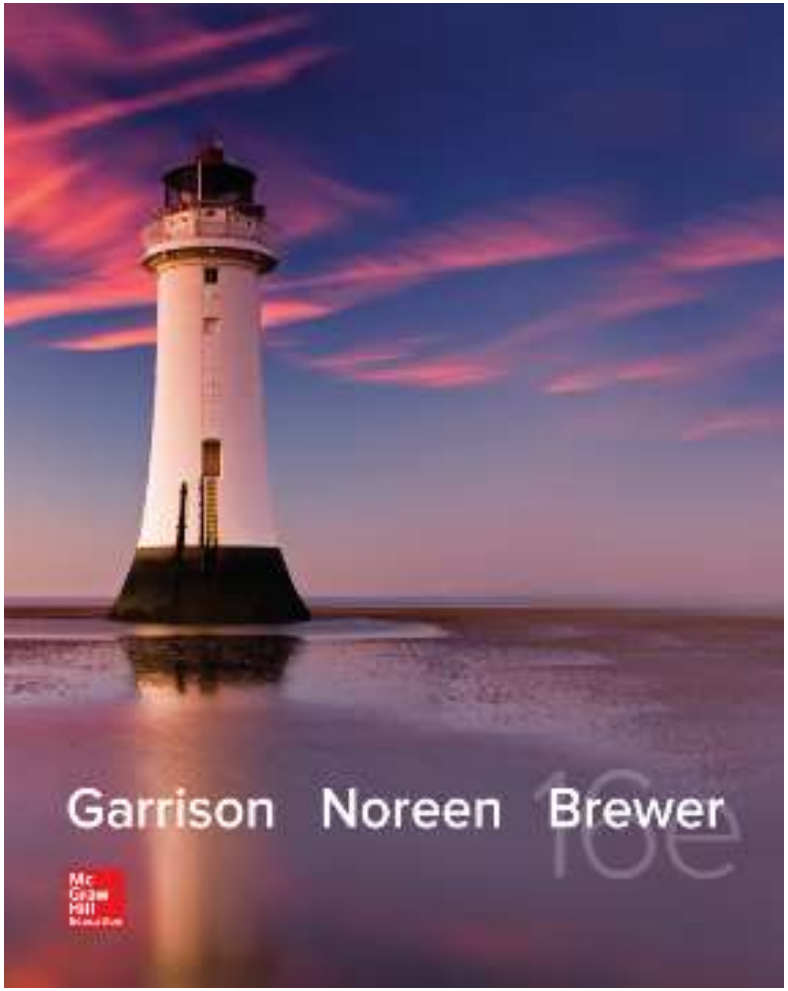
Managerial Accounting

Sixteenth Edition



Chapter 15

Financial Statement Analysis

Limitations of Financial Statement Analysis

- Differences in accounting methods between companies sometimes make comparisons difficult.
- Company 1:
  - We use the LIFO method to value inventory.
- Company 2:
  - We use the average cost method to value inventory.

Looking Beyond Ratios

- Managers should look beyond the ratios.
  - Technology changes
  - Industry trends
  - Changes within the company
  - Consumer tastes
  - Economic factors

Learning Objective 1

- Prepare and interpret financial statements in comparative and common-size form.

Key Concept

- An item on a financial statement has little meaning by itself. The meaning of the numbers can be enhanced by drawing comparisons using:
  1. Dollar and percentage changes on statements
  2. Common-size statements
  3. Ratios

Dollar and Percentage Changes on Statements

- Horizontal analysis (or trend analysis) shows the changes between years in the financial data in both dollar and percentage form.
- Quantifying **dollar changes** over time serves to highlight the changes that are the most important economically.
- Quantifying **percentage changes** over time serves to highlight the changes that are the most unusual.

Horizontal Analysis – Part 1

- The following slides illustrate a horizontal analysis of Clover Corporation's comparative balance sheets and comparative income statements for this year and last year.

Horizontal Analysis – Part 2

CLOVER CORPORATION Comparative Balance Sheets December 31				
			Increase (Decrease)	
	This Year	Last Year	Amount	%
Assets				
Current assets:				
Cash	$ 12,000	$ 23,500		
Accounts receivable, net	60,000	40,000		
Inventory	80,000	100,000		
Prepaid expenses	3,000	1,200		
Total current assets	155,000	164,700		
Property and equipment:				
Land	40,000	40,000		
Buildings and equipment, net	120,000	85,000		
Total property and equipment	160,000	125,000		
Total assets	$ 315,000	$ 289,700		

Horizontal Analysis – Part 3

Calculating Change in Dollar Amounts

Dollar Change = Current Year Figure - Base Year Figure (The dollar amounts for last year become the "base" year figures.)

Horizontal Analysis – Part 4

Calculating Change as a Percentage

$$\text{Percentage Change} = \frac{\text{Dollar Change}}{\text{Base Year Figure}} \times 100\%$$

Horizontal Analysis – Part 5 (1 of 2)

- Cash Amount $(11,500)=**$12,000 – $23,500 = $(11,500)**
- Buildings and equipment, net %=**($11,500 ÷ $23,500) × 100% = (48.9%)**

Horizontal Analysis – Part 5 (2 of 2)

CLOVER CORPORATION Comparative Balance Sheets December 31				
			Increase (Decrease)	
	This Year	Last Year	Amount	%
Assets				
Current assets:				
Cash	$ 12,000	$ 23,500	$ (11,500)	(48.9)
Accounts receivable, net	60,000	40,000	20,000	50.0
Inventory	80,000	100,000	(20,000)	(20.0)
Prepaid expenses	3,000	1,200	1,800	150.0
Total current assets	155,000	164,700	(9,700)	(5.9)
Property and equipment:				
Land	40,000	40,000	-	0.0
Buildings and equipment, net	120,000	85,000	35,000	41.2
Total property and equipment	160,000	125,000	35,000	28.0
Total assets	$ 315,000	$ 289,700	$ 25,300	8.7

Horizontal Analysis – Part 6

CLOVER CORPORATION Comparative Balance Sheets December 31				
			Increase (Decrease)	
	This Year	Last Year	Amount	%
Assets				
Current assets:				
Cash	$ 12,000	$ 23,500	$ (11,500)	(48.9)
Accounts receivable, net	60,000	40,000	20,000	50.0
Inventory	80,000	100,000	(20,000)	(20.0)
Prepaid expenses	3,000	1,200	1,800	150.0
Total current assets	155,000	164,700	(9,700)	(5.9)
Property and equipment:				
Land	40,000	40,000	-	0.0
Buildings and equipment, net	120,000	85,000	35,000	41.2
Total property and equipment	160,000	125,000	35,000	28.0
Total assets	$ 315,000	$ 289,700	$ 25,300	8.7

Horizontal Analysis – Part 7

- We could do this for the liabilities and stockholders' equity, but now let's look at the income statement accounts.

Horizontal Analysis – Part 8

CLOVER CORPORATION Comparative Income Statements For the Years Ended December 31				
			Increase (Decrease)	
	This Year	Last Year	Amount	%
Sales	$ 520,000	$ 480,000		
Cost of goods sold	360,000	315,000		
Gross margin	160,000	165,000		
Operating expenses	128,600	126,000		
Net operating income	31,400	39,000		
Interest expense	6,400	7,000		
Net income before taxes	25,000	32,000		
Less income taxes (30%)	7,500	9,600		
Net income	$ 17,500	$ 22,400		

Horizontal Analysis – Part 9

CLOVER CORPORATION Comparative Income Statements For the Years Ended December 31				
			Increase (Decrease)	
	This Year	Last Year	Amount	%
Sales	$520,000	$480,000	$ 40,000	8.3
Cost of goods sold	360,000	315,000	45,000	14.3
Gross margin	160,000	165,000	(5,000)	(3.0)
Operating expenses	128,600	126,000	2,600	2.1
Net operating income	31,400	39,000	(7,600)	(19.5)
Interest expense	6,400	7,000	(600)	(8.6)
Net income before taxes	25,000	32,000	(7,000)	(21.9)
Less income taxes (30%)	7,500	9,600	(2,100)	(21.9)
Net income	$ 17,500	$ 22,400	$ (4,900)	(21.9)

Horizontal Analysis – Part 10 (1 of 2)

CLOVER CORPORATION Comparative Income Statements For the Years Ended December 31				
			Increase (Decrease)	
	This Year	Last Year	Amount	%
Sales	$520,000	$480,000	$ 40,000	8.3
Cost of goods sold	360,000	315,000	45,000	14.3
Gross margin	160,000	165,000	(5,000)	(3.0)
Operating expenses	128,600	126,000	2,600	2.1
Net operating income	31,400	39,000	(7,600)	(19.5)
Interest expense	6,400	7,000	(600)	(8.6)
Net income before taxes	25,000	32,000	(7,000)	(21.9)
Less income taxes (30%)	7,500	9,600	(2,100)	(21.9)
Net income	$ 17,500	$ 22,400	$ (4,900)	(21.9)

- Sales increased by 8.3%, yet net income decreased by 21.9%.

Horizontal Analysis – Part 11 (1 of 2)

CLOVER CORPORATION Comparative Income Statements For the Years Ended December 31				
			Increase (Decrease)	
	This Year	Last Year	Amount	%
Sales	$520,000	$480,000	$ 40,000	8.3
Cost of goods sold	360,000	315,000	45,000	14.3
Gross margin	160,000	165,000	(5,000)	(3.0)
Operating expenses	128,600	126,000	2,600	2.1
Net operating income	31,400	39,000	(7,600)	(19.5)
Interest expense	6,400	7,000	(600)	(8.6)
Net income before taxes	25,000	32,000	(7,000)	(21.9)
Less income taxes (30%)	7,500	9,600	(2,100)	(21.9)
Net income	$ 17,500	$ 22,400	$ (4,900)	(21.9)

Horizontal Analysis – Part 11 (2 of 2)

- There were increases in both cost of goods sold (14.3%) and operating expenses (2.1%). These increased costs more than offset the increase in sales, yielding an overall decrease in net income.

Trend Percentages

- Trend percentages state several years' financial data in terms of a **base year**, which equals 100 percent.

Trend Analysis – Part 1

- Here is the equation for computing a trend percentage:

$$\text{Trend Percentage} = \frac{\text{Current Year Amount}}{\text{Base Year Amount}} \times 100\%$$

Trend Analysis – Part 2

- Look at the income information for Berry Products for the years 1 through 5. We will do a trend analysis on these amounts to see what we can learn about the company.

Trend Analysis – Part 3

Berry Products
Income Information
For the Years Ended December 31

Item	Year: 1	Year: 2	Year: 3	Year: 4	Year: 5
Sales	$ 275,000	$ 290,000	$ 320,000	$ 355,000	$ 400,000
Cost of goods sold	190,000	198,000	225,000	250,000	285,000
Gross margin	85,000	92,000	95,000	105,000	115,000

- The base year is Year 1, and its amounts will equal 100%.

Trend Analysis – Part 4 (1 of 2)

Berry Products
Income Information
For the Years Ended December 31

Item	Year: 1	Year: 2	Year: 3	Year: 4	Year: 5
Sales	100%	105%	116%	129%	145%
Cost of goods sold	100%	104%	118%	132%	150%
Gross margin	100%	108%	112%	124%	135%

Trend Analysis – Part 4 (2 of 2)

- (Year 2 Amount ÷ Year 1 Amount) × 100%
  - **($290,000 ÷ $275,000) × 100% = 105%**
  - **($198,000 ÷ $190,000) × 100% = 104%**
  - **($ 92,000 ÷ $ 85,000) × 100% = 108%**

Trend Analysis – Part 5

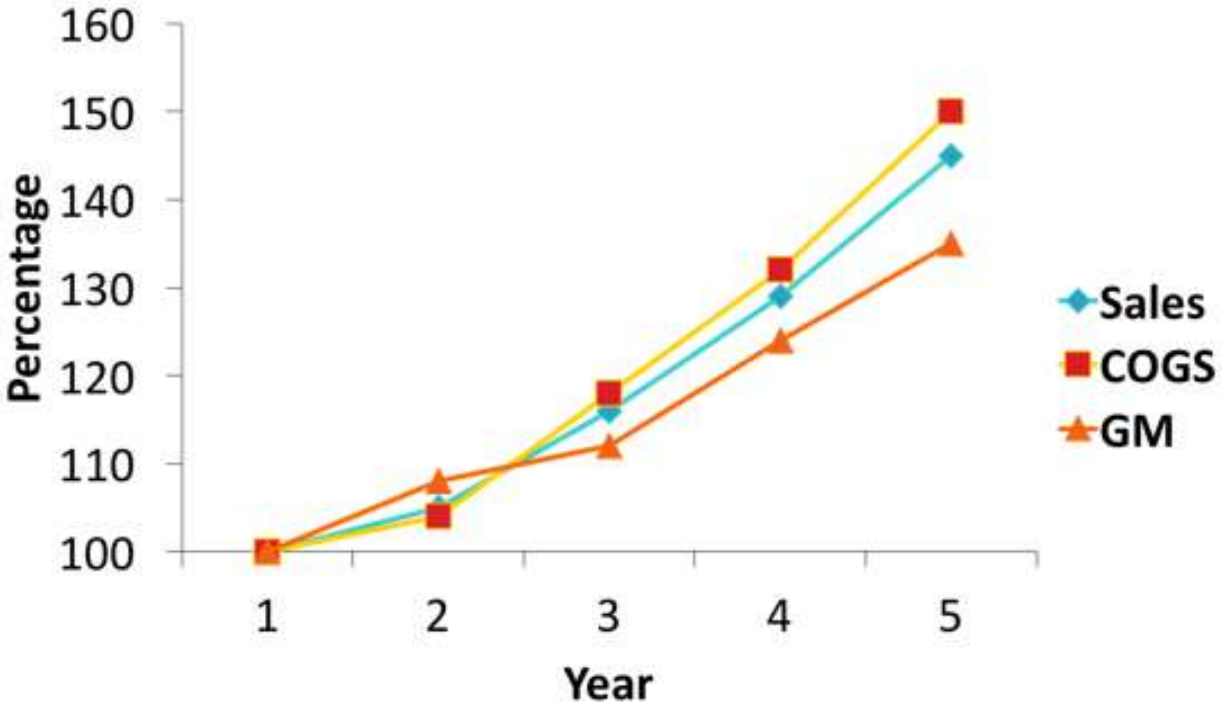
Berry Products
Income Information
For the Years Ended December 31

Item	Year: 1	Year: 2	Year: 3	Year: 4	Year: 5
Sales	100%	105%	116%	129%	145%
Cost of goods sold	100%	104%	118%	132%	150%
Gross margin	100%	108%	112%	124%	135%

- By analyzing the trends for Berry Products, we can see that cost of goods sold is increasing faster than sales, which is slowing the increase in gross margin.

Trend Analysis – Part 6

- We can use the trend percentages to construct a graph so we can see the trend over time.



Common-Size Statements – Part 1

- **Vertical analysis** focuses on the relationships among financial statement items at a given point in time.
- A **common-size** financial statement is a vertical analysis in which each financial statement item is expressed as a percentage.

Common-Size Statements – Part 2

- In balance sheets, all items usually are expressed as a percentage of total assets.

Common-Size Statements – Part 3

- In income statements, all items usually are expressed as a percentage of sales.

Common-Size Statements – Part 4

- Let’s take another look at the information from the comparative income statements of Clover Corporation for this year and last year.
- **This time, let’s prepare common-size statements.**

Common-Size Statements – Part 5

CLOVER CORPORATION Comparative Income Statements For the Years Ended December 31				
			Common-Size Percentages	
	This Year	Last Year	This Year	Last Year
Sales	$520,000	$480,000	100.0	100.0
Cost of goods sold	360,000	315,000	69.2	65.6
Gross margin	160,000	165,000	30.8	34.4
Operating expenses	128,600	126,000	24.8	26.2
Net operating income	31,400	39,000	6.0	8.2
Interest expense	6,400	7,000	1.2	1.5
Net income before taxes	25,000	32,000	4.8	6.7
Less income taxes (30%)	7,500	9,600	1.4	2.0
Net income	$ 17,500	$ 22,400	3.4	4.7

- **Sales** is usually the base and is expressed as 100%.

Common-Size Statements – Part 6 (1 of 2)

- This Year's Operating Expenses ÷ This Year's Sales × 100% ($128,600 ÷ $520,000) × 100% = 24.8%

CLOVER CORPORATION Comparative Income Statements For the Years Ended December 31				
			Common-Size Percentages	
	This Year	Last Year	This Year	Last Year
Sales	$520,000	$480,000	100.0	100.0
Cost of goods sold	360,000	315,000	69.2	65.6
Gross margin	160,000	165,000	30.8	34.4
Operating expenses	128,600	126,000	24.8	26.2
Net operating income	31,400	39,000	6.0	8.2
Interest expense	6,400	7,000	1.2	1.5
Net income before taxes	25,000	32,000	4.8	6.7
Less income taxes (30%)	7,500	9,600	1.4	2.0
Net income	$ 17,500	$ 22,400	3.4	4.7

Common-Size Statements – Part 6 (2 of 2)

- Last Year's Operating Expenses ÷ Last Year's Sales × 100% ($126,000 ÷ $480,000) × 100% = 26.2%

Common-Size Statements – Part 7

What conclusions can we draw?

CLOVER CORPORATION Comparative Income Statements For the Years Ended December 31				
			Common-Size Percentages	
	This Year	Last Year	This Year	Last Year
Sales	$520,000	$480,000	100.0	100.0
Cost of goods sold	360,000	315,000	69.2	65.6
Gross margin	160,000	165,000	30.8	34.4
Operating expenses	128,600	126,000	24.8	26.2
Net operating income	31,400	39,000	6.0	8.2
Interest expense	6,400	7,000	1.2	1.5
Net income before taxes	25,000	32,000	4.8	6.7
Less income taxes (30%)	7,500	9,600	1.4	2.0
Net income	$ 17,500	$ 22,400	3.4	4.7

Quick Check 1

Which of the following statements describes horizontal analysis?

a. A statement that shows items appearing on it in percentage and dollar form.
b. A side-by-side comparison of two or more years' financial statements.
c. A comparison of the account balances on the current year's financial statements.
d. None of the above.

Quick Check 1a (1 of 2)

Which of the following statements describes horizontal analysis?

a. A statement that shows items appearing on it in percentage and dollar form.
b. A side-by-side comparison of two or more years' financial statements.
c. A comparison of the account balances on the current year's financial statements.
d. None of the above.

Answer: b

Horizontal analysis shows the changes between years in the financial data in both dollar and percentage form.

Norton Corporation – Data for Calculating Ratios

- Now, let's look at Norton Corporation's financial statements for this year and last year.

Norton Balance Sheet – Part 1

NORTON CORPORATION Balance Sheets December 31		
	This Year	Last Year
Assets		
Current assets:		
Cash	$ 30,000	$ 20,000
Accounts receivable, net	20,000	17,000
Inventory	12,000	10,000
Prepaid expenses	3,000	2,000
Total current assets	65,000	49,000
Property and equipment:		
Land	165,000	123,000
Buildings and equipment, net	116,390	128,000
Total property and equipment	281,390	251,000
Total assets	$ 346,390	$ 300,000

Norton Balance Sheet – Part 2

NORTON CORPORATION Balance Sheets December 31		
	This Year	Last Year
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 39,000	$ 40,000
Notes payable, short-term	3,000	2,000
Total current liabilities	42,000	42,000
Long-term liabilities:		
Notes payable, long-term	70,000	78,000
Total liabilities	112,000	120,000
Stockholders' equity:		
Common stock, $1 par value	27,400	17,000
Additional paid-in capital	158,100	113,000
Total paid-in capital	185,500	130,000
Retained earnings	48,890	50,000
Total stockholders' equity	234,390	180,000
Total liabilities and stockholders' equity	$ 346,390	$ 300,000

Norton Income Statement

NORTON CORPORATION Income Statements For the Years Ended December 31		
	This Year	Last Year
Sales	$ 494,000	$ 450,000
Cost of goods sold	140,000	127,000
Gross margin	354,000	323,000
Operating expenses	270,000	249,000
Net operating income	84,000	74,000
Interest expense	7,300	8,000
Net income before taxes	76,700	66,000
Less income taxes (30%)	23,010	19,800
Net income	$ 53,690	$ 46,200

Learning Objective 2

- Compute and interpret financial ratios that managers use to assess liquidity.

Ratio Analysis – Liquidity

- The data and ratios that managers use to assess liquidity include working capital, the current ratio, and the acid-test (quick) ratio.
- The information shown for Norton Corporation will be used to calculate the aforementioned liquidity ratios.

NORTAN CORPORATION

This Year

Cash	$ 30,000
Accounts receivable, net	20,000
Total current assets	65,000
Total current liabilities	42,000

Working Capital – Part 1

- The excess of current assets over current liabilities is known as working capital.
- Working capital is not free. It must be financed with long-term debt and equity.

Working Capital – Part 2

	December 31 This Year
Current assets	$ 65,000
Current liabilities	(42,000)
Working capital	$ 23,000

Current Ratio – Part 1

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

- The current ratio measures a company's short-term debt paying ability.
- A declining ratio may be a sign of deteriorating financial condition, or it might result from eliminating obsolete inventories.

Current Ratio – Part 2

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Current Ratio} = \frac{\$65{,}000}{\$42{,}000}$$

$$= 1.55$$

Acid-Test (Quick) Ratio

$$\text{Acid} - \text{Test Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

$$\text{Acid} - \text{Test Ratio} = \frac{\$50{,}000}{\$42{,}000}$$

$$= 1.19$$

- Quick assets include Cash, Marketable Securities, Accounts Receivable, and current Notes Receivable. This ratio measures a company's ability to meet obligations without having to liquidate inventory.

Learning Objective 3

- Compute and interpret financial ratios that managers use for asset management purposes.

Ratio Analysis – Asset Management (1 of 2)

- Managers compute a variety of ratios for asset management purposes. The information shown for Norton Corporation will be used to calculate the asset management ratios.

Note: You may also use information provided in an earlier slide for these computations.

Ratio Analysis – Asset Management (2 of 2)

NORTON CORPORATION
This Year

Accounts receivable, net	
Beginning of year	17,000
End of year	20,000
Inventory	
Beginning of year	10,000
End of year	12,000
Total assets	
Beginning of year	300,000
End of year	346,390
Sales on account	494,000
Cost of goods sold	140,000

Accounts Receivable Turnover

$$\text{Accounts Receivable Turnover} = \frac{\text{Sales on Account}}{\textbf{Average} \text{ Accounts Receivable}}$$

$$\text{Accounts Receivable Turnover} = \frac{\$494{,}000}{(\$17{,}000 + \$20{,}000) \div 2}$$

$$= 26.7 \text{ times}$$

- This ratio measures how many times a company converts its receivables into cash each year.

Average Collection Period

$$\text{Average Collection Period} = \frac{365\ \text{Days}}{\text{Accounts Receivable Turnover}}$$

$$\text{Average Collection Period} = \frac{365\ \text{Days}}{26.7\ \text{Times}}$$

$$= 13.67\ \text{days}$$

- This ratio measures, on average, how many days it takes to collect an account receivable.

Inventory Turnover – Part 1

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\textbf{Average}\ \text{Inventory}}$$

- This ratio measures how many times a company's inventory has been sold and replaced during the year.
- If a company's inventory turnover Is less than its industry average, it either has excessive inventory or the wrong types of inventory.

Inventory Turnover – Part 2

- Inventory turnover measures how many times a company's inventory has been sold and replaced during the year.

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\textbf{Average}\ \text{Inventory}}$$

$$\text{Inventory Turnover} = \frac{\$140{,}000}{(\$10{,}000 + \$12{,}000) \div 2}$$

$$= 12.73 \text{ times}$$

Average Sale Period

$$\text{Average Sale Period} = \frac{365\ \text{Days}}{\text{Inventory Turnover}}$$

$$\text{Average Sale Period} = \frac{365\text{Days}}{12.73\ \text{Times}}$$

$$= 28.67\text{days}$$

- This ratio measures how many days, on average, it takes to sell the entire inventory.

Operating Cycle – Part 1

- Average Sale Period + Average Collection Period = Operating Cycle
- This ratio measures the elapsed time from when inventory is received from suppliers to when cash is received from customers.

Operating Cycle – Part 2

- Average Sale Period + Average Collection Period = Operating Cycle
- 28.67 days + 13.67 days = 42.34 days
- This ratio measures the elapsed time from when inventory is received from suppliers to when cash is received from customers.

Total Asset Turnover – Part 1

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Average Total Assets}}$$

- This ratio measures how efficiently a company's assets are being used to generate sales. This ratio expands beyond current assets to include noncurrent assets.

Total Asset Turnover – Part 2

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Average Total Assets}}$$

$$\text{Total Asset Turnover} = \frac{\$494{,}000}{(\$300{,}000 + \$346{,}390) \div 2}$$

$$= 1.53$$

- This ratio measures how efficiently a company's assets are being used to generate sales. This ratio expands beyond current assets to include noncurrent assets.

Learning Objective 4

- Compute and interpret financial ratios that managers use for debt management purposes.

Ratio Analysis – Debt Management (1 of 2)

- Managers compute a variety of ratios for debt management purposes. The information shown for Norton Corporation will be used to calculate its debt management ratios.

Note: You may also use information provided in an earlier slide for these computations.

Ratio Analysis – Debt Management (2 of 2)

NORTON CORPORATION

This Year

Earnings before interest expense and income taxes (This is also referred to as net operating income.)	$ 84,000
Interest expense	7,300
Stockholders' equity	
Beginning of year	180,000
End of year	234,390
Total liabilities	112,000

Times Interest Earned Ratio

$$\text{Times Interest Earned} = \frac{\text{Earnings before Interest Expense and Income Taxes}}{\text{Interest Expense}}$$

$$\text{Times Interest Earned} = \frac{\$84{,}000}{\$7{,}300}$$

$$= 11.5 \text{ times}$$

- This is the most common measure of a company's ability to provide protection for its long-term creditors. A ratio of less than 1.0 is inadequate.

Debt-to-Equity Ratio – Part 1

$$\text{Debt} - \text{to} - \text{Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Stockholders' Equity}}$$

- This ratio indicates the relative proportions of debt to equity on a company's balance sheet.
- Stockholders like a lot of debt if the company's rate of return on its assets exceeds the rate of return paid to creditors.
- Creditors prefer less debt and more equity because equity represents a buffer of protection.

Debt-to-Equity Ratio – Part 2

$$\text{Debt-to-Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Stockholders' Equity}}$$

$$\text{Debt-to-Equity Ratio} = \frac{\$112{,}000}{\$234{,}390}$$

$$= 0.48$$

The Equity Multiplier – Part 1

$$\text{Equity Multiplier} = \frac{\text{Average Total Assets}}{\text{Average Stockholders' Equity}}$$

- This ratio indicates the portion of a company's assets that are funded by equity. It focuses on average amounts maintained throughout the year rather than amounts at one point in time.

The Equity Multiplier – Part 2

$$\text{Equity Multiplier} = \frac{\text{Average Total Assets}}{\text{Average Stockholders' Equity}}$$

$$\text{Equity Multiplier} = \frac{(\$300{,}000 + \$346{,}390) \div 2}{(\$180{,}000 + \$234{,}390) \div 2}$$

$$= 1.56$$

- This ratio indicates the portion of a company's assets that are funded by equity. It focuses on average amounts maintained throughout the year rather than amounts at one point in time.

Learning Objective 5

- Compute and interpret financial ratios that managers use to assess profitability.

Ratio Analysis – Profitability Ratios (1 of 2)

- The information shown for Norton Corporation will be used to calculate its profitability ratios.

Note: You may also use information provided in an earlier slide for these computations.

Ratio Analysis – Profitability Ratios (2 of 2)

NORTON CORPORATION

This Year

Number of common shares outstanding	
Beginning of year	17,000
End of year	27,400
Tax rate	30%
Net income	$ 53,690
Stockholders' equity	
Beginning of year	180,000
End of year	234,390
Dividends per share	2
Dec. 31 market price per share	20
Interest expense	7,300
Total assets	
Beginning of year	300,000
End of year	346,390

Gross Margin Percentage – Part 1

$$\text{Gross Margin Percentage} = \frac{\text{Gross Margin}}{\text{Sales}}$$

- This measure indicates how much of each sales dollar is left after deducting the cost of goods sold to cover expenses and provide a profit.

Gross Margin Percentage – Part 2

$$\text{Gross Margin Percentage} = \frac{\text{Gross Margin}}{\text{Sales}}$$

$$\text{Gross Margin Percentage} = \frac{\$494{,}000 - \$140{,}000}{\$494{,}000}$$

$$= 71.6\%$$

- This measure indicates how much of each sales dollar is left after deducting the cost of goods sold to cover expenses and provide a profit.

Net Profit Margin Percentage – Part 1

$$\text{Net Profit Margin Percentage} = \frac{\text{Net Income}}{\text{Sales}}$$

- In addition to cost of goods sold, this ratio also looks at how selling and administrative expenses, interest expense, and income tax expense influence performance.

Net Profit Margin Percentage – Part 2

$$\text{Net Profit Margin Percentage} = \frac{\text{Net Income}}{\text{Sales}}$$

$$\text{Net Profit Margin Percentage} = \frac{\$53{,}690}{\$494{,}000}$$

$$= 10.9\%$$

- In addition to cost of goods sold, this ratio also looks at how selling and administrative expenses, interest expense, and income tax expense influence performance.

Return on Total Assets

$$\text{Return on Total Assets} = \frac{\text{Net Income} + [\text{Interest Expense}(1 - \text{Tax Rate})]}{\textbf{Average} \text{ Total Assets}}$$

$$\text{Return on Total Assets} = \frac{\$53{,}690 + [\$7{,}300 \times (1 - .30)]}{(\$300{,}000 + \$346{,}390) \div 2}$$

$$= 18.19\%$$

- Adding interest expense back to net income enables the return on assets to be compared for companies with different amounts of debt or over time for a single company that has changed its mix of debt and equity.

Return on Equity

$$\text{Return on Equity} = \frac{\text{Net Income}}{\textbf{Average}\ \text{Stockholders' Equity}}$$

$$\text{Return on Equity} = \frac{\$53{,}690}{(\$180{,}000 + \$234{,}390) \div 2}$$

$$= 25.91\%$$

- This measure indicates how well the company used the owners' investments to earn income.

DuPont Formula

- Return on Equity=Net Profit Margin × Total Asset Turnover × Equity Multiplier
- The return on equity can also be computed using the DuPont Formula shown here.

Financial Leverage

- Financial leverage results from the difference between the rate of return the company earns on investments in its own assets and the rate of return that the company must pay its creditors.
- Return on investment in assets > Fixed rate of return on borrowed funds = Positive financial leverage
- Return on investment in assets < Fixed rate of return on borrowed funds = Negative financial leverage

Quick Check 2

Which of the following statements is true?

a. Negative financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.

b. Positive financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.

c. Financial leverage is the expression of several years' financial data in percentage form in terms of a base year.

Quick Check 2a

Which of the following statements is true?

a. Negative financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.
b. Positive financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.
c. Financial leverage is the expression of several years' financial data in percentage form in terms of a base year.

Answer: a

Learning Objective 6

- Compute and interpret financial ratios that managers use to assess market performance.

Ratio Analysis – Market Performance (1 of 2)

- The information shown for Norton Corporation will be used to calculate its profitability ratios.

NORTON CORPORATION

This Year

Number of common shares	
Outstanding	
Beginning of year	17,000
End of year	27,400
Stockholders' equity	$ 234,390
Dividends per share	$ 2
Dec 331. market price per share	$ 20

Ratio Analysis – Market Performance (2 of 2)

Note: You may also use information provided in an earlier slide for these computations.

Earnings Per Share – Part 1

$$\text{Earnings per share} = \frac{\text{Net Income}}{\textbf{Average}\ \text{Number of Common Shares Outstanding}}$$

- Whenever a ratio divides an income statement balance by a balance sheet balance, the average for the year is used in the denominator.
- Earnings form the basis for dividend payments and future increases in the value of shares of stock.

Earnings Per Share – Part 2

$$\text{Earnings per share} = \frac{\text{Net Income}}{\textbf{Average}\ \text{Number of Common Shares Outstanding}}$$

$$\text{Earnings per share} = \frac{\$53{,}690}{(17{,}000 + 27{,}400)/2}$$

$$= \$2.42$$

This measure indicates how much income was earned for each share of common stock outstanding.

Price-Earnings Ratio

$$\text{Price} - \text{Earnings Ratio} = \frac{\text{Market Per Share}}{\text{Earnings Per Share}}$$

$$\text{Price} - \text{Earnings Ratio} = \frac{\$20.00}{\$2.42}$$

$$= 8.26 \text{ times}$$

- A higher price-earnings ratio means that investors are willing to pay a premium for a company's stock because of optimistic future growth prospects.

Dividend Payout Ratio – Part 1

$$\text{Dividend Payout Ratio} = \frac{\text{Dividends Per Share}}{\text{Earnings Per Share}}$$

$$\text{Dividend Payout Ratio} = \frac{\$2.00}{\$2.42}$$

$$= 82.6\%$$

- This ratio gauges the portion of current earnings being paid out in dividends. Investors seeking dividends (market price growth) would like this ratio to be large (small).

Dividend Yield Ratio – Part 2

$$\text{Dividend Yield Ratio} = \frac{\text{Dividends Per Share}}{\text{Market Price Per Share}}$$

$$\text{Dividend Yield Ratio} = \frac{\$2.00}{\$20.00}$$

$$= 10.00\%$$

- This ratio identifies the return, in terms of cash dividends, on the current market price of the stock.

Book Value Per Share – Part 1

$$\text{Book Value per Share} = \frac{\text{Common Stockholders' Equity}}{\text{Number of Common Shares Outstanding}}$$

$$\text{Book Value per Share} = \frac{\$234.390}{27{,}400}$$

$$= \$8.55$$

- This ratio measures the amount that would be distributed to holders of each share of common stock if all assets were sold at their balance sheet carrying amounts after all creditors were paid off.

Book Value Per Share – Part 2

$$\text{Book Value per Share} = \frac{\text{Common Stockholders' Equity}}{\text{Number of Common Shares Outstanding}}$$

$$\text{Book Value per Share} = \frac{\$234.390}{27{,}400}$$

$$= \$8.55$$

- Notice that the book value per share of $8.55 **does not equal** the market value per share of $20. This is because the market price reflects expectations about future earnings and dividends, whereas the book value per share is based on historical cost.

Published Sources That Provide Comparative Ratio Data (1 of 2)

Sources of Financial Ratios

Source	Content
Almanac of Business and Industrial Financial Ratios, Aspen Publishers; published annually	An exhaustive source that contains common-size income statements and financial ratios by industry and by the size of companies within each industry.
AMA Annual Statement Studies, Risk Management Association: published annually	A widely used publication that contains common-size statements and financial ratios on individual companies; the companies are arranged by industry.
EDGAR, Securities and Exchange Commission; website that is continually updated; **www.sec.gov**	An exhaustive Internet database that contains reports filed by companies with the SEC; these reports can be downloaded
FreeEdgar, EDGAR Online, Inc.; website that is continually updated; **www.freeedgar.com**	A site that allows you to search SEC fillings; financial information can be downloaded directly into Excel worksheets.
Hoover's Online, Hoovers, Inc.; website that is continually updated; **www.hoovers.com**	A site that provides capsule profiles for 10,000 U.S. companies with links to company websites, annual reports, stock charts, news articles and industry information.

Published Sources That Provide Comparative Ratio Data (2 of 2)

Source	Content
Industry Norms & Key Business Ratios, Dun & Bradstreet; published annually	Fourteen commonly used financial ratios are computed for over 800 major industry groupings
Mergent Industrial Manual and Mergent Bank and Finance Manual; published annually	An exhaustive source that contains financial ratios on all companies listed on the New York Stock Exchange, the American Stock Exchange, and regional American exchanges.
Sandard & Poor's Industry Survey, Standard & Poor's; published annually	Various statistics, including some financial ratios, are given by industry and for leading companies within each industry grouping.

End of Presentation