

Chapter 18

Financial Statement Analysis

Decision Guidelines

Solution

Depending on the year used for analysis, the answers to the following questions may vary. January 1999 year-end data were used for this analysis. To extend this exercise, you may wish to have students locate industry averages for these ratios, using web-based finance research search engines such as Yahoo! (Finance section), and then have the student compare both companies to industry averages.

1. Gap, Inc., at .36, has a better acid-test ratio than Lands' End. The company did not report any short-term investments or receivables for the period, resulting in a low acid-test ratio. These two items, if Gap had them, would boost the numerator in the acid-test calculation, resulting in a higher ratio value.
2. Gap turned its inventory over 4.5 times in FY99, which is better than Lands' End at 3.3 times. Therefore, Gap has better inventory saleability.
3. Gap covered its interest expense approximately 98 times in FY99. Lands' End covered its interest expense 7.7 times.
4. Gap reports stronger return on net sales at 9.1%.

T Questions

1. Three analytical tools based on accounting information are (a) horizontal analysis, (b) vertical analysis, and (c) ratio analysis.
2. *Horizontal analysis* is the study of percentage changes in comparative financial statements. Decision makers may track the percentage changes in accounts over time to analyze trends.
3. *Vertical analysis* of a financial statement shows the relationship of each statement item to a specified base—total assets on the balance sheet and total revenues on the income statement. Its purpose is to show what percent of the base is represented by each item listed on a financial statement.

Common-size statements—a form of vertical analysis—are used to compare a company's performance from period to period; a company to its industry average; companies of different sizes, or a specific competitor; and to identify the need for corrective action.

4. Two ratios used to measure the company's ability to pay current liabilities are the current ratio and the acid-test ratio. These ratios are computed as follows:

$$\text{Current ratio} = \frac{\text{Total current assets}}{\text{Total current liabilities}}$$

$$\text{Acid-test ratio} = \frac{\text{Cash} + \text{Short-term investments} + \text{Net current receivables}}{\text{Total current liabilities}}$$

5. The acid-test ratio is given that name because it measures the company's ability to pay its current liabilities if they were to come due immediately (that is, if the company were put to the "acid test").

6. The inventory turnover ratio measures the number of times a company sells its average level of inventory during a year.
7. An increase in days' sales in receivables is generally a bad sign about a company. It indicates that the length of time it takes to collect receivables is increasing. The company's credit and collection department should strengthen its collection efforts.
8. An increase in a company's debt ratio is important to the company's creditors. This increase means that the company has a growing proportion of liabilities to assets. This growth in turn increases the risk that the company will not be able to pay its debts and generally results in the company's having to pay a higher interest rate on new borrowings.
9. Company A, the grocery store chain, is likely to have the higher current ratio because of the greater relative importance of inventory to its asset structure. In contrast, Company B, the construction company, has a greater portion of long-term fixed assets (equipment) that it uses to construct buildings. The grocery company is likely to have the higher inventory turnover because its inventory is made up of low-cost items such as breakfast cereal and toothpaste, which turn over rapidly. Company B's inventory takes longer to construct, costs more, and therefore turns over more slowly.

Company B, the construction company, is likely to have the higher rate of return on sales because its sales are composed of high-priced items that each bear a higher rate of profit than the grocery's inventory.

10. A price/earnings ratio of 8 for Ford Motor Company, compared to a ratio of 40 for Lucent Technologies, indicates that the market favors Lucent. The market assigns a price of \$8 for each \$1 of Ford earnings, and a price of \$40 for each \$1 of Lucent Technologies' earnings.

11.

a. Good news	e. Good news
b. Bad news	f. Bad news
c. Good news	g. Bad news
d. Good news	h. Bad news

12. EVA[®] stands for economic value added. It is computed as follows:

$$\text{EVA}^{\text{®}} = \text{Net income} + \text{Interest expense} - \text{Capital charge}^*$$

$$\text{*Capital charge} = \left[\text{Short-term debt} + \text{Long-term debt} + \text{Stockholders' equity} \right] \times \text{Cost of capital}$$

EVA[®] measures whether a company's operations have increased stockholder wealth.

T Daily Exercises

(5-10 min.) **DE 18-3**

(5-10 min.) **DE 18-1**

	Millions			Increase (Decrease)			
				1999		1998	
	1999	1998	1997	Amount	Percent	Amount	Percent
Revenues	\$78,596	\$74,391	\$72,055	\$4,205	5.7%	\$2,336	3.2%
Cost of sales	29,561	26,820	15,941				
Gross profit	\$49,035	\$47,571	\$56,114	\$1,464	3.1%	\$(8,543)	(15.2)%

(5 min.) **DE 18-2**

One View:

The large percentage increase in receivables may suggest difficulty in collecting receivables.

The large percentage increase in inventories may suggest difficulty in selling the inventory.

The large percentage increases in receivables and inventory may therefore convey bad news about the company, especially in light of a decrease in sales.

The Opposing View:

Other students may argue that the increases in receivables and inventories are not worrisome because net sales and net income actually increased during 1999. A growing company needs more inventory to sell and, as a result, its receivables should also increase.

1. Trend percentages:

	1999	1998	1997	1996	1995
Net sales.....	160%	151%	133%	114%	100%
Net income....	364	355	218	45	100

2. The trend of *net income* looks better.

(10 min.) **DE 18-4**

	20X2		20X1	
	Amount	Percent	Amount	Percent
Net sales	\$204,000	100.0%	\$171,000	100.0%
Cost of goods sold	61,000	29.9	50,000	29.2
Selling expenses	45,000	22.1	36,000	21.1
General expenses	18,000	8.8	17,000	9.9
Net income	\$ 80,000	39.2%	\$ 68,000	39.8%

The analysis reflects *favorably* on the company. Sales and net income both increased. Net income remained steady at 39–40% of net sales.

1. Vertical analysis of assets

	20X2		20X1		20X0	
	Amount	Percent	Amount	Percent	Amount	Percent
Cash	\$ 4,000	2.1%	\$ 8,000	4.8%	\$ 9,000	6.0%
Receivables, net	46,000	24.2	32,000	19.3	20,000	13.3
Inventory	42,000	22.1	36,000	21.7	33,000	22.0
Prepaid expenses	2,000	1.1	2,000	1.2	1,000	0.7
Property, plant, and equipment, net	96,000	50.5	88,000	53.0	87,000	58.0
Total assets	\$190,000	100.0%	\$166,000	100.0%	\$150,000	100.0%

Receivables, as a percent of total assets, have grown dramatically. This may have caused the cash shortage.

2. To generate more cash, the company can pursue the collection of receivables more vigorously. Alternatively, the company can

- refuse to sell on account to less creditworthy customers.
- offer an early-payment discount to customers.

1. Both receivables' and inventories' percentages of total assets increased during 1999, as follows:

	% of Total Assets	
	1999	1998
Receivables.....	26.9%	25.2%
Inventories.....	15.9	15.5

2. The increases are not worrisome because (1) the percentage increases are not large, and (2) the company's sales and profits are so high and are growing.

(10 min.) **DE 18-7**

<i>Millions</i>	Nike		Home Depot	
	Amount	Percent	Amount	Percent
Net sales	<u>\$8,777</u>	<u>100.0%</u>	<u>\$38,434</u>	<u>100.0%</u>
Cost of goods sold	5,494	62.6	27,023	70.3
Selling and administrative expenses	2,427	27.7	7,579	19.7
Interest expense	44	0.5	28	0.1
Other expense	66	0.7	—	—
Income tax expense	<u>295</u>	<u>3.4</u>	<u>1,484</u>	<u>3.9</u>
Net income	<u>\$ 451</u>	<u>5.1%</u>	<u>\$ 2,320</u>	<u>6.0%</u>

Home Depot earns more net income. It earns over five times as much net income as Nike.

Home Depot's net income is also a higher percentage of net sales.

On both measures, Home Depot is more profitable than Nike.

(10 min.) **DE 18-8**

<i>Millions</i>	Nike		Home Depot	
	Amount	Percent	Amount	Percent
ASSETS				
Current assets:				
Cash and equivalents	\$ 198	3.8%	\$ 168	1.0%
Short-term investments	—	—	2	0.1
Accounts receivable, net	1,540	29.3	587	3.4
Inventories	1,199	22.9	5,489	32.1
Other current assets	328	6.3	144	0.8
Total current assets	3,265	62.3	6,390	37.4
Property, plant, and equipment, net	1,266	24.1	10,227	59.9
Goodwill and other intangibles	427	8.1	311	1.8
Other assets	290	5.5	153	0.9
Total assets	<u>\$5,248</u>	<u>100.0%</u>	<u>\$17,081</u>	<u>100.0%</u>

Current assets appear more important to *Nike* (62.3% of total assets).

Plant assets appear more important to *The Home Depot* (59.9% of total assets).

(5-10 min.) **DE 18-9**

	(Dollar amounts in thousands)			
	20X1	20X0	19X9	19X8
Total current assets	\$829,744	\$699,650	\$663,999	\$602,697
Total current liabilities	\$259,314	\$223,246	\$245,500	\$235,300
	= 3.20	= 3.13	= 2.70	= 2.56

The company's ability to pay its current liabilities is *improving*.

(5-10 min.) **DE 18-10**

1.

	(Dollar amounts in millions)	
	1999	1998
Cash and cash equivalents + Receivables, net	\$1,816 + \$10,438	\$1,154 + \$7,405
Total current liabilities	\$11,778	\$10,885
	= 1.04	= 0.79

2. Lucent's acid-test ratio looks *strong* because it is close to 1.0 and is much higher than the ratio values of MCI WorldCom and Wal-Mart.

(10-15 min.) **DE 18-11**

(Dollar amounts in millions)

$$\begin{aligned} \text{a. Inventory turnover} &= \frac{\text{Cost of goods sold}}{\text{Average inventory}} = \frac{\$19,688}{(\$6,151 + \$4,538) / 2} \\ &= \frac{\$19,688}{\$5,344.5} = 3.7 \text{ times} \end{aligned}$$

b. Days' sales in receivables:

$$\text{One day's sales} = \frac{\text{Revenues}}{365} = \frac{\$38,303}{365} = \$104.9$$

$$\text{Days' sales in receivables} = \frac{\text{Average net receivables}}{\text{One day's sales}} = \frac{\$8,921.5^*}{\$104.9} = 85 \text{ days}$$

$$^*(\$10,438 + \$7,405) / 2 = \$8,921.5$$

(5-10 min.) **DE 18-12**

(Dollar amounts in millions)

1. Debt ratio = $\frac{\text{Total liabilities}}{\text{Total assets}} = \frac{\$25,191}{\$38,775} = 0.65$

2. Times-interest-earned ratio = $\frac{\text{Operating income}}{\text{Interest expense}} = \frac{\$5,406}{\$406} = 13.3$

3. The debt ratio is within the normal range for most companies. The times-interest-earned ratio is fairly high. Overall, the company's ability to pay its liabilities and interest expense appears *strong*.

(10 min.) **DE 18-13**

(Dollar amounts in millions)

- a. Rate of return on net sales (taken from Exhibit 18-4) = 12.4%

- b. Rate of return on total assets = $\frac{\text{Net income} + \text{Interest expense}}{\text{Average total assets}} = \frac{\$4,766 + \$406}{(\$38,775 + \$29,363) / 2} = 0.152$

- c. Rate of return on common stockholders' equity = $\frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}} = \frac{\$4,766 - \$0}{(\$13,584 + \$7,709) / 2} = 0.448$

These rates of return are *very strong*.

(5-10 min.) **DE 18-14**

$$1. \text{ EPS} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Number of shares of common stock outstanding}} = \frac{\$2,320,000,000 - \$0}{2,244,000,000}$$

$$= \$1.03$$

$$\text{Price/earnings ratio} = \frac{\text{Market price per share of common stock}}{\text{EPS}} = \frac{\$55.63}{\$1.03} = 54$$

2. The stock market says that \$1 of The Home Depot's net income is worth \$54.

(5-10 min.) **DE 18-15**

$$\text{EPS} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Number of shares of common stock outstanding (X)}} = \frac{\$4,766,000,000}{X} = \$1.52$$

$$X = \frac{\$4,766,000,000}{\$1.52} = 3,135,526,316 \text{ shares}$$

(5-10 min.) **DE 18-16**

(Amounts in millions,
except book value per share)

	1999	1998
Book value per share of common stock		
Total stockholders' equity	\$13,584	\$7,709
Preferred equity	\$0	\$0
Number of shares of common stock outstanding	3,072	3,022
	\$4.42	\$2.55

The increasing trend of book value per share is *positive*.

Income Statement	
	<i>Millions</i>
Net sales	<u>\$6,424</u>
Cost of goods sold	3,050 (a)
Selling expenses	1,634
Administrative expenses	304
Interest expense	173 (b)
Other expenses	<u>166</u>
Income before taxes	1,097
Income tax expense	<u>373 (c)</u>
Net income	<u>\$ 724 (d)</u>

$$(a) = \left[\frac{\$564 + \$615}{2} \right] \times 5.174 = \$3,050$$

$$(d) = \$6,424 \times 0.1127 = \$724$$

$$(c) = \$1,097 - \$724 = \$373$$

$$(b) = \$6,424 - \$3,050 - \$1,634 - \$304 - \$166 - \$1,097 = \$173$$

Balance Sheet			
<i>(Amounts in millions)</i>			
Cash	\$ 6	Total current liabilities	\$3,146
Receivables	541 (a)	Long-term debt	1,330 (e)
Inventories	615	Other long-term	
Prepaid expenses	<u>132 (b)</u>	liabilities	811
Total current assets	1,294 (c)		
Plant assets, net	1,726 (d)	Common stock	402
Other assets	2,502	Retained earnings	4,041
		Other stockholders' equity	<u>(4,208)</u>
		Total liabilities and	
Total assets	<u>\$5,522</u>	equity	<u>\$5,522 (f)</u>

$$(f) = \$5,522 \text{ (same as total assets)}$$

$$(e) = \$5,522 \times 0.9574 = \$5,287$$

$$\$5,287 - \$3,146 - \$811 = \$1,330$$

or

$$\$5,522 - \$3,146 - \$811 - \$402 - \$4,041 - (-\$4,208) = \$1,330$$

$$(c) = \$3,146 \times 0.4113 = \$1,294$$

$$(a) = \$3,146 \times 0.1739 = \$547; \$547 - \$6 = \$541$$

$$(b) = \$1,294 - \$6 - \$541 - \$615 = \$132$$

$$(d) = \$5,522 - \$1,294 - \$2,502 = \$1,726$$

(10 min.) **DE 18-19**

(Dollar amounts in millions)

$$\begin{aligned} 1. \text{ EVA}^{\circledR} &= \text{Net income} + \text{Interest expense} - \text{Capital charge} \\ &= \$4,013 + \$966 - \$7,974^* \\ &= \$(2,995) \end{aligned}$$

$$\begin{aligned} \text{*Capital charge} &= \left[\underbrace{\text{Short-term debt} + \text{Long-term debt}}_{(\$21,205)} + \text{Stockholders' equity} \right] \times \text{Cost of capital} \\ &= (\$21,205 + \$45,241) \times .12 \\ &= \$7,974 \end{aligned}$$

2. The stockholders should be unhappy with the negative EVA[®] for 1999. As a result, MCI WorldCom's stock performed poorly during this period.

T Exercises

(5-15 min.) **E 18-1**

	20X3	20X2	20X1
Total current assets.....	\$408,000	\$399,000	\$385,000
Total current liabilities.....	<u>250,000</u>	<u>211,000</u>	<u>232,000</u>
Working capital.....	<u>\$158,000</u>	<u>\$188,000</u>	<u>\$153,000</u>

The decreasing trend of working capital is unfavorable.

	Decrease \$(30,000) (16.0%)	Increase \$35,000 22.9%
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Saladin Publishing				
Horizontal Analysis of Comparative Income Statement				
Years Ended December 31, 20X4 and 20X3				
	20X4	20X3	INCREASE (DECREASE)	
			AMOUNT	PERCENT
Total revenues	\$460,000	\$373,000	\$87,000	23.3%
Expenses:				
Cost of goods sold	\$202,000	\$188,000	\$14,000	7.4
Selling and general				
expenses	98,000	93,000	5,000	5.4
Interest expense	7,000	4,000	3,000	75.0
Income tax expense	52,000	37,000	15,000	40.5
Total expenses	359,000	322,000	37,000	11.5
Net income	\$101,000	\$ 51,000	\$50,000	98.0

Net income increased by a higher percentage than total revenues did during 20X4 because revenues increased at a higher rate (23.3%) than did total expenses (11.5%). Stated differently, the company controlled its expenses quite well.

Trend percentages:

	<u>Year 5</u>	<u>Year 4</u>	<u>Year 3</u>	<u>Year 2</u>	<u>Year 1</u>
Net sales	126%	110%	102%	106%	100%
Net income	141	134	87	95	100

Net income grew by 41% during the period, compared to 26% for net sales.

Artisan International		
Vertical Analysis of Balance Sheet		
December 31, 20X3		
	AMOUNT	PERCENT
ASSETS		
Total current assets	\$ 99,000	28.2%
Long-term investments	35,000	10.0
Property, plant, and equipment, net	<u>217,000</u>	<u>61.8</u>
Total assets	<u>\$351,000</u>	<u>100.0%</u>
LIABILITIES		
Total current liabilities	\$ 58,000	16.5%
Long-term debt	<u>118,000</u>	<u>33.6</u>
Total liabilities	176,000	50.1
STOCKHOLDERS' EQUITY		
Total stockholders' equity	<u>175,000</u>	<u>49.9</u>
Total liabilities and stockholders' equity	<u>\$351,000</u>	<u>100.0%</u>

Saladin Publishing		
Comparative Common-Size Income Statement		
Years Ended December 31, 20X4 and 20X3		
	20X4	20X3
Total revenues	<u>100.0%</u>	<u>100.0%</u>
Expenses:		
Cost of goods sold	43.9	50.4
Selling and general expenses	21.3	24.9
Interest expense	1.5	1.1
Income tax expense	<u>11.3</u>	<u>9.9</u>
Total expense	<u>78.0</u>	<u>86.3</u>
Net income	<u>22.0%</u>	<u>13.7%</u>

(10-15 min.) **E 18-6**

- a. Current ratio = $\frac{\$197,000}{\$121,000} = 1.63$
- b. Acid-test (quick) ratio = $\frac{\$29,000 + \$11,000 + \$64,000}{\$121,000} = 0.86$
- c. Inventory turnover = $\frac{\$260,000}{(\$87,000 + \$71,000) / 2} = 3.29$ times
- d. Accounts receivable turnover = $\frac{\$480,000}{(\$64,000 + \$73,000) / 2} = 7.01$ times
- e. Days' sales in average receivables = $\frac{(\$64,000 + \$73,000) / 2}{\$480,000 / 365} = 52$ days

(15-20 min.) **E 18-7**

- a. *Current ratio:*
 20X2: $\frac{\$21,000 + \$28,000 + \$102,000 + \$226,000 + \$11,000}{\$232,000} = 1.67$
 20X1: $\frac{\$47,000 + \$116,000 + \$263,000 + \$9,000}{\$301,000} = 1.45$
- b. *Acid-test ratio:*
 20X2: $\frac{\$21,000 + \$28,000 + \$102,000}{\$232,000} = 0.65$
 20X1: $\frac{\$47,000 + \$116,000}{\$301,000} = 0.54$
- c. *Debt ratio:*
 20X2: $\frac{\$261,000}{\$511,000} = 0.51$ 20X1: $\frac{\$273,000}{\$493,000} = 0.55$
- d. *Times-interest-earned ratio:*
 20X2: $\frac{\$174,000}{\$36,000} = 4.83$ 20X1: $\frac{\$160,000}{\$39,000} = 4.10$

Summary: The company's ability to pay its current liabilities and long-term debt improved during 20X2, as shown by improvement in all four ratios.

(10-15 min.) **E 18-8**

a. Rate of return on net sales:

$$\begin{array}{l} 20X3: \frac{\$12,000}{\$178,000} = 0.067 \\ 20X2: \frac{\$18,000}{\$163,000} = 0.110 \end{array}$$

b. Rate of return on total assets:

$$\begin{array}{l} 20X3: \frac{\$12,000 + \$21,000}{\$204,000} = 0.162 \\ 20X2: \frac{\$18,000 + \$10,000}{\$191,000} = 0.147 \end{array}$$

c. Rate of return on common stockholders' equity:

$$\begin{array}{l} 20X3: \frac{\$12,000 ! \$3,000}{\$96,000} = 0.094 \\ 20X2: \frac{\$18,000 ! \$3,000}{\$89,000} = 0.169 \end{array}$$

d. Earnings per share of common stock:

$$\begin{array}{l} 20X3: \frac{\$12,000 ! \$3,000}{20,000} = \$0.45 \\ 20X2: \frac{\$18,000 ! \$3,000}{20,000} = \$0.75 \end{array}$$

The company's operating performance deteriorated during 20X3. Three of the profitability measures decreased. Only return on assets increased, and that was because of the high level of interest expense—not a good sign about operating performance.

(10-15 min.) **E 18-9**

$$\begin{array}{l} \text{20X4} \\ \text{a. Price / earnings ratio:} \\ \frac{\$15.12}{(\$58,000 ! \$14,000*) / 80,000} = 27.5 \end{array}$$

$$\begin{array}{l} \text{20X3} \\ \frac{\$10.88}{(\$55,000 ! \$14,000*) / 80,000} = 21.2 \end{array}$$

b. Dividend yield:

$$\frac{(\$28,000 \times 1/2) / 80,000}{\$15.12} = 0.012$$

$$\frac{(\$28,000 \times 1/2) / 80,000}{\$10.88} = 0.016$$

c. Book value per share of common stock:

$$\frac{\$630,000}{80,000} = \$7.88$$

$$\frac{\$600,000}{80,000} = \$7.50$$

$$\frac{\$28,000}{2} = \$14,000$$

The stock's attractiveness increased during 20X4, as shown by the increases in the price/earnings ratio and in book value per share. The dividend yield decreased, but insignificantly.

(20-30 min.) **E 18-12**

Step		<i>Millions</i>
Given	Current assets	\$24,356
4	Property, plant, and equipment..... \$54,217	
Given	Less Accumulated depreciation..... <u>(8,224)</u>	<u>45,993</u>
3	Total assets (\$44,515) 0.63277)	<u>\$70,349</u>
1	Current liabilities (\$24,356) .94392)	\$25,803
2	Long-term liabilities (\$44,515 ! \$25,803)	18,712
6	Stockholders' equity (\$70,349 ! \$44,515)	<u>25,834</u>
5	Total liabilities and stockholders' equity	<u>\$70,349</u>