Fundamentals of Corporate Finance, 2/e

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Chapter 4: Analyzing Financial Statements

Learning Objectives

1. EXPLAIN THE THREE PERSPECTIVES FROM WHICH FINANCIAL STATEMENTS CAN BE VIEWED.
2. DESCRIBE COMMON-SIZE FINANCIAL STATEMENTS, EXPLAIN WHY THEY ARE USED, AND BE ABLE TO PREPARE AND USE THEM TO ANALYZE THE HISTORICAL PERFORMANCE OF A FIRM.

Learning Objectives

3. DISCUSS HOW FINANCIAL RATIOS FACILITATE FINANCIAL ANALYSIS, AND BE ABLE TO COMPUTE AND USE THEM TO ANALYZE A FIRM'S PERFORMANCE.
4. DESCRIBE THE DUPONT SYSTEM OF ANALYSIS AND BE ABLE TO USE IT TO EVALUATE A FIRM'S PERFORMANCE AND IDENTIFY CORRECTIVE ACTIONS THAT MAY BE NECESSARY.

Learning Objectives

5. EXPLAIN WHAT BENCHMARKS ARE, DESCRIBE HOW THEY ARE PREPARED, AND DISCUSS WHY THEY ARE IMPORTANT IN FINANCIAL STATEMENT ANALYSIS.
6. IDENTIFY THE MAJOR LIMITATIONS IN USING FINANCIAL STATEMENT ANALYSIS.

Background for Financial Statement Analysis

- PERSPECTIVES FOR ANALYSIS
  - **Stockholder**
  - **Manager**
  - **Creditor**

Background for Financial Statement Analysis

- STOCKHOLDER'S PERSPECTIVE
  - **Focus on**

    net cash flows

    risk

    rate of return

    market value of firm's stock

Background for Financial Statement Analysis

- MANAGER'S PERSPECTIVE
  - **Focus on**

    rate of return

    efficient use of assets

    controlling costs

    increasing net cash flows

    increasing market value of firm's stock

    job security

Background for Financial Statement Analysis

- CREDITOR'S PERSPECTIVE
  - **Focus on**

    predictability of revenues and expenses

    ability to meet short-term obligations

    ability to make loan payments as scheduled

    no unanticipated change in risk

Common-Size Financial Statements

- COMMON-SIZE FINANCIAL STATEMENTS
  - **Show the dollar amount of each item as a percentage of a reference value**

    Common-size balance sheet may use total assets as the reference value; each item is expressed as a percentage of total assets.

    Common-size income statement may use net sales as the reference value; each item is expressed as a percentage of net sales.

Common-Size Financial Statements

- COMMON-SIZE BALANCE SHEET
  - **Standardizes the amount in a balance sheet account by converting the dollar value of each item to its percentage of total assets**

    Dollar values on a regular balance sheet provide information on the number of dollars associated with a balance sheet account.

    Percentage values on a common-size balance sheet provide information on the relative size or importance of the dollars associated with a balance sheet account.

Exhibit 4.1: Common-Size Balance Sheets for Diaz Manufacturing

	2011		2010		2009	
		% of Assets		% of Assets		% of Assets
Assets:						
Cash and marketable securities	$ 288.5	15.3	$ 16.6	1.1	$ 8.2	0.6
Accounts receivable	306.2	16.2	268.8	18.0	271.5	19.4
Inventories	423.8	22.4	372.7	24.9	400.0	28.6
Other current assets	21.3	1.1	29.9	2.0	24.8	1.8
Total current assets	$ 1,039.8	55.0	$ 688.0	46.1	$ 704.5	50.4
Plant and equipment (net)	399.4	21.1	394.2	26.4	419.6	30.0
Goodwill and other assets	450.0	23.8	411.6	27.6	273.9	19.6
Total assets	$ 1,889.2	100.0	$ 1,493.8	100.0	$ 1,398.0	100.0
Liabilities and Stockholders' Equity:						
Accounts payable and accruals	$ 349.3	18.5	$ 325.0	21.8	$ 395.0	28.3
Notes payable	10.5	0.6	4.2	0.3	14.5	1.0
Accrued income taxes	18.0	1.0	16.8	1.1	12.4	0.9
Total current liabilities	$ 377.8	20.0	$ 346.0	23.2	$ 421.9	30.2
Long-term debt	574.0	30.4	305.6	20.5	295.6	21.1
Total liabilities	$ 951.8	50.4	$ 651.6	43.6	$ 717.5	51.3
Common stock (54,566,054 shares)	0.5	0.0	0.5	0.0	0.5	0.0
Additional paid in capital	892.4	47.2	892.4	59.7	892.4	63.8
Retained earnings	67.8	3.6	(50.7)	(3.4)	(155.8)	(11.1)
Less: treasury stock	(23.3)	(1.2)	—	—	(56.6)	(4.0)
Total stockholders' equity	$ 937.4	49.6	$ 842.2	56.4	$ 680.5	48.7
Total liabilities and equity	$ 1,889.2	100.0	$ 1,493.8	100.0	$ 1,398.0	100.0

Exhibit 4.2: Common-Size Income Statements for Diaz Manufacturing

EXHIBIT 4.2 **Common-Size Income Statements for Diaz Manufacturing for Fiscal Years Ending December 31 ($ millions)**

Common-size income statements express each account as a percentage of net sales. These statements allow financial analysts to better compare firms of different sizes and to analyze trends in a single firm's income statement accounts over time.

	2011		2010		2009	
		% of Net Sales		% of Net Sales		% of Net Sales
Net sales	$1,563.7	100.0	$1,386.7	100.0	$1,475.1	100.0
Cost of goods sold	1,081.1	69.1	974.8	70.3	1,076.3	73.0
Selling and administrative expenses	231.1	14.8	197.4	14.2	205.7	13.9
Earnings before interest, taxes, depreciation, and amortization (EBITDA)	$ 251.5	16.1	$ 214.5	15.5	$ 193.1	13.1
Depreciation	83.1	5.3	75.3	5.4	71.2	4.8
Earnings before interest and taxes (EBIT)	$ 168.4	10.8	$ 139.2	10.0	$ 121.9	8.3
Interest expense	5.6	0.4	18.0	1.3	27.8	1.9
Earnings before taxes (EBT)	$ 162.8	10.4	$ 121.2	8.7	$ 94.1	6.4
Taxes	44.3	2.8	16.1	1.2	27.9	1.9
Net income	$ 118.5	7.6	$ 105.1	7.6	$ 66.2	4.5
Dividends	—		—		—	
Addition to retained earnings	$ 118.5		$ 105.1		$ 66.2	

Financial Ratios and Firm Performance

- RATIOS IN FINANCIAL ANALYSIS.
  - **Ratios establish a common reference point across firms - even though the numerical value of the reference point will differ from firm-to-firm**

    Ratios make it easier to compare the performance of large firms to that of small firms.

    Ratios make it easier to compare the current and historical performance of a single firm as the firm changes over time.

Financial Ratios and Firm Performance

- RATIOS USED VARY ACROSS FIRMS
  - occupancy ratios (hotel)
  - sales-per-square foot (retailing)
  - loans-to-assets (banking)
  - medical cost ratio (health insurance)

Financial Ratios and Firm Performance

- RATIO VALUES VARY WITHIN AN INDUSTRY
  - **2010 Gross Margin**

Big Lots	Target	Walmart
40.6%	30.5%	24.9%

Financial Ratios and Firm Performance

- CATEGORIES OF COMMON FINANCIAL RATIOS
  - **Liquidity ratios**
  - **Efficiency ratios**
  - **Leverage ratios**
  - **Profitability ratios**
  - **Market Value ratios**

Financial Ratios and Firm Performance

- LIQUIDITY RATIOS
  - **Indicate a firm's ability to pay short-term obligations with short-term assets without endangering the firm. In general, higher ratios are a favorable indicator.**

$$\text{Current Ratio} = \frac{\text{Current assets}}{\text{Current liabilites}} \qquad (4.1)$$

$$\text{Quick Ratio} = \frac{\text{Current assets - Inventory}}{\text{Current liabilites}} \qquad (4.2)$$

Financial Ratios and Firm Performance

- EFFICIENCY RATIOS
  - **Indicate a firm's ability to use assets to produce sales. These are also called turnover ratios. In general, higher numbers are a favorable indicator.**

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}} \qquad (4.3)$$

$$\text{Total Asset Turnover} = \frac{\text{Net Sales}}{\text{Total Assets}} \qquad (4.7)$$

Financial Ratios and Firm Performance

- EFFICIENCY RATIOS
  - **For the efficiency ratio below, a lower number is generally a positive signal**

$$\text{Days Sales in Inventory} = \frac{365\ \text{Days}}{\text{Inventory Turnover}} \qquad (4.4)$$

Financial Ratios and Firm Performance

- LEVERAGE (DEBT) RATIOS
  - **Indicate whether a firm is using the appropriate amount of debt financing. In general, higher ratios indicate greater potential return and greater bankruptcy risk.**

$$\text{Total Debt Ratio} = \frac{\text{Total Debt}}{\text{Total Assets}} \qquad (4.9)$$

$$\text{Debt-to-Equity} = \frac{\text{Total Debt}}{\text{Total Equity}} \qquad (4.10)$$

Financial Ratios and Firm Performance

- LEVERAGE (DEBT) RATIOS
  - **For the ratio below, a higher number generally indicates less bankruptcy risk and (possibly) lower potential return**

$$\text{Times Interest Earned} = \frac{\text{Earnings Before Interest \& Taxes}}{\text{Interest Expense}} \quad (4.12)$$

Financial Ratios and Firm Performance

- PROFITABILITY RATIOS
  - **Indicate whether a firm is generating adequate profit from its assets. In general, higher ratios indicate better performance.**

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Net Sales}} \quad (4.16)$$

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}} \quad (4.18)$$

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Total Equity}} \quad (4.19)$$

Financial Ratios and Firm Performance

- MARKET VALUE RATIOS
  - **Indicate how the market is valuing the firm's equity. Higher ratios indicate greater shareholder wealth.**

$$\text{Price-Earnings Ratio} = \frac{\text{Price Per Share}}{\text{Earnings Per Share}} \quad (4.21)$$

$$\text{Market-to-Book} = \frac{\text{Price Per Share}}{\text{Book Value of Equity Per Share}} \quad (4.22)$$

Exhibit 4.3: Ratios for Time-Trend Analysis for Diaz Manufacturing

Financial Ratio	2011	2010	2009
Liquidity Ratios:			
Current ratio	2.75	1.99	1.67
Quick ratio	1.63	0.91	0.72
Efficiency Ratios:			
Inventory turnover	2.55	2.62	2.69
Day's sales in inventory	143.14	139.31	135.69
Accounts receivable turnover	5.11	5.16	5.43
Day's sales outstanding	71.43	70.74	67.22
Total asset turnover	0.83	0.93	1.06
Fixed asset turnover	3.92	3.52	3.52
Leverage Ratios:			
Total debt ratio	0.50	0.44	0.51
Debt-to-equity ratio	1.02	0.77	1.05
Equity multiplier	2.02	1.77	2.05
Times interest earned	30.07	7.73	4.38
Cash coverage	44.91	11.92	6.95
Profitability Ratios:			
Gross profit margin	30.86 %	29.70 %	27.04 %
Operating profit margin	10.77 %	10.04 %	8.26 %
Net profit margin	7.58 %	7.58 %	4.49 %
EBIT return on assets	8.91 %	9.32 %	8.72 %
Return on assets	6.27 %	7.04 %	4.74 %
Return on equity	12.64 %	12.48 %	9.73 %
Market-Value Indicators:			
Price-earnings ratio	22.40	18.43	14.29
Earnings per share	$ 2.17	$ 1.93	$ 1.21
Market-to-book ratio	2.83	1.63	1.39

The DuPont System

- THE DUPONT SYSTEM
  - **Diagnostic tool for evaluating a firm's financial health**
  - **Uses related ratios that link the balance sheet and income statement**
  - **Based on two equations that connect a firm's ROA and ROE**
  - **Used by management and shareholders to understand factors that drive ROE**

The DuPont System

- THE DUPONT EQUATION
  - In ratio form (Equation 4.26)

$$\text{ROE} = \frac{\text{Net Income}}{\text{Net Sales}} + \frac{\text{Net Sales}}{\text{Total Assets}} + \frac{\text{Total Assets}}{\text{Total Equity}}$$

  - Shows that return-on-equity is driven by profitability, operating efficiency, and amount of leverage (debt)

Exhibit 4.4: Two Basic Strategies to Earn a Higher ROA

EXHIBIT 4.4 **Two Basic Strategies to Earn a Higher ROA[a]**

To maximize a firm's ROA, management can focus more on achieving high profit margins or on achieving high asset turnover. High-end retailers like Polo Ralph Lauren and Tiffany & Co. focus more on achieving high profit margins. In contrast, grocery and discount stores like Whole Foods Market and Wal-Mart tend to focus more on achieving high asset turnover because competition limits their ability to achieve very high profit margins.

Company	Asset Turnover	×	Profit Margin (%)	=	ROA (%)
High Profit Margin:					
Polo Ralph Lauren	1.12		8.15		9.13
Tiffany & Co.	0.92		7.72		7.10
High Turnover:					
Whole Foods Market	2.12		1.83		3.88
Wal-Mart Stores	2.47		3.31		8.18

[a]Ratios are calculated using financial results for 2009.

Exhibit 4.5: Relations in the DuPont System of Analysis

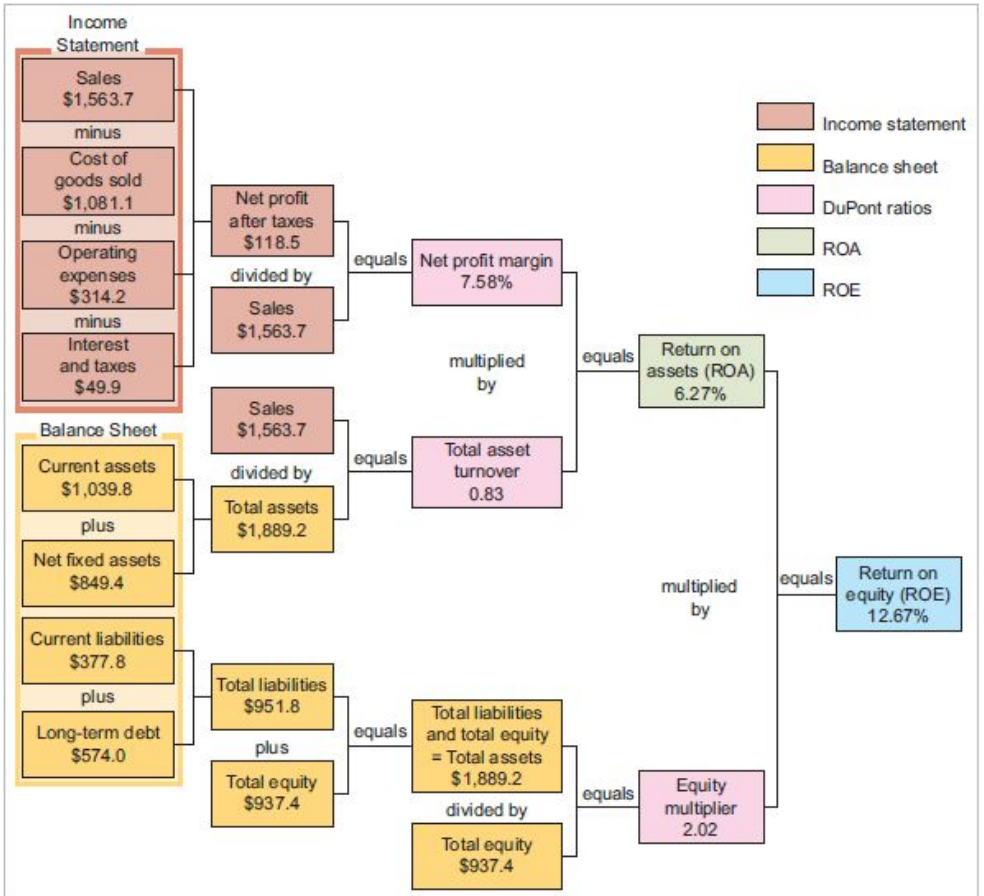

EXHIBIT 4.5

Relations in the DuPont System of Analysis for Diaz Manufacturing in 2011 ($ millions)

The diagram shows how the three key DuPont ratios are linked together and to the firm's balance sheet and income statement. Numbers in the exhibit are in millions of dollars and represent 2011 data from Diaz Manufacturing. The ROE of 12.67 percent differs from the 12.64 percent in Exhibit 4.3 due to rounding.

Selecting a Benchmark

- BENCHMARK RELEVANCE
  - **A ratio or ratio analysis is relevant only when compared to an appropriate benchmark**

    Trend Analysis – comparison to the firm's historical performance

    Peer Group Analysis – comparison to a select group of firms in the same industry

    Industry Analysis – comparison to the aggregate of firms in the same industry

Selecting a Benchmark

- BENCHMARK RELEVANCE
  - **A ratio or a ratio analysis is relevant only when compared to the appropriate benchmark(s). Benchmarks may be used in combination.**

    Level and trend should be considered when evaluating a firm's performance and its future.

Exhibit 4.6: Peer Group Ratios for Diaz Manufacturing

	2011	2010	2009
Liquidity Ratios:			
Current ratio	2.10	2.20	2.10
Quick ratio	1.50	1.60	1.50
Efficiency Ratios:			
Inventory turnover	5.40	5.30	5.20
Day's sales in inventory	67.59	68.87	70.19
Accounts receivable turnover	4.90	4.20	4.10
Days' sales outstanding	76.70	89.80	90.00
Total asset turnover	0.87	0.90	0.80
Fixed asset turnover	3.50	3.30	2.40
Leverage Ratios:			
Total debt ratio	0.18	0.11	0.21
Debt-to-equity ratio	0.40	0.20	0.50
Equity multiplier	2.02	1.77	2.05
Times interest earned	7.00	5.60	1.60
Cash coverage	7.50	8.20	1.30
Profitability Ratios:			
Gross profit margin	26.80%	24.10%	19.20%
Operating profit margin	12.00%	6.90%	2.70%
Net profit margin	10.74%	3.30%	0.10%
Return on assets	9.34%	3.30%	0.80%
Return on equity	13.07%	7.00%	1.00%
Market-Value Indicators:			
Price-to-earnings ratio	18.10	38.40	44.60
Earnings per share	$1.65	$3.85	$3.78
Market-to-book ratio	2.84	1.82	1.64

Exhibit 4.7: Peer Group Analysis for Diaz Manufacturing

EXHIBIT 4.7 **Peer Group Analysis for Diaz Manufacturing**

Examining the differences between the ratios of a firm and its peer group is a good way to spot areas that require further analysis.

	(1) Diaz Ratio	(2) Peer Group Ratio	(3) Difference (Column 1 – Column 2)
DuPont Ratios:			
Return on equity (%)	12.64	13.07	(0.43)
Return on assets (%)	6.27	9.34	(3.07)
Equity multiplier (%)	2.02	1.40	0.62
Net profit margin (%)	7.58	10.74	(3.16)
Total asset turnover	0.83	0.87	(0.04)
Profit Margins:			
Gross profit margin (%)	30.86	26.80	4.06
Operating margin (%)	10.77	12.00	(1.23)
Net profit margin (%)	7.58	10.74	(3.16)
Asset Ratios:			
Current ratio	2.75	2.10	0.65
Fixed asset turnover	3.92	3.50	0.42
Inventory turnover	2.55	5.40	(2.85)
Accounts receivable turnover	5.11	4.90	0.21

Limitations of Financial Statement Analysis

- FINANCIAL STATEMENT ANALYSIS
  - **Weaknesses**

    not an exact science

    relies on accounting data and historical costs

    few guidelines or principles for determining whether a ratio is “high” or “low”, or is a reason for confidence or for concern