FINANCIAL ANALYSIS

Chapter 4

Principals Used in this Chapter

- Principle 3: Cash Flows Are the Source of Value.
- Principle 4: Market Prices Reflect Information.
- Principle 5: Individuals Respond to Incentives.

Learning Objectives

1. Explain what we can learn by analyzing a firm’s financial statements.
2. Use common size financial statements as a tool of financial analysis.
3. Calculate and use a comprehensive set of financial ratios to evaluate a company’s performance.
4. Select an appropriate benchmark for use in performing a financial ratio analysis.
5. Describe the limitations of financial ratio analysis

Table 4.1 H. J. Boswell, Inc.

Common-Size Income Statement for the Year Ending December 31, 2013

Sales		100.0%
Cost of goods sold		−75.0%
Gross profits		25.0%
Operating expenses:		
Selling expenses	−3.3%	
General and administrative expense	−2.5%	
Depreciation and amortization expense	−5.0%	
Total operating expense		−10.8%
Operating income (EBIT, or earnings before interest and taxes)		14.2%
Interest expense		−2.5%
Earnings before taxes		11.7%
Income taxes		−4.1%
Net income		7.6%

Table 4.2 H. J. Boswell, Inc.

Common-Size Balance Sheets for the Years Ending December 31, 2012 and 2013

	2012	2013	Change
Cash	5.4%	4.6%	−0.8%
Accounts receivable	7.9%	8.2%	0.3%
Inventory	13.0%	19.2%	6.2%
Other current assets	0.8%	0.7%	−0.1%
Total current assets	27.0%	32.6%	5.6%
Gross plant and equipment	94.6%	93.6%	−1.0%
Less accumulated depreciation	−21.7%	−26.3%	−4.6%
Net plant and equipment	73.0%	67.4%	−5.6%
Total assets	100.0%	100.0%	0.0%
	2012	**2013**	**Change**
Accounts payable	10.5%	9.6%	−0.9%
Accrued expenses	2.6%	2.3%	−0.3%
Short-term notes	3.6%	2.7%	−0.8%
Total current liabilities	16.6%	14.6%	−2.0%
Long-term debt	40.8%	39.2%	−1.7%
Total debt	57.4%	53.8%	−3.6%
Common stockholders' equity			
Common stock—par value	2.6%	2.3%	−0.3%
Paid in capital	18.4%	16.4%	−1.9%
Retained earnings	21.7%	27.5%	5.8%
Total common stockholders' equity	42.6%	46.2%	3.6%
Total liabilities and equity	100.0%	100.0%	0.0%

Using Financial Ratios

Question	Category of Ratios Used to Address the Question
1. How liquid is the firm? Will it be able to pay its bills as they come due?	Liquidity ratios
2. How has the firm financed the purchase of its assets?	Capital structure ratios
3. How efficient has the firm's management been in utilizing its assets to generate sales?	Asset management efficiency ratios
4. Has the firm earned adequate returns on its investments?	Profitability ratios
5. Are the firm's managers creating value for shareholders?	Market value ratios

Liquidity Ratios: Current Ratio

- . **Current Ratio**: Current Ratio compares a firm's current (liquid) assets to its current (short-term) liabilities.

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

- **Acid-Test (Quick) Ratio** excludes the inventory from current assets as inventory may not be very liquid.

$$\begin{array}{c}\text{Acid-Test} \\ \text{(or Quick) Ratio}\end{array} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$

Liquidity Ratios: AR & Inventory

Average Collection Period measures the number of days it takes the firm to collects its receivables.

$$\text{Average Collection Period} = \frac{\text{Accounts Receivable}}{\text{Annual Credit Sales/365 days}} = \frac{\text{Accounts Receivable}}{\text{Daily Credit Sales}}$$

Inventory turnover ratio measures how many times the company turns over its inventory during the year.

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

Days' sales in inventory measures how long it takes to convert inventory into sales

- **Days' Sales in Inventory**

= 365 ÷ inventory turnover ratio

Capital Structure Ratios

Debt ratio measures the proportion of the firm's assets that are financed by borrowing or debt financing.

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

- **Times Interest Earned Ratio** measures the ability of the firm to service its debt or repay the interest on debt.

$$\text{Times Interest Earned} = \frac{\text{Net Operating Income or EBIT}}{\text{Interest Expense}}$$

Asset Management Efficiency Ratios

- **Total Asset Turnover Ratio** represents the amount of sales generated per dollar invested in firm's assets.

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}} = \frac{\$2{,}700 \text{ million}}{\$1{,}971 \text{ million}} = 1.37 \text{ times}$$

$$\text{Peer-group total asset turnover} = 1.15 \text{ times}$$

- **Fixed asset turnover ratio** measures firm's efficiency in utilizing its fixed assets (such as property, plant and equipment).

$$\text{Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Net Plant and Equipment}} = \frac{\$2{,}700 \text{ million}}{\$1{,}327.5 \text{ million}} = 2.03 \text{ times}$$

$$\text{Peer-group fixed asset turnover} = 1.75 \text{ times}$$

Cost Control: Is the Firm Earning Reasonable Profit Margins?

Gross profit margin shows how well the firm's management controls its expenses to generate profits.

Gross Profit Margin = Gross Profits/Sales

Operating Profit Margin measures how much profit is generated from each dollar of sales after accounting for both costs of goods sold and operating expenses.

Operating Profit Margin = EBIT/Sales

Net Profit Margin measures how much income is generated from each dollar of sales after adjusting for all expenses (including income taxes).

Net Profit Margin = Net Income/Sales

Return on Invested Capital

Operating Return on Assets ratio is the summary measure of operating profitability.

- Usually ROA

$$\text{Operating Return on Assets (OROA)} = \frac{\text{Net Operating Income or EBIT}}{\text{Total Assets}}$$

Decomposing Return on Assets

- OROA = EBIT/Assets
- = (EBIT/Assets)*(Sales/Sales)
- = EBIT/Sales)*(Sales/Assets)
- = Operating Profit Margin * Asset Turnover

Return on Equity

Return on Equity (ROE) ratio measures the accounting return on the common stockholders' investment.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Common Equity}}$$

DuPont Decomposition of ROE

ROE = Profitability × Efficiency × Equity Multiplier

ROE = (NI/Equity)*(Sales/Sales)*(Assets/Assets)

= NI/Sales*Sales/Assets*Assets/Equity

= Net Profit Margin*Asset Turnover*Equity Multiplier

Market Value Ratios

- **Price-Earnings (PE)** Ratio indicates how much investors are currently willing to pay for $1 of reported earnings.
  - PE = Market Price per share/ EPS

Market-to-Book Ratio measures the relationship between the market value and the accumulated investment in the firm's equity.

Market to Book = Market Price per share/ Book Value per share

Using Financial Ratios

- Financial ratios in isolation are not very useful
  - Trend Analysis – compares a firm's financial statements over time (time-series comparisons).
  - Peer Group Comparisons – compares the subject firm's financial statements with "peer" firms.
    - Usually same industry