Financial Statement Analysis

Chapter 14

Learning Objective 1

Perform a horizontal analysis
of financial statements

Evaluating Performance of a Company

Performance can be judged in several ways:

- From year to year
- Compared with a competitor
- Compared with industry averages

Methods of Analysis

Three ways to analyze financial statements

- Horizontal analysis: a year-to-year comparison.
- Vertical analysis: evaluate the relative size of each line.
- Ratio analysis: evaluate the relationships between key components of the financial statements.

Horizontal Analysis

- Step 1: Compute the dollar amount of the change from the earlier period to the later period.
- Step 2: Divide the dollar amount of change by the earlier period amount. We call the earlier period the base period.

			Increase (Decrease)	
(amounts in thousands)	2014	2013	Amount	Percentage
Sales revenue	$858,000	$803,000	$55,000	6.8%

$858,000 - $803,000 = $55,000

Amount / base year = Percentage

55,000 / $803,000 = 6.8

Exhibit 14-3: Comparative Income Statement

	A	B	C	D	E
1	Supermart				
2	Comparative Income Statement				
3	For the Years Ended December 31, 2014 and 2013				
4					
5		*(amounts in thousands)*		Increase/(Decrease)	
6		2014	2013	Change	Percentage
7	Sales revenues	$ 858,000	$ 803,000	$ 55,000	6.8%
8	Less: Cost of goods sold	513,000	509,000	4,000	0.8%
9	Gross profit	$ 345,000	$ 294,000	$ 51,000	17.3%
10	Less: Operating expenses	244,000	237,000	7,000	3.0%
11	Operating income	$ 101,000	$ 57,000	$ 44,000	77.2%
12	Less: Interest expense	20,000	14,000	6,000	42.9%
13	Income before income taxes	$ 81,000	$ 43,000	$ 38,000	88.4%
14	Less: Income tax expense	33,000	17,000	16,000	94.1%
15	Net income	$ 48,000	$ 26,000	$ 22,000	84.6%
16					

Exhibit 14-4: Comparative Balance Sheet

Supermart				
Comparative Balance Statement				
December 31, 2014 and 2013				
	(amounts in thousands)		Increase/(Decrease)	
Assets	2014	2013	Change	Percentage
Current assets:				
Cash	$ 29,000	$ 32,000	$ (3,000)	–9.4%
Accounts receivable	114,000	85,000	29,000	34.1%
Inventory	113,000	111,000	2,000	1.8%
Other current assets	6,000	8,000	(2,000)	–25.0%
Total current assets	$ 262,000	$ 236,000	$ 26,000	11.0%
Property, plant, and equipment, net	507,000	399,000	108,000	27.1%
Other non-current assets	18,000	9,000	9,000	100.0%
Total assets	$ 787,000	$ 644,000	$ 143,000	22.2%

Exhibit 14-4 (cont.)

16					
17	**Liabilities**				
18	Current liabilities:				
19	Accounts payable	$ 73,000	$ 68,000	$ 5,000	7.4%
20	Notes payable	42,000	27,000	15,000	55.6%
21	Accrued liabilities	27,000	31,000	(4,000)	−12.9%
22	Total current liabilities	$ 142,000	$ 126,000	$ 16,000	12.7%
23	Long-term liabilities	289,000	198,000	91,000	46.0%
24	Total liabilities	$ 431,000	$ 324,000	$ 107,000	33.0%
25					
26	**Stockholders' equity**				
27	Common stock, no par	$ 186,000	$ 186,000	0	0.0%
28	Retained earnings	170,000	134,000	36,000	26.9%
29	Total stockholders' equity	$ 356,000	$ 320,000	36,000	11.3%
30					
31	Total liabilities and equity	$ 787,000	$ 644,000	$ 143,000	22.2%
32					

Now turn to E14-12A

Prepare a horizontal analysis of the following comparative income statement of Mariner Designs.

	A	B	C
1	**Mariner Designs**		
2	**Income Statement**		
3	**For the Years Ended December 31, 2014 and 2013**		
4		***(amounts in thousands)***	
5		**2014**	**2013**
6	Sales revenues	$ 567,276	$ 492,000
7	Less: Cost of goods sold	266,805	247,500
8	Gross profit	$ 300,471	$ 244,500
9	Less: Operating expenses	148,750	140,000
10	Operating income	$ 151,721	$ 104,500
11	Less: Interest expense	9,905	4,070
12	Income before income taxes	$ 141,816	$ 100,430
13	Less: Income tax expense	21,235	18,430
14	Net income	$ 120,581	$ 82,000
15			

Why did net income increase by a higher percentage than net sales revenue during 2014?

E14-12A: Horizontal Analysis Example

	2014	2013	Difference
Net sales	$567,276	$492,000	$75,276

$75,276 ÷ $492,000 = .15 or 15%

E14-12A (cont.)

Mariner Designs				
Horizontal Analysis of Comparative Income Statement				
Years Ended December 31, 2014 and 2013				
			Incr.(Decr.)	
	2014	2013	AMT	%
Total revenues	$567,276	$492,000	$75,276	15%
Expenses:				
Cost of goods sold	266,805	247,500	19,305	8%
Operating expenses	148,750	140,000	8,750	6%
Other expenses	31,140	22,500	8,640	38.0%
Total expenses	446,695	410,000	36,695	9.0%
Net income	120,581	82,000	38,581	47.0%

Trend Percentages

- **Trend percentages** are a form of horizontal analysis
  - Trends indicate the direction a business is taking
- Trend percentages are computed by selecting a base year.
  - Base year amounts are set equal to 100%.
  - Trend % = $\dfrac{\text{Any year \$}}{\text{Base year \$}}$

Exhibit 14-5: Trend Percentages

- Indicates the direction a business is taking over a longer period of time, such as three to ten years.

	A	B	C	D	E	F	G
1	**Supermart Trend Data**	**2014**	**2013**	**2012**	**2011**	**2010**	**Base Year 2009**
2	Sales revenue	$ 858,000	$ 803,000	$ 690,000	$ 648,000	$ 618,000	$ 600,000
3	Trend percentage	143%	134%	115%	108%	103%	100%
4							

Now turn to E14-13A

Compute trend percentages for Bright Skies Realtors net revenue and net income for the following five-year period using 2010 as the base year.

(in thousands)	2014	2013	2012	2011	2010
Net revenue........................	$1,700	$1,325	$1,275	$1,150	$1,250
Net income.........................	$ 180	$ 150	$ 114	$ 108	$ 120

Which grew faster during the period, net revenue or net income?

E14-13A: Compute Trend Percentages

(in thousands)	2014	2013	2012	2011	2010
Net revenue	$ 1,700	$1,325	$1,275	$1,150	$ 1,250
Net income	$ 180	$ 150	$114	$108	$ 120

(in thousands)	2014	2013	2012	2011	2010
Net revenue	136%	106%	102%	92%	100%
Net income	150%	125%	95%	90%	100%

Learning Objective 2

Perform a vertical analysis of financial statements

Exhibit 14-7: Vertical Analysis

- Shows relationship of each item to a base amount on financial statements
  - Income statement—each item expressed as percentage of net sales
  - Balance sheet—each item expressed as percentage of total assets

	2014 (in thousands)	Percentage (rounded)
Sales revenues	$ 858,000	100.0%
Less: Cost of goods sold	513,000	59.8%
Gross profit	$ 345,000	40.2%
Less: Operating expenses	244,000	28.4%
Operating income	$ 101,000	11.8%

Amount / sales revenue = percentage

$513,000 / $858,000 = 59.79 = 59.8%

$345,000 / $858,000 = 40.209 = 40.2%

Exhibit 14-7: Income Statement

Supermart Income Statement—Vertical Analysis For the Year Ended December 31, 2014		
	2014 (in thousands)	Percentage (rounded)
Sales revenues	$ 858,000	100.0%
Less: Cost of goods sold	513,000	59.8%
Gross profit	$ 345,000	40.2%
Less: Operating expenses	244,000	28.4%
Operating income	$ 101,000	11.8%
Less: Interest expense	20,000	2.3%
Income before income taxes	$ 81,000	9.4%
Less: Income tax expense	33,000	3.8%
Net income	$ 48,000	5.6%

Exhibit 14-8: Partial Balance Sheet Vertical Analysis

Assets	2014 (in thousands)	Percentage (rounded)
Current assets:		
Cash	$ 29,000	3.7%
Accounts receivable	114,000	14.5%
Inventory	113,000	14.4%
Other current assets	6,000	0.8%
Total current assets	$ 262,000	33.3%
Property, plant, and equipment, net	507,000	64.4%
Other non-current assets	18,000	2.3%
Total assets	$ 787,000	100.0%

Exhibit 14-8 (cont.)

Liabilities		
Current liabilities:		
Accounts payable	$ 73,000	9.3%
Notes payable	42,000	5.3%
Accrued liabilities	27,000	3.4%
Total current liabilities	$ 142,000	18.0%
Long-term liabilities	289,000	36.7%
Total liabilities	$ 431,000	54.8%
Stockholders' equity		
Common stock, no par	$ 186,000	23.6%
Retained earnings	170,000	21.6%
Total stockholders' equity	$ 356,000	45.2%
Total liabilities and equity	$ 787,000	100.0%

Learning Objective 3

Prepare and use common-size financial statements

Exhibit 14-9: Common-Size Statements

- Reports only percentages used in vertical analysis
- Useful when comparing a company against industry averages or key competitors

	Supermart	Target*
Sales revenues	100.0%	100.0%
Less: Cost of goods sold	59.8%	69.4%
Gross profit	40.2%	30.6%
Less: Operating expenses	28.4%	23.2%
Operating income	11.8%	7.4%
Less: Interest expense	2.3%	1.0%
Income before income taxes	9.4%	6.3%
Less: Income tax expense	3.8%	2.2%
Net income	5.6%	4.1%

Now turn to E14-15A

Prepare a comparative common-size income statement for Mariner Designs. To an investor, how does 2014 compare with 2013? Explain your reasoning.

	A	B	C
1	Mariner Designs		
2	Income Statement		
3	For the Years Ended December 31, 2014 and 2013		
4		*(amounts in thousands)*	
5		**2014**	**2013**
6	Sales revenues	$ 567,276	$ 492,000
7	Less: Cost of goods sold	266,805	247,500
8	Gross profit	$ 300,471	$ 244,500
9	Less: Operating expenses	148,750	140,000
10	Operating income	$ 151,721	$ 104,500
11	Less: Interest expense	9,905	4,070
12	Income before income taxes	$ 141,816	$ 100,430
13	Less: Income tax expense	21,235	18,430
14	Net income	$ 120,581	$ 82,000
15			

E14-15A: Prepare Common-Size Income Statement

Mariner Designs				
Comparative Common- size Income Statement				
Years Ended December 31, 2014 and 2013				
	2014	2013	2014	2013
Total revenues	$567,276	$492,000	100.0%	100.0%
Expenses:				
Cost of goods sold	$266,805	$247,500	47.0%	50.0%
Operating expenses	148,750	140,000	26.0%	28.0%
Other expenses	31,140	22,500	5.0%	5.0%
Total expenses	$446,695	$410,000	79.0%	83.0%
Net income	$120,581	$82,000	21.0%	17.0%

Learning Objective 4

Compute the standard financial ratios

Ratio Analysis

- A means of evaluating the relationships between key components of the financial statements
- The information needed can be found in the company's financial statements
- A few ratios require the amount of the company's closing market price
- Some ratios require knowledge of the number of shares outstanding

Ability to Pay Current Liabilities

Working capital—measures the ability to meet short-term obligations with current assets

The 2014 working capital for Supermart follows:

$$\$262,000 - \$142,000 = \$120,000$$

Ability to Pay Current Liabilities

Current ratio—the current ratio measures the ability to pay current liabilities with current assets.

The 2014 and 2013 current ratio for Supermart follows:

	Supermart's Current Ratio	
Formula	2014	2013
$\text{Current ratio} = \dfrac{\text{Current assets}}{\text{Current liabilities}}$	$\dfrac{\$262{,}000}{\$142{,}000} = 1.85$	$\dfrac{\$236{,}000}{\$126{,}000} = 1.87$

Ability to Pay Current Liabilities

- Acid test ratio (quick ratio) reveals whether the entity could pay all its current liabilities if they came due immediately
- Quick assets—cash, short-term investments, net current receivables

:

The 2014 and 2013 acid-test ratio for Supermart follows:

Formula	Supermart's Acid-Test Ratio 2014	Supermart's Acid-Test Ratio 2013
$\text{Acid-test ratio} = \dfrac{\text{Cash + Short-term investments + Net current receivables}}{\text{Current liabilities}}$	$\dfrac{\$29{,}000 + \$0 + \$114{,}000}{\$142{,}000} = 1.01$	$\dfrac{\$32{,}000 + \$0 + \$85{,}000}{\$126{,}000} = 0.93$

Ability to Sell Inventory

Inventory turnover—how many times a year the company sells its average level of inventory

The 2014 inventory turnover for Supermart follows:

Formula	Supermart's 2014 Inventory Turnover
$\text{Inventory turnover} = \dfrac{\text{Cost of goods sold}}{\text{Average inventory}}$	$\dfrac{\$513{,}000}{(\$111{,}000 + \$113{,}000)/2} = 4.6$

*Average inventory =
(Beginning inventory + Ending inventory) / 2

30

Ability to Collect Receivables

Accounts receivable turnover—how quickly the company collects cash from credit customers

The 2014 accounts receivable turnover for Supermart follows:

Formula	Supermart's 2014 Accounts Receivable Turnover
$\text{Accounts receivable turnover} = \dfrac{\text{Net credit sales}}{\text{Average net accounts receivable}}$	$\dfrac{\$858{,}000}{(\$85{,}000 + \$114{,}000)/2} = 8.6$

*Average net accounts receivable =
(Beginning receivables + Ending receivables) / 2

Now turn to E14-16A

The partial financial statements of a company include the following items:

	A	B	C
1	**Balance sheet item:**	**Current year**	**Preceding year**
2	Cash	$ 16,500	$ 23,500
3	Short-term investments	$ 10,750	$ 24,000
4	Net receivables	$ 49,000	$ 77,360
5	Inventory	$ 81,000	$ 78,500
6	Prepaid expenses	$ 21,500	$ 8,000
7	Total current assets	$ 178,750	$ 211,360
8	Total current liabilities	$ 125,000	$ 86,000
9			
10	**Income statement:**		
11	Net credit sales	$ 427,050	
12	Cost of goods sold	$ 319,000	
13			

Requirement

Compute the following ratios for the current year:

a. Current ratio

b. Acid-test ratio

c. Inventory turnover

d. Days' sales in average receivables

E14-16A: Compute Ratios

	A	B	C
1	**Balance sheet item:**	**Current year**	**Preceding year**
2	Cash	$ 16,500	$ 23,500
3	Short-term investments	$ 10,750	$ 24,000
4	Net receivables	$ 49,000	$ 77,360
5	Inventory	$ 81,000	$ 78,500
6	Prepaid expenses	$ 21,500	$ 8,000
7	Total current assets	$ 178,750	$ 211,360
8	Total current liabilities	$ 125,000	$ 86,000
9			
10	**Income statement:**		
11	Net credit sales	$ 427,050	
12	Cost of goods sold	$ 319,000	
13			

Current ratio =
\$178,750 / 125,000 = 1.43

Acid test =
\$16,500 + \$10,750 + \$49,000
/ \$125,000 = 0.61

Inventory turnover =
\$319,000
(\$81,000 + \$78,500) / 2 = 4.0

Days' sales in A/R =
(\$49,000 + \$77,360) / 2
(\$427,050 / 365) = 54 days

Ability to Pay Long-Term Debt

Debt ratio—proportion of company's assets financed with debt

The 2014 and 2013 debt ratio for Supermart follows:

	Supermart's Debt Ratio	
Formula	2014	2013
$\text{Debt ratio} = \dfrac{\text{Total liabilities}}{\text{Total assets}}$	$\dfrac{\$431{,}000}{\$787{,}000} = 0.55$	$\dfrac{\$324{,}000}{\$644{,}000} = 0.50$

Ability to Pay Long-Term Debt

Times-interest-earned (interest coverage)—how many times operating income covers interest expense

The 2014 and 2013 times-interest-earned ratio for Supermart follows:

Formula	Supermart's Times-Interest-Earned Ratio 2014	Supermart's Times-Interest-Earned Ratio 2013
$\text{Times-interest-earned ratio} = \dfrac{\text{Income from operations}}{\text{Interest expense}}$	$\dfrac{\$101{,}000}{\$20{,}000} = 5.05$	$\dfrac{\$57{,}000}{\$14{,}000} = 4.07$

Measuring Profitability

Rate of return on net sales (profit margin)—percentage of each sales dollar that is earned as net income

The 2014 and 2013 rate of return on sales for Supermart follows:

Formula	Supermart's Rate of Return on Sales 2014	Supermart's Rate of Return on Sales 2013
$\text{Rate of return on sales} = \dfrac{\text{Net income}}{\text{Net sales}}$	$\dfrac{\$48{,}000}{\$858{,}000} = 5.6\%$	$\dfrac{\$26{,}000}{\$803{,}000} = 3.2\%$

Measuring Profitability

Rate of return on total assets—how successful the business is using its assets to earn a profit

The 2014 rate of return on total assets for Supermart follows:

Formula	Supermart's 2014 Rate of Return on Total Assets
$\text{Rate of return on assets} = \dfrac{\text{Net income} + \text{Interest expense}}{\text{Average total assets}}$	$\dfrac{\$48{,}000 + \$20{,}000}{(\$644{,}000 + \$787{,}000)/2} = 9.5\%$

*Average total assets =
(Beginning assets + Ending assets) / 2

Measuring Profitability

Rate of return on common stockholders' equity—how much income is earned for every $1 invested by the common stockholder

The 2014 rate of return on common stockholders' equity for Supermart follows:

Formula	Supermart's 2014 Rate of Return on Common Stockholders' Equity
$\text{Rate of return on common stockholders' equity} = \dfrac{\text{Net income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}}$	$\dfrac{\$48{,}000 - \$0}{(\$320{,}000 + \$356{,}000)/2} = 14.2\%$

*Average common stockholders' equity =
(Beginning + Ending common stockholders' equity) / 2

Measuring Profitability

- Trading on the equity (using leverage)—company borrows at a lower rate, then invests the money to earn a higher rate

Measuring Profitability

Earnings per share of common stock—income generated by one share of stock

The 2014 and 2013 earnings per share for Supermart follows:

Formula	Supermart's Earnings per Share 2014	Supermart's Earnings per Share 2013
$\text{Earnings per share of common stock} = \dfrac{\text{Net income} - \text{Preferred dividends}}{\text{Number of shares of common stock outstanding}}$	$\dfrac{\$48{,}000 - \$0}{10{,}000} = \$4.80$	$\dfrac{\$26{,}000 - \$0}{10{,}000} = \$2.60$

Now turn to E14-18A

Compute four ratios that measure Variline's ability to earn profits. The company's comparative income statement follows. The data for 2014 are given as needed.

	A	B		C
1	Variline			
2	Income Statement			
3	For the Years Ended December 31, 2014 and 2013			
4		*(amounts in thousands)*		
5		2014	2013	2012
6	Sales revenues	$ 178,120	$ 167,725	
7	Less: Cost of goods sold	94,000	88,000	
8	Gross profit	$ 84,120	$ 79,725	
9	Less: Operating expenses	43,000	35,000	
10	Operating income	$ 41,120	$ 44,725	
11	Less: Interest expense	7,360	8,100	
12	Income before income taxes	$ 33,760	$ 36,625	
13	Less: Income tax expense	11,495	23,207	
14	Net income	$ 22,265	$ 13,418	
15				
16	Additional data:			
17	Total assets	$ 203,000	$ 192,000	$ 179,000
18	Common stockholders' equity	$ 110,050	$ 86,000	$ 77,000
19	Preferred dividends	$ 2,660	$ 2,660	$ 0
20	Common shares outstanding during the year	26,140	26,140	24,000
21				

Did the company's operating performance improve or deteriorate during 2014?

E14-18A: Compute Profitability Ratios

Refer to the text for financial statement information to compute the following:

Rate of return on net sales = $\$22,265 / \$178,120 = 13\%$

Rate of return on total assets = $\dfrac{(\$22,265 + \$7,360)}{(\$203,000 + \$192,000) / 2} = \dfrac{\$29,625}{\$197,500} = 15\%$

Rate of return on common stockholders' equity = $\dfrac{\$22,265 - \$2,660}{(\$110,050 + \$86,000)/2} \quad \dfrac{\$19,605}{98,025} = 20\%$

Earnings per share of common stock = $\dfrac{\$22,265 - \$2,660}{26,140} \quad \dfrac{\$19,605}{26,140} = \$\ 0.75$

Analyzing Stock as an Investment

Price/earnings ratio

Formula	Supermart's Price/Earnings Ratio 2014	2013
$\text{P/E ratio} = \dfrac{\text{Market price per share of common stock}}{\text{Earnings per share}}$	$\dfrac{\$60.00}{\$4.80} = 12.5$	$\dfrac{\$35.00}{\$2.60} = 13.5$

Analyzing Stock as an Investment

Dividend yield—percentage of a stock's market value that is returned annually as dividends

Formula	Dividend Yield on Supermart's Common Stock 2014	2013
Dividend yield on common stock* = $\frac{\text{Dividend per share of common stock}}{\text{Market price per share of common stock}}$	$\frac{\$1.20}{\$60.00} = 2.0\%$	$\frac{\$1.00}{\$35.00} = 2.9\%$

Analyzing Stock as an Investment

Book value per share of common stock—amount of equity one share of common stock has in the company

Formula	Book Value per Share of Supermart's Common Stock 2014	Book Value per Share of Supermart's Common Stock 2013
$\text{Book value per share of common stock} = \dfrac{\text{Total stockholders' equity} - \text{Preferred equity}}{\text{Number of shares of common stock outstanding}}$	$\dfrac{\$356{,}000 - \$0}{10{,}000} = \$35.60$	$\dfrac{\$320{,}000 - \$0}{10{,}000} = \$32.00$

Now turn to E14-19A

Evaluate the common stock of Warwick State Bank as an investment. Specifically, use the three stock ratios to determine whether the common stock has increased or decreased in attractiveness during the past year.

	Current year	Last year
Net income	$ 83,375	$ 77,300
Dividends—common	$ 19,845	$ 19,845
Dividends—preferred	$ 12,500	$ 12,500
Total stockholders' equity at year end (includes 81,000 shares of common stock)	$772,000	$605,950
Preferred stock, 6%	$205,000	$205,000
Market price per share of common	$ 17.50	$ 14.00

E14-19A: Compute Stock Ratios

Price/earnings ratio	\$17.50 /\$0.875	20
Dividend yield ratio	0.245/17.50	1.4%
Book value per share of common stock	772,000 – 205,000 / 81,000	\$7.00

Red Flags in Financial Statement Analysis

- Movement of sales, inventory, and receivables
- Earnings problems
- Decreased cash flow
- Too much debt
- Inability to collect receivables
- Inventory buildup

End of Chapter 14