, \$2,082 was left to meet the firm's cash flow needs for investment.

22. *a.* Total assets 2014 = \$1,005 + 4,144 = \$5,149
Total liabilities 2014 = \$402 + 2,190= \$2,592
Owners' equity 2014 = \$5,149 – 2,592 = \$2,557

Total assets 2015 = \$1,089 + 4,990 = \$6,079
Total liabilities 2015 = \$451 + 2,329 = \$2,780
Owners' equity 2015 = \$6,079 – 2,780 = \$3,299

b. NWC 2014 = CA14 – CL14 = \$1,005 – 402 = \$603
NWC 2015 = CA15 – CL15 = \$1,089 – 451 = \$638
Change in NWC = NWC15 – NWC14 = \$638 – 603 = \$35

c. We can calculate net capital spending as:

Net capital spending = Net fixed assets 2015 – Net fixed assets 2014 + Depreciation
Net capital spending = $4,990 – 4,144 + 1,136 = $1,982

So, the company had a net capital spending cash flow of $1,982. We also know that net capital spending is:

Net capital spending = Fixed assets bought – Fixed assets sold
$1,982 = $2,080 – Fixed assets sold
Fixed assets sold = $2,080 – 1,982 = $98

To calculate the cash flow from assets, we must first calculate the operating cash flow. The income statement is:

Income Statement	
Sales	$12,751
Costs	5,946
Depreciation expense	1,136
EBIT	$ 5,669
Interest expense	323
EBT	$ 5,346
Taxes (35%)	1,871
Net income	$ 3,475

So, the operating cash flow is:

OCF = EBIT + Depreciation – Taxes = $5,669 + 1,136 – 1,871 = $4,934

And the cash flow from assets is:

Cash flow from assets = OCF – Change in NWC – Net capital spending.
= $4,934 – 35 – 1,982 = $2,917

d. Net new borrowing = LTD15 – LTD14 = $2,329 – 2,190 = $139
Cash flow to creditors = Interest – Net new LTD = $323 – 139 = $184
Net new borrowing = $139 = Debt issued – Debt retired
Debt retired = $420 – 139 = $281

Challenge

23. Net capital spending $= NFA_{end} - NFA_{beg} + \text{Depreciation}$
$= (NFA_{end} - NFA_{beg}) + (\text{Depreciation} + AD_{beg}) - AD_{beg}$
$= (NFA_{end} - NFA_{beg}) + AD_{end} - AD_{beg}$
$= (NFA_{end} + AD_{end}) - (NFA_{beg} + AD_{beg})$
$= FA_{end} - FA_{beg}$

24. *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.

b. Taxes = .15($50,000) + .25($25,000) + .34($25,000) + .39($235,000) = $113,900

Average tax rate = $113,900 / $335,000 = .34, or 34%

The marginal tax rate on the next dollar of income is 34 percent.

For corporate taxable income levels of $335,000 to $10 million, average tax rates are equal to marginal tax rates.

Taxes = .34($10,000,000) + .35($5,000,000) + .38($3,333,333) = $6,416,667

Average tax rate = $6,416,667 / $18,333,333 = .35, or 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 = .34($200,000) = $68,000
$68,000 = .15($50,000) + .25($25,000) + .34($25,000) + X($100,000);
X($100,000) = $68,000 – 22,250
X = $45,750 / $100,000
X = 45.75%

25.

Balance sheet as of Dec. 31, 2014

Cash	$ 6,674	Accounts payable	$ 4,822
Accounts receivable	8,837	Notes payable	1,288
Inventory	15,711	Current liabilities	$ 6,110
Current assets	$31,222		
		Long-term debt	$22,352
Net fixed assets	$55,977	Owners' equity	$58,737
Total assets	$87,199	Total liab. & equity	$87,199

Balance sheet as of Dec. 31, 2015

Cash	$ 7,113	Accounts payable	$ 5,1008
Accounts receivable	10,371	Notes payable	1,262
Inventory	16,817	Current liabilities	$ 6,370
Current assets	$34,301		
		Long-term debt	$27,099
Net fixed assets	$59,700	Owners' equity	$60,532
Total assets	$94,001	Total liab. & equity	$94,001

2014 Income Statement	
Sales	$12,730.00
COGS	4,377.00
Other expenses	1,041.00
Depreciation	1,827.00
EBIT	$5,485.00
Interest	854.00
EBT	$4,631.00
Taxes (34%)	1,574.54
Net income	$3,056.46
Dividends	$1,522.00
Additions to RE	1,534.46

2015 Income Statement	
Sales	$14,229.00
COGS	5,178.00
Other expenses	906.00
Depreciation	1,910.00
EBIT	$6,235.00
Interest	1,019.00
EBT	$5,216.00
Taxes (34%)	1,773.44
Net income	$3,442.56
Dividends	$1,780.00
Additions to RE	1,662.56

26. OCF = EBIT + Depreciation – Taxes = $6,235 + 1,910 – 1,773.44 = $6,371.56

Change in NWC $= NWC_{end} - NWC_{beg} = (CA - CL)_{end} - (CA - CL)_{beg}$
$= (\$34,301 - 6,370) - (\$31,222 - 6,110)$
$= \$2,819$

Net capital spending $= NFA_{end} - NFA_{beg}$ + Depreciation
$= \$59,700 - 55,977 + 1,910 = \$5,633$

Cash flow from assets = OCF – Change in NWC – Net capital spending
$= \$6,371.56 - 2,819 - 5,633 = -\$2,080.44$

Cash flow to creditors = Interest – Net new LTD
Net new LTD $= LTD_{end} - LTD_{beg}$
Cash flow to creditors $= \$1,019 - (\$27,099 - 22,352) = -\$3,728$

Net new equity $= Common\ stock_{end} - Common\ stock_{beg}$
Common stock + Retained earnings = Total owners' equity
Net new equity $= (OE - RE)_{end} - (OE - RE)_{beg}$
$= OE_{end} - OE_{beg} + RE_{beg} - RE_{end}$
$RE_{end} = RE_{beg}$ + Additions to RE15
$\therefore$ Net new equity $= OE_{end} - OE_{beg} + RE_{beg} - (RE_{beg}$ + Additions to RE15)
$= OE_{end} - OE_{beg}$ – Additions to RE
Net new equity $= \$60,532 - 58,737 - 1,662.56 = \$132.44$

CFS = Dividends – Net new equity
CFS $= \$1,780 - 132.44 = \$1,647.56$

As a check, cash flow from assets is –$2,080.44.

CFA = Cash flow from creditors + Cash flow to stockholders
CFA $= -\$3,278 + 1,647.56 = -\$2,080.44$

CHAPTER 3
WORKING WITH FINANCIAL STATEMENTS

Answers to Concepts Review and Critical Thinking Questions

1. *a.* If inventory is purchased with cash, then there is no change in the current ratio. If inventory is purchased on credit, then there is a decrease in the current ratio if it was initially greater than 1.0.
b. Reducing accounts payable with cash increases the current ratio if it was initially greater than 1.0.
c. Reducing short-term debt with cash increases the current ratio if it was initially greater than 1.0.
d. As long-term debt approaches maturity, the principal repayment and the remaining interest expense become current liabilities. Thus, if debt is paid off with cash, the current ratio increases if it was initially greater than 1.0. If the debt has not yet become a current liability, then paying it off will reduce the current ratio since current liabilities are not affected.
e. Reduction of accounts receivables and an increase in cash leaves the current ratio unchanged.
f. Inventory sold at cost reduces inventory and raises cash, so the current ratio is unchanged.
g. Inventory sold for a profit raises cash in excess of the inventory recorded at cost, so the current ratio increases.

2. The firm has increased inventory relative to other current assets; therefore, assuming current liability levels remain unchanged, liquidity has potentially decreased.

3. A current ratio of .50 means that the firm has twice as much in current liabilities as it does in current assets; the firm potentially has poor liquidity. If pressed by its short-term creditors and suppliers for immediate payment, the firm might have a difficult time meeting its obligations. A current ratio of 1.50 means the firm has 50% more current assets than it does current liabilities. This probably represents an improvement in liquidity; short-term obligations can generally be met completely with a safety factor built in. A current ratio of 15.0, however, might be excessive. Any excess funds sitting in current assets generally earn little or no return. These excess funds might be put to better use by investing in productive long-term assets or distributing the funds to shareholders.

4. *a.* Quick ratio provides a measure of the short-term liquidity of the firm, after removing the effects of inventory, generally the least liquid of the firm's current assets.
b. Cash ratio represents the ability of the firm to completely pay off its current liabilities with its most liquid asset (cash).
c. Total asset turnover measures how much in sales is generated by each dollar of firm assets.
d. Equity multiplier represents the degree of leverage for an equity investor of the firm; it measures the dollar worth of firm assets each equity dollar has a claim to.
e. Long-term debt ratio measures the percentage of total firm capitalization funded by long-term debt.

f. Times interest earned ratio provides a relative measure of how well the firm's operating earnings can cover current interest obligations.
g. Profit margin is the accounting measure of bottom-line profit per dollar of sales.
h. Return on assets is a measure of bottom-line profit per dollar of total assets.
i. Return on equity is a measure of bottom-line profit per dollar of equity.
j. Price-earnings ratio reflects how much value per share the market places on a dollar of accounting earnings for a firm.

5. Common-size financial statements express all balance sheet accounts as a percentage of total assets and all income statement accounts as a percentage of total sales. Using these percentage values rather than nominal dollar values facilitates comparisons between firms of different size or business type. Common-base year financial statements express each account as a ratio between their current year nominal dollar value and some reference year nominal dollar value. Using these ratios allows the total growth trend in the accounts to be measured.

6. 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. An aspirant group would be a set of firms whose performance the company in question would like to emulate. The financial manager often uses the financial ratios of aspirant groups as the target ratios for his or her firm; some managers are evaluated by how well they match the performance of an identified aspirant group.

7. Return on equity is probably the most important accounting ratio that measures the bottom-line performance of the firm with respect to the equity shareholders. The DuPont identity emphasizes the role of a firm's profitability, asset utilization efficiency, and financial leverage in achieving an ROE figure. For example, a firm with ROE of 20% would seem to be doing well, but this figure may be misleading if it were marginally profitable (low profit margin) and highly levered (high equity multiplier). If the firm's margins were to erode slightly, the ROE would be heavily impacted.

8. The book-to-bill ratio is intended to measure whether demand is growing or falling. It is closely followed because it is a barometer for the entire high-tech industry, where levels of revenues and earnings have been relatively volatile.

9. 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.

10. *a.* For an electric utility such as Con Ed, expressing costs on a per-kilowatt-hour basis would be a way to compare costs with other utilities of different sizes.
b. For a retailer such as Sears, expressing sales on a per-square-foot basis would be useful in comparing revenue production against other retailers.
c. For an airline such as Southwest, expressing costs on a per-passenger-mile basis allows for comparisons with other airlines by examining how much it costs to fly one passenger one mile.

d. For an online service provider such as Comcast, using a per internet session for costs would allow for comparisons with smaller services. A per subscriber basis would also make sense.
e. For a hospital such as Holy Cross, revenues and costs expressed on a per-bed basis would be useful.
f. For a college textbook publisher such as McGraw-Hill/Irwin, the leading publisher of finance textbooks for the college market, the obvious standardization would be per book sold.

11. Reporting the sale of Treasury securities as cash flow from operations is an accounting "trick," and as such, should constitute a possible red flag about the companies accounting practices. For most companies, the gain from a sale of securities should be placed in the financing section. Including the sale of securities in the cash flow from operations would be acceptable for a financial company, such as an investment or commercial bank.

12. Increasing the payables period increases the cash flow from operations. This could be beneficial for the company as it may be a cheap form of financing, but it is basically a one-time change. The payables period cannot be increased indefinitely as it will negatively affect the company's credit rating if the payables period becomes too long.

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. Using the formula for NWC, we get:

NWC = CA – CL
CA = CL + NWC
CA = $4,380 + 1,920
CA = $6,300

So, the current ratio is:

Current ratio = CA / CL
Current ratio = $6,300 / $4,380
Current ratio = 1.44 times

And the quick ratio is:

Quick ratio = (CA – Inventory) / CL
Quick ratio = ($6,300 – 3,750) / $4,380
Quick ratio = .58 times

2. We need to find net income first. So:

Profit margin = Net income / Sales
Net income = Profit margin(Sales)
Net income = .06($17,500,000)
Net income = $1,050,000

ROA = Net income / TA
ROA = $1,050,000 / $13,100,000
ROA = .0802, or 8.02%

To find ROE, we need to find total equity. Since TL & OE equals TA:
TA = TD + TE
TE = TA – TD
TE = $13,100,000 – 5,700,000
TE = $7,400,000

ROE = Net income / TE
ROE = $1,050,000 / $7,400,000
ROE = .1419, or 14.19%

3. Receivables turnover = Sales / Receivables
Receivables turnover = $5,173,820 / $438,720
Receivables turnover = 11.79 times

Days' sales in receivables = 365 days / Receivables turnover
Days' sales in receivables = 365 / 11.79
Days' sales in receivables = 30.95 days

On average, the company's customers paid off their accounts in 30.95 days.

4. Inventory turnover = COGS / Inventory
Inventory turnover = $4,682,715 / $417,381
Inventory turnover = 11.22 times

Days' sales in inventory = 365 days / Inventory turnover
Days' sales in inventory = 365 / 11.22
Days' sales in inventory = 32.53 days

On average, a unit of inventory sat on the shelf 32.53 days before it was sold.

5. Total debt ratio = .53 = TD / TA

Substituting total debt plus total equity for total assets, we get:

.53 = TD / (TD + TE)

Solving this equation yields:

.53(TE) = .47(TD)

Debt-equity ratio = TD / TE = .53 / .47 = 1.13

Equity multiplier = 1 + D/E = 2.13

6.

Net income	= Addition to RE + Dividends	= $395,000 + 195,000 = $590,000
Earnings per share	= NI / Shares	= $590,000 / 170,000 = $3.47 per share
Dividends per share	= Dividends / Shares	= $195,000 / 170,000 = $1.15 per share
Book value per share	= TE / Shares	= $5,300,000 / 170,000 = $31.18 per share
Market-to-book ratio	= Share price / BVPS	= $64 / $31.18 = 2.05 times
P/E ratio	= Share price / EPS	= $64 / $3.47 = 18.44 times
Sales per share	= Sales / Shares	= $5,150,000 / 170,000 = $30.29
P/S ratio	= Share price / Sales per share	= $64 / $30.29 = 2.11 times

7. ROE = (PM)(TAT)(EM)
ROE = (.061)(2.10)(1.15)
ROE = .1473, or 14.73%

8. This question gives all of the necessary ratios for the DuPont Identity except the equity multiplier, so, using the DuPont Identity:

ROE = (PM)(TAT)(EM)
ROE = .1615 = (.051)(1.95)(EM)

EM = .1615 / (.051)(1.95)
EM = 1.62

D/E = EM – 1
D/E = 1.62 – 1
D/E = .62

9. Decrease in inventory is a source of cash.
Decrease in accounts payable is a use of cash.
Increase in notes payable is a source of cash.
Increase in accounts receivable is a use of cash.

Change in cash = Sources – Uses
Change in cash = $365 – 215 + 280 – 240
Change in cash = $190

Cash increased by $190