
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 mostly unchanged, liquidity has potentially decreased.
3. A current ratio of 0.50 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 balance with its most liquid asset (cash).
 - c. The capital intensity ratio tells us the dollar amount investment in assets needed to generate one dollar in sales.
 - d. Total asset turnover measures how much in sales is generated by each dollar of firm assets.
 - e. 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.
 - f. Long-term debt ratio measures the percentage of total firm capitalization funded by long-term debt.

B-12 SOLUTIONS

- g.* Times interest earned ratio provides a relative measure of how well the firm's operating earnings can cover current interest obligations.
 - h.* Profit margin is the accounting measure of bottom-line profit per dollar of sales.
 - i.* Return on assets is a measure of bottom-line profit per dollar of total assets.
 - j.* Return on equity is a measure of bottom-line profit per dollar of equity.
 - k.* 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 Du Pont identity emphasizes the role of a firm's profitability, asset utilization efficiency, and financial leverage in achieving a 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 a 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 comparing 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 Delta, 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 on-line service such as AOL, using a per call basis 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.

Solutions to Questions and Problems

Basic

- $NWC = \$1,050 = CA - CL$; $CA = \$1,050 + 4,300 = \$5,350$
 Current ratio = $CA / CL = \$5,350 / \$4,300 = 1.24$ times
 Quick ratio = $(CA - \text{inventory}) / CL = (\$5,350 - 1,300) / \$4,300 = 0.94$ times
- Profit margin = net income / sales; net income = $(\$32M)(0.07) = \$2,240,000$
 ROA = net income / TA = $\$2.24M / \$43M = 5.21\%$
 ROE = net income / TE = net income / $(TA - TD) = \$2.24M / (\$43M - 9M) = 6.59\%$
- Receivables turnover = sales / receivables = $\$2,105,620 / \$392,164 = 5.37$ times
 Days' sales in receivables = $365 \text{ days} / \text{receivables turnover} = 365 / 5.37 = 67.98$ days
 The average collection period for an outstanding accounts receivable balance was 67.98 days.
- Inventory turnover = COGS / inventory = $\$2,365,450 / \$423,500 = 5.59$ times
 Days' sales in inventory = $365 \text{ days} / \text{inventory turnover} = 365 / 5.59 = 65.35$ days
 On average, a unit of inventory sat on the shelf 65.35 days before it was sold.
- Total debt ratio = $0.62 = TD / TA = TD / (TD + TE)$; $0.38(TD) = 0.62(TE)$
 Debt/equity ratio = $TD / TE = 0.62 / 0.38 = 1.63$
 Equity multiplier = $1 + D/E = 2.63$
- NI = addition to retained earnings + dividends = $\$275K + 150K = \$425K$
 EPS = NI / shares = $\$425K / 125K = \3.40 per share
 DPS = dividends / shares = $\$150K / 125K = \1.20 per share
 BVPS = TE / shares = $\$6M / 125K = \48.00 per share
 Market-to-book ratio = share price / BVPS = $\$95 / \$48 = 1.98$ times
 P/E ratio = share price / EPS = $\$95 / \$3.40 = 27.9$ times
- ROE = $(PM)(TAT)(EM) = (.08)(1.20)(1.90) = 18.24\%$
- ROE = $.2370 = (.07)(1.94)(EM)$; $EM = 1.75$; $D/E = EM - 1 = 0.75$
- Decrease in inventory is a source of cash
 Decrease in accounts payable is a use of cash
 Decrease in notes payable is a use of cash
 Increase in accounts receivable is a use of cash
 Changes in cash = sources – uses = $\$500 - (310 + 820 + 940) = -\$1,570$

B-14 SOLUTIONS

Cash decreased by \$1,570

10. Payables turnover = COGS / payables = \$10,432 / \$2,120 = 4.92 times
 Days' sales in payables = 365 days / payables turnover = 365 / 4.92 = 74.18 days
 The company left its bills to suppliers outstanding for 74.18 days on average. A large value for this ratio could imply that either (1) the company is having liquidity problems, making it difficult to pay off its short-term obligations, or (2) that the company has successfully negotiated lenient credit terms from its suppliers.

11. Net investment in FA = (NFA_{end} - NFA_{beg}) + depreciation = \$490 + \$160 = \$650
 The company bought \$650 in new fixed assets; this is a use of cash.

12. EM = 1 + D/E = 2.10
 ROE = (ROA)(EM) = .084(2.10) = 17.64%
 ROE = NI / TE; NI = (.1764)(\$440,000) = \$77,616

13. through 15:

	2001	#13	2002	#13	#14	#15
Assets						
Current assets						
Cash	\$ 9,201	2.37%	\$ 9,682	2.25%	1.0523	0.9494
Accounts receivable	28,426	7.32%	29,481	6.86%	1.0371	0.9372
Inventory	<u>54,318</u>	<u>13.99%</u>	<u>63,682</u>	<u>14.81%</u>	1.1724	1.0586
Total	\$ 91,945	23.68%	\$102,845	23.92%	1.1185	1.0101
Fixed assets						
Net plant and equipment	<u>296,418</u>	<u>76.32%</u>	<u>327,154</u>	<u>76.08%</u>	1.1037	0.9969
Total assets	<u>\$388,363</u>	<u>100%</u>	<u>\$429,999</u>	<u>100%</u>	1.1072	1.0000
Liabilities and Owners' Equity						
Current liabilities						
Accounts payable	\$ 71,802	18.49%	\$ 56,382	13.11%	0.7852	0.7090
Notes payable	<u>36,108</u>	<u>9.30%</u>	<u>50,116</u>	<u>11.65%</u>	1.3879	1.2527
Total	\$107,910	27.79%	\$106,498	24.77%	0.9869	0.8913
Long-term debt	50,000	12.87%	35,000	8.14%	0.7000	0.6325
Owners' equity						
Common stock and paid-in surplus	\$ 75,000	19.31%	\$ 75,000	17.44%	1.0000	0.9032
Accumulated retained earnings	<u>155,453</u>	<u>40.03%</u>	<u>213,501</u>	<u>49.65%</u>	1.3744	1.2403
Total	<u>\$230,453</u>	<u>59.36%</u>	<u>\$288,501</u>	<u>67.09%</u>	1.2519	1.1302
Total liabilities and owners' equity	<u>\$388,363</u>	<u>100%</u>	<u>\$429,999</u>	<u>100%</u>	1.1072	1.0000

16.	2001	Sources/Uses	2002
Assets			
Current assets			
Cash	\$ 9,201	+481 U	\$ 9,682
Accounts receivable	28,426	+1,055 U	29,481
Inventory	<u>54,318</u>	<u>+9,364 U</u>	<u>63,682</u>
Total	\$ 91,945	+10,900 U	\$102,845
Fixed assets			
Net plant and equipment	<u>296,418</u>	<u>+30,736 U</u>	<u>327,154</u>
Total assets	<u>\$388,363</u>	<u>+41,636 U</u>	<u>\$429,999</u>

B-16 SOLUTIONS

Liabilities and Owners' Equity			
Current liabilities			
Accounts payable	\$ 71,802	-15,420 U	\$ 56,382
Notes payable	<u>36,108</u>	<u>+14,008 S</u>	<u>50,116</u>
Total	\$107,910	- 1,412 U	\$106,498
Long-term debt	<u>50,000</u>	<u>-15,000 U</u>	<u>35,000</u>
Owners' equity			
Common stock and paid-in surplus	\$ 75,000	0	\$ 75,000
Accumulated retained earnings	<u>155,453</u>	<u>+58,048 S</u>	<u>213,501</u>
Total	<u>\$230,453</u>	<u>+58,048 S</u>	<u>\$288,501</u>
Total liabilities and owners' equity	<u>\$388,363</u>	<u>+41,636 S</u>	<u>\$429,999</u>

The firm used \$41,636 in cash to acquire new assets. It raised this amount of cash by increasing liabilities and owners' equity by \$41,636. In particular, the needed funds were raised entirely by internal financing (on a net basis), out of the additions to retained earnings.

17. a. $CR01 = \$91,945 / \$107,910 = 0.85$; $CR02 = \$102,845 / \$106,498 = 0.97$
 b. $QR01 = (\$91,945 - 54,318) / \$107,910 = 0.35$; $QR02 = (\$102,845 - 63,682) / \$106,498 = 0.37$
 c. $Cash\ ratio01 = \$9,201 / \$107,910 = 0.09$; $Cash\ ratio02 = \$9,682 / \$106,498 = 0.09$
 d. $NWC/TA\ ratio01 = (\$91,945 - 107,910) / \$388,636 = -4.11\%$
 $NWC/TA\ ratio02 = (\$102,845 - 106,498) / \$429,999 = -0.85\%$
 e. $D/E01 = (\$107,910 + 50,000) / \$230,453 = 0.68$; $EM01 = 1 + D/E01 = 1.68$
 $D/E02 = (\$106,498 + 35,000) / \$288,501 = 0.49$; $EM02 = 1 + D/E02 = 1.49$
 f. $TDR01 = (\$388,363 - 230,453) / \$388,363 = 0.41$
 $TDR02 = (\$429,999 - 288,501) / \$429,999 = 0.33$
 $LTDR01 = \$50,000 / (\$50,000 + 230,543) = 0.18$
 $LTDR02 = \$35,000 / (\$35,000 + 288,501) = 0.11$

Intermediate

18. $ROE = 0.18 = (PM)(TAT)(EM) = (PM)(S / TA)(1 + D/E)$
 $PM = [(0.18)(\$1,020)] / [(1 + 1)(\$2,300)] = .0399$
 $PM = .0399 = NI / S$; $NI = .0399(\$2,300) = \91.80
19. Decreases in liability accounts represent a use of cash to the firm. Accounts payable are a form of short-term financing, since suppliers are providing their goods and services on credit to the firm. Thus a decrease in accounts payable represents a net use of funds to the firm.
20. $CR = 1.30 = CA / CL$; $CA = 1.30(\$900) = \$1,170$
 $PM = .095 = NI / sales$; $NI = .095(\$4,680) = \444.60
 $ROE = .224 = NI / TE$; $TE = \$444.60 / .224 = \$1,984.82$
 $Long\text{-}term\ debt\ ratio = 0.65 = LTD / (LTD + TE)$
 $1 + TE / LTD = 1.538$; $LTD = \$1,984.82 / .538 = \$3,686.09$
 $TD = CL + LTD = \$900 + \$3,686.09 = \$4,586.09$
 $TA = TD + TE = \$4,586.09 + \$1,984.82 = \$6,570.91$
 $NFA = TA - CA = \$6,570.91 - \$1,170 = \$5,400.91$

21. Child: profit = $\$0.50 / \$25 = 2\%$; store: profit margin = $NI / S = \$5.5M / \$550M = 1\%$
 The advertisement is referring to the store's profit margin, but a more appropriate earnings measure for the firm's owners is the return on equity.
 $ROE = NI / TE = NI / (TA - TD) = \$5.5M / (\$140 - 90M) = 11.00\%$
22. Days' sales in receivables = 21.50 days = 365 days / receivables turnover
 Receivables turnover = sales / receivables; Sales = $(\$59,300)(365) / 21.50 = \$1,006,720.93$
 $PM = NI / S = \$52,300 / \$1,006,720.93 = 5.20\%$
 $TAT = S / TA = \$1,006,720.93 / \$430,000 = 2.34$ times
 $EM = 1 + D/E = 2.30$
 $ROE = (PM)(TAT)(EM) = (.0520)(2.34)(2.30) = 27.97\%$
23. Net income = $(1 - t)EBT$; $EBT = \$8,175 / 0.66 = \$12,386.36$
 $EBIT = EBT + \text{interest paid} = \$12,386.36 + 2,380 = \$14,766.36$
 $EBDIT = EBIT + \text{depreciation expense} = \$14,766.36 + \$1,560 = \$16,326.36$
 Cash coverage ratio = $EBDIT / \text{interest} = \$16,326.36 / \$2,380 = 6.86$ times
24. Sales - COGS - Dep = $EBIT = \$380K - 110K - 32K = \$238K$
 $DPS = \text{dividends} / \text{shares}$; dividends = $\$1.50(30,000) = \$45K$
 Net income = dividends + additions to retained earnings = $\$45K + \$41,620 = \$86,620$
 $EBT = NI / (1 - t) = \$86,620 / 0.66 = \$131,242.42$
 $EBIT - EBT = \text{interest paid} = \$238K - \$131,242.42 = \$106,757.58K$
 Times interest earned ratio = $EBIT / \text{interest} = \$238K / \$106,757.58K = 2.23$ times
25. $PM = NI / S = -£10,418 / £140,682 = -7.41\%$
 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.
 $NI = -0.074 (\$1,236,332) = -\$91,554.76$
26. *Short-term solvency ratios:*
 $CR01 = \$7,440 / \$1,717 = 4.33$ times
 $CR02 = \$7,798 / \$2,163 = 3.61$ times
 $QR01 = (\$7,440 - 4,408) / \$1,717 = 1.77$ times
 $QR02 = (\$7,798 - 4,982) / \$2,163 = 1.30$ times
 Cash ratio01 = $\$650 / \$1,717 = 0.38$ times
 Cash ratio02 = $\$710 / \$2,163 = 0.33$ times
- Asset utilization ratios:*
 $TAT = \$28,000 / \$26,382 = 1.06$ times
 Inventory turnover = $\$11,600 / \$4,982 = 2.33$ times
 Receivables turnover = $\$28,000 / \$2,106 = 13.30$ times

B-18 SOLUTIONS

Long-term solvency ratios:

$$\text{Debt ratio01} = (\$21,432 - 15,397) / \$21,432 = 0.28$$

$$\text{Debt ratio02} = (\$26,382 - 20,029) / \$26,382 = 0.24$$

$$\text{D/E01} = (\$1,717 + 4,318) / \$15,397 = 0.39$$

$$\text{D/E02} = (\$2,163 + 4,190) / \$20,029 = 0.32$$

$$\text{EM01} = 1 + \text{D/E01} = 1.39; \quad \text{EM02} = 1 + \text{D/E02} = 1.32$$

$$\text{TIE ratio} = \$14,260 / \$980 = 14.55 \text{ times}$$

$$\text{Cash coverage ratio} = (\$14,260 + 2,140) / \$980 = 16.73 \text{ times}$$

Profitability ratios:

$$\text{PM} = \$8,632 / \$28,000 = 30.83\%$$

$$\text{ROA} = \$8,632 / \$26,382 = 32.72\%$$

$$\text{ROE} = \$8,632 / \$20,029 = 43.10\%$$

27. $\text{ROE} = (\text{PM})(\text{TAT})(\text{EM}) = (0.3083)(1.06133)(1.31719) = 0.4310$

28. Interval measure = CA / average daily operating costs

$$\text{Average daily operating costs} = \text{COGS} / 365 \text{ days} = \$11,600 / 365 = \$31.78 \text{ per day}$$

$$\text{Interval measure} = \$7,798 / \$31.78 \text{ per day} = 245 \text{ days}$$

29.

SMOLIRA GOLF CORP.
Statement of Cash Flows
For Period Ending December 31, 2002

Cash, beginning of the year	\$ 650
<i>Operating activities</i>	
Net income	\$ 8,632
Plus:	
Depreciation	\$ 2,140
Increase in accounts payable	\$ 228
Increase in other current liabilities	\$ 140
Decrease in accounts receivable	\$ 276
Less:	
Increase in inventory	<u>(\$ 574)</u>
<i>Net cash from operating activities</i>	<u>\$ 10,842</u>
<i>Investment activities</i>	
Fixed asset acquisition	<u>(\$ 6,732)</u>
<i>Net cash from investment activities</i>	<u>(\$ 6,732)</u>
<i>Financing activities</i>	
Increase in notes payable	\$ 78
Dividends paid	(\$ 4,000)
Decrease in long-term debt	<u>(\$ 128)</u>
<i>Net cash from financing activities</i>	<u>(\$ 4,050)</u>
<i>Net increase in cash</i>	<u>\$ 60</u>
Cash, end of year	<u>\$ 710</u>

30. $\text{EPS} = \$8,632 / 1,250 \text{ shares} = \6.91 per share
 $\text{P/E ratio} = \$63 / \$6.91 = 9.12 \text{ times}$
 $\text{DPS} = \$4,000 / 1,250 \text{ shares} = \3.20 per share
 $\text{BVPS} = \$20,029 / 1,250 \text{ shares} = \16.02 per share
 $\text{Market-to-book ratio} = \$63.00 / \$16.02 = 3.93 \text{ times}$