

Chapter 3—Working with financial statements: Solutions to questions and problems

1 Inventory turnover = $221\,014/31\,450$ = 7.03 times

Days' sales in inventory = $365/7.03$ = 52 days

2 $27 = 365/\text{Inventory turnover}$

Inventory turnover = 13.52 times

$13.52 = \text{COGS}/55\,000$

COGS = \$743 600

3 A decrease in accounts payable is a use of cash; this caused cash to decrease by \$25 000. A decrease in inventory is a source of cash; this caused cash to increase by \$15 000. An increase in accounts receivable is a use of cash; this caused cash to decrease by \$27 000. An increase in borrowings is a source of cash; this caused cash to increase by \$65 000.

Change in cash = $-25\,000 + 15\,000 - 27\,000 + 65\,000 = \$28\,000$.

So cash increased by \$28 000.

4 $1 = (\text{Total assets} - 5)/5$

Total assets = \$10m

$0.1 = \text{Net profit}/10\text{m}$

Net profit = \$1m

ROE = $1/5 = 0.2 = 20\%$

Equity multiplier = $1 + D/E = 1 + 1 = 2$ times

5 Receivables turnover = $645\,964/33\,842$ = 19.09 times

Average collection period = $365/19.09$ = 19 days

Payables turnover = $439\,870/62\,403$ = 7.05 times

Payables period = $365/7.05$ = 52 days

It takes Woolly an average of 19 days to collect on credit sales and an average of 47 days to pay creditors.

6 Short-term solvency ratios

$$\text{Current ratio for 200X} = (600 + 1\,950 + 3\,135)/(1\,500 + 2\,271) = 1.51 \text{ times}$$

$$\text{Current ratio for 200X+1} = (1\,509 + 2\,064 + 2\,100)/(1\,590 + 1\,929) = 1.61 \text{ times}$$

$$\text{Quick ratio for 200X} = (600 + 1\,950)/(1\,500 + 2\,271) = 0.68 \text{ times}$$

$$\text{Quick ratio for 200X+1} = (1\,509 + 2\,064)/(1\,590 + 1\,929) = 1.02 \text{ times}$$

Asset management ratios

$$\text{Total asset turnover} = 4\,200/10\,740 = 0.391 \text{ times}$$

$$\text{Inventory turnover (using ending figure)} = 2\,100/2\,100 = 1 \text{ time}$$

$$\begin{aligned} \text{Inventory turnover (using average)} &= 2\,100/[2\,100 + 3\,135]/2 \\ &= 2\,100/2\,617.5 = 0.80 \text{ times} \end{aligned}$$

$$\text{Receivables turnover (using ending figure)} = 4\,200/2\,064 = 2.03 \text{ times}$$

$$\begin{aligned} \text{Receivables turnover (using average)} &= 4\,200/[2\,064 + 1\,950]/2 \\ &= 4\,200/2\,007 = 2.09 \text{ times} \end{aligned}$$

Long-term solvency ratios

$$\text{Debt/Equity ratio for 200X} = 7\,062/3\,093 = 2.28$$

$$\text{Debt/Equity ratio for 200X+1} = 7\,071/3\,669 = 1.93$$

$$\text{Equity multiplier for 200X} = 2.28 + 1 = 3.28$$

$$\text{Equity multiplier for 200X+1} = 1.93 + 1 = 2.93$$

$$\text{Net interest cover ratio} = 1\,500/450 = 3.33 \text{ times}$$

Profitability ratios

$$\text{Profit margin} = 639/4\,200 = 0.1521 = 15.21\%$$

$$\text{ROA} = 639/10\,740 = 0.0595 = 5.95\%$$

$$\text{ROE} = 639/3\,669 = 0.1742 = 17.42\%$$

7 Du Pont identity: $\text{ROE} = \text{PM} \times \text{TAT} \times \text{EM} = 0.1521 \times 0.391 \times 2.93 = 17.42\%$

Cash flow statement for the period ended 30 June 200X+1

Operating activities	
Receipts from Customers	4 086
Payments to Suppliers	-975
Payment of interest	-450
Income tax paid	-411
Cash flow from operating activities	2 250
Investing activities	
Acquisition of Plant	-1 197
Cash flow from investing activities	-1 197
Financing activities	
Repayment of borrowings	-81
Issue of shares	390
Payment of dividends	-453
Cash flow from financing activities	-144
Net cash flows	909

9 Inventory turnover = $2\ 100 / 2\ 100 = 1$

Days' sales in inventory = $365 / 1 = 365$ days

Bumpy Enterprises could operate for 365 days, or one year.

10

EPS = $639 / 2000 = \$0.32$

P/E = $4.58 / .32 = 14.31$ times

Book value per share = $3\ 669 / 2\ 000 = 1.835$

Market-to-book ratio = $4.58 / 1.835 = 2.496$

11

- a Reducing the short-term debt with cash increases the current ratio (assuming that it exceeds 1.0).
- b 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 (assuming that it exceeds 1.0).
- c Reducing accounts payable with cash increases the current ratio (assuming that it exceeds 1.0).
- d As long-term debt approaches maturity, both the principal payment and the interest obligations become current liabilities. Thus, if the debt is paid with cash, then the current ratio will increase (assuming that it exceeds 1.0).
- e A reduction in accounts receivable from a cash payment causes no change in the current ratio.
- f If inventory items are sold for cash at book value, then there is no change in the current ratio; it will

increase if the inventory is sold for an amount in excess of book.

12 Taxable income = $21\,000 / (1 - 0.30) = \$30\,000$
EBIT = $30\,000 + 20\,000 = \$50\,000$
Net interest cover = $50\,000 / 20\,000 = 2.5$ times

13 Wright Ltd has increased inventory relative to other current assets. While the current ratio has increased, the increase is due to inventory which is the least liquid current asset.

14 ROA = $16\,299 / 200\,655 = 0.0812 = 8.12\%$
Profit margin = $16\,299 / 160\,640 = 10.1\%$

15

$$\begin{aligned} D/E &= 0.43 \\ \text{therefore } D &= 0.43E \\ V &= E + D \\ &= E + .43E \\ &= 1.43E \end{aligned}$$

Equity multiplier = 1.43

16 Quick ratio = $(100\,000 - 22\,000) / (55\,000 - 33\,000) = 3.5$ times

17 Gladi Ltd spent $1\,310 + 750 + 460 = \$2\,520$ on non-current assets. This is a use of cash.

18 ROA = $.06(2) = 12\%$
ROE = $.06(2)(1 + 0.6) = 19.2\%$

Redgant Company**Common-size Balance Sheet****30 June 200X+2**

	<i>Common-size</i>		<i>Common-size</i>
<i>Assets</i>	<i>200X+2</i>	<i>Liabilities and OE</i>	<i>200X+2</i>
Current assets		Current liabilities	
Cash	3.65%	Accounts payable	6.01%
Accounts receivable	7.23%	Borrowings	10.48%
Inventory	4.98%	Total	16.49%
Total	15.86%	Long-term debt	9.31%
Non-current assets	84.14%	Owners' equity	
		Capital	30.91%
		Retained earnings	43.29%
		Total	74.20%
Total assets	100.00%	Total liabilities and OE	100.00%

20 (\$53 408 – 56 354) – \$1 250 = (\$4 196). The cash flow from investing activities was negative \$4 196. Redgant increased its investment in plant and equipment during the period.

21a Current ratio for 200X = $13\,330/16\,518 = 0.81$

Current ratio for 200X+1 = $14\,212/17\,358 = 0.82$

b Quick ratio for 200X = $(13\,330 - 8\,402)/16\,518 = 0.30$

Quick ratio for 200X+1 = $(14\,212 - 8\,430)/17\,358 = 0.33$

c Net Debt/Equity ratio for 200X = $(7\,633 + 6\,764 - 1\,482)/43\,456 = 0.30$

Net Debt/Equity ratio for 200X+1 = $(8\,355 + 4\,356 - 1\,553)/48\,852 = 0.23$

Debt/Equity ratio for 200X = $(66\,738 - 43\,456)/43\,456 = 0.54$

Debt/Equity ratio for 200X+1 = $(70\,566 - 48\,852)/48\,852 = 0.44$

Equity multiplier for 200X = $1 + 0.54 = 1.54$

Equity multiplier for 200X+1 = $1 + 0.44 = 1.44$

22 $45 = 365/\text{Receivables turnover}$
 $\text{Receivables turnover} = 8.111 \text{ times}$
 $8.111 = \text{Sales}/210\,000$
 $\text{Sales} = \$1\,703\,310$
 $\text{Profit margin} = 620\,000/1\,703\,310 = .364 = 36.4\%$
 $\text{Total assets turnover} = 1\,703\,310/3\,000\,000 = 0.568 \text{ times}$
 $0.4 = (3\,000\,000 - \text{Equity})/\text{Equity}$
 $\text{Equity} = \$2\,142\,857$
 $\text{ROE} = 620\,000/2\,142\,857 = 0.2893 = 28.93\%$

23 $\text{Receivables turnover} = 267\,830/35\,839 = 7.47 \text{ times}$
 $\text{Days' sales in receivables} = 365/7.47 = 49 \text{ days}$
 The average collection period is similar to the days' sales in receivables, so the average collection period is 49 days.

24 $\text{Profit margin (child)} = 0.25/10 = 0.025 = 2.5\%$
 $\text{Profit margin (store)} = 2.5\% \times 0.5 = X/1\,450$
 $X = \$18.125 \text{ million}$
 $\text{Total asset turnover} = 1\,450/160 = 9.0625 \text{ times}$
 $\text{ROA} = 18.125/160 = 0.1138 = 11.38\%$
 $\text{ROE} = 18.125/(160 - 70) = 0.2013 = 20.13\%$

The store does have a profit margin equal to half of the child's profit. However, relatively narrow profit margins are characteristic of grocery stores. Turnover, on the other hand, is quite high. As a result, in this case, the store's return on assets is 11.38% and its return on equity is 20.13%. Therefore, the claim is not necessarily inaccurate, but it is arguably misleading.

25 $\text{Debt} = \text{Total assets} - \text{Equity}$
 $= \$20\text{m} - \text{Equity}$
 $\text{Debt /Equity} = 1.0 = [\$20\text{m} - \text{Equity}]/\text{Equity}$
 $\text{Equity} = \$5\text{m}$
 $\text{ROE} = 0.2 = \text{Net Profit}/\5m
 $\text{Net profit} = \$1\text{m}$
 $\text{Profit margin} = \$1\text{m}/\$20\text{m} = 0.05 \text{ or } 5\%$

MINICASE SOLUTIONS

1 The calculations for the ratios listed are:

$$\text{Current ratio} = \$2\,186\,520 / \$2\,919\,000$$

$$\text{Current ratio} = 0.75 \text{ times}$$

$$\text{Quick ratio} = (\$2\,186\,250 - 1\,037\,120) / \$2\,919\,000$$

$$\text{Quick ratio} = 0.39 \text{ times}$$

$$\text{Cash ratio} = \$441\,000 / \$2\,919\,000$$

$$\text{Cash ratio} = 0.15 \text{ times}$$

$$\text{Total asset turnover} = \$30\,499\,420 / \$18\,308\,920$$

$$\text{Total asset turnover} = 1.67 \text{ times}$$

$$\text{Inventory turnover} = \$22\,224\,580 / \$1\,037\,120$$

$$\text{Inventory turnover} = 21.43 \text{ times}$$

$$\text{Receivables turnover} = \$30\,499\,420 / \$708\,400$$

$$\text{Receivables turnover} = 43.05 \text{ times}$$

$$\text{Total debt ratio} = (\$18\,308\,920 - 10\,069\,920) / \$18\,308\,920$$

$$\text{Total debt ratio} = 0.45 \text{ times}$$

$$\text{Debt-equity ratio} = (\$2\,919\,000 + 5\,320\,000) / \$10\,069\,920$$

$$\text{Debt-equity ratio} = 0.82 \text{ times}$$

$$\text{Equity multiplier} = \$18\,308\,920 / \$10\,069\,920$$

$$\text{Equity multiplier} = 1.82 \text{ times}$$

Times interest earned = $\$3\,040\,660 / \$478\,240$

Times interest earned = 6.36 times

Cash coverage = $(\$3\,040\,660 + 1\,366\,680) / \$478\,420$

Cash coverage = 9.22 times

Profit margin = $\$1\,537\,452 / \$30\,499\,420$

Profit margin = 5.04%

Return on assets = $\$1\,537\,452 / \$18\,308\,920$

Return on assets = 8.40%

Return on equity = $\$1\,537\,452 / \$10\,069\,920$

Return on equity = 15.27%

- 2 Boeing is probably not a good aspirant company. Even though both companies manufacture aeroplanes, S&S Air manufactures small aeroplanes, while Boeing manufactures large commercial aircraft. These are two different markets. Additionally, Boeing is heavily involved in the defence industry, as well as Boeing Capital, which finances aeroplanes.

Bombardier is a Canadian company that builds business jets, short-range airliners and fire-fighting amphibious aircraft and also provides defence-related services. It is the third largest commercial aircraft manufacturer in the world. Embraer is a Brazilian manufacturer that manufactures commercial, military and corporate aeroplanes. Additionally, the Brazilian government is a part owner of the company. Bombardier and Embraer are probably not good aspirant companies because of the diverse range of products and manufacture of larger aircraft.

Cirrus is the world's second largest manufacturer of single-engine, piston-powered aircraft. Its SR22 is the world's best-selling plane in its class. The company is noted for its innovative small aircraft and is a good aspirant company.

Cessna is a well-known manufacturer of small aeroplanes. The company produces business jets, freight- and passenger-hauling utility caravans, personal and small-

business single engine pistons. It may be a good aspirant company; however, its products could be considered too broad and diversified since S&S Air produces only small personal aeroplanes.

- 3 S&S is below the median industry ratios for the current and cash ratios. This implies that the company has less liquidity than the industry in general. However, both ratios are above the lower quartile, so there are companies in the industry with lower liquidity ratios than S&S Air. The company may have more predictable cash flows, or more access to short-term borrowing. If you created an Inventory to Current liabilities ratio, S&S Air would have a ratio that is lower than the industry median. The current ratio is below the industry median, while the quick ratio is above the industry median. This implies that S&S Air has less inventory to current liabilities than the industry median. S&S Air has less inventory than the industry median, but more accounts receivable than the industry since the cash ratio is lower than the industry median.

The turnover ratios are all higher than the industry median; in fact, all three turnover ratios are above the upper quartile. This may mean that S&S Air is more efficient than the industry.

The financial leverage ratios are all below the industry median, but above the lower quartile. S&S Air generally has less debt than comparable companies, but still within the normal range.

The profit margin, ROA and ROE are all slightly below the industry median; however, not dramatically lower. The company may want to examine its cost structure to determine if costs can be reduced or prices can be increased.

Overall, S&S Air's performance seems good, although the liquidity ratios indicate that a closer look may be needed in this area.

Below is a list of possible reasons it may be good or bad that each ratio is higher or lower than the industry. Note that the list is not exhaustive, but merely one possible explanation for each ratio.

Ratio	Good	Bad
Current ratio	Better at managing current accounts.	May be having liquidity problems.
Quick ratio	Better at managing current accounts.	May be having liquidity problems.
Cash ratio	Better at managing current accounts.	May be having liquidity problems.
Total asset turnover	Better at utilising assets.	Assets may be older and depreciated, requiring extensive investment soon.
Inventory turnover	Better at inventory management, possibly due to better procedures.	Could be experiencing inventory shortages.
Receivables turnover	Better at collecting receivables.	May have credit terms that are too strict. Decreasing receivables turnover may increase sales.
Total debt ratio	Less debt than industry median means the company is less likely to experience credit problems.	Increasing the amount of debt can increase shareholder returns. Especially notice that it will increase ROE.
Debt-equity ratio	Less debt than industry median means the company is less likely to experience credit problems.	Increasing the amount of debt can increase shareholder returns. Especially notice that it will increase ROE.
Equity multiplier	Less debt than industry median means the company is less likely to experience credit problems.	Increasing the amount of debt can increase shareholder returns. Especially notice that it will increase ROE.
TIE	Higher quality materials could be increasing costs.	The company may have more difficulty meeting interest payments in a downturn.
Cash coverage	Less debt than industry median means the company is less likely to experience credit problems.	Increasing the amount of debt can increase shareholder returns. Especially notice that it will increase ROE.
Profit margin	The PM is slightly below the industry median. It could be a result of higher quality materials or better manufacturing.	Company may be having trouble controlling costs.

ROA	Company may have newer assets than the industry.	Company may have newer assets than the industry.
ROE	Lower profit margin may be a result of higher quality.	Profit margin and EM are lower than industry, which results in the lower ROE.