Appendix: Financial Definitions

Several standardized methods have been created to analyze business financial data. These numbers are easily computed from the standard reported accounting data. The various financial ratios are particularly useful to highlight potential problems. The ratios can be compared against industry averages that are published by various companies.

The basic definitions are presented here with brief comments on their usage. You can find more detailed analysis and interpretation in any introductory finance textbook.

Basic Accounting Reports

The balance sheet summarizes the firm's assets, liabilities, and owner's equity (net worth) at a particular point in time. The income statement details the receipts and profits during a specified time period. The statement of owner's equity or retained earnings statement covers the same time period as the income statement and displays the changes in ownership data.

Balance Sheet

Assets		Claims	
Cash		Accounts Payable	
Securities		Notes Payable	
Receivables		Accruals	
Inventories		Bonds Payable	
(total)	Current Assets	Provisions for Taxes	
		(total)	Total Liabilities
Gross Plant & Equip.			
less Depreciation		Common Stocks	
	Net Plant & Equip.	Retained Earnings	
		(total)	Total Net Worth
(add)	Total Assets	(add)	Total Claims

Income Statement

Net Sales		*(gross sales - returns and discounts)*
- Cost of goods sold		*(inventory, purchases, transportation, etc.)*
	Gross Profit	

Selling costs
General & administrative
Building leases

(total)	Operating expenses	
(subtract to get)	Gross operating income	
(subtract)	Depreciation	
(equals)	Net operating income	
(add)	Other income	*(royalties, etc.)*
(equals)	Gross income	

Interest on notes payable
Interest on mortgage
Interest on bonds

(total)	Other expenses	
(subtract to get)	Net income before taxes	
(subtract)	Federal income taxes	
	Net income	

Statement of Retained Earnings

(Starting)	Retained earnings
(add)	Net income
(equals)	Total
(subtract)	Dividends
(equals)	Ending retained earnings

Financial Ratio Calculations

Profitability

$$\text{Profit margin} = \frac{\text{Net income before taxes}}{\text{Net sales}}$$

$$\text{Earnings per share (EPS)} = \frac{\text{Net income after taxes} + \text{dividends}}{\text{Number of shares outstanding}}$$

$$\text{Return on equity (ROE)} = \frac{\text{Net income after taxes}}{\text{Equity (book value)}}$$

$$\text{Price earnings ratio (P / E)} = \frac{\text{Average market price per share}}{\text{EPS}}$$

Liquidity

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

$$\text{Quick (or Acid) test} = \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$$

Activity Ratios

$$\text{Asset turnover} = \frac{\text{Net sales}}{\text{Total assets}}$$

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}}$$

$$\text{Average collection period} = \frac{\text{Accounts receivable}}{\text{Sales per day}}$$

Leverage Ratios

$$\text{Debt ratio} = \frac{\text{Total debt}}{\text{Total assets}}$$

$$\text{Times interest earned} = \frac{\text{Income before taxes} + \text{Interest charges}}{\text{Interest charges}}$$

DuPont Analysis

$$ROA = \underbrace{\frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}}}_{\text{Profit margin x Total asset turnover}}$$

$$ROE = \underbrace{\frac{\text{Net income}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common equity}}}_{\text{ROA x Leverage}}$$

Interpretation

Profitability Ratios

There are many ways to evaluate profitability in a firm. Some people look at gross profit (income); others rely on net income. Profit margin is a common measure, but it varies considerably by industry. Return on assets and return on equity more closely reflect the earnings received by investors. The DuPont method shows these two values are closely related. The DuPont method also highlights a key feature of ROA. Firms can increase ROA by increasing their profit margin (possibly selling products at a higher price) or by increasing their turnover (dropping the price and selling more items at lower profit). A quick examination of these two values will tell you a key strategy of the firm.

Liquidity Ratios

Liquidity ratios evaluate whether a firm can meet its short-term obligations. Higher values mean it is easier to cover current expenses, but values that are too high imply too much money is sitting idle. The quick ratio is the most conservative, where values greater than 1.0 imply a firm can pay off current debts almost immediately.

Activity Ratios

The activity ratios indicate how well the firm is handling day-to-day operations. In particular, a low *asset turnover* would imply the firm has excess capacity. A low *inventory turnover* implies they are not handling inventory very well or that sales are dropping. A low *average collection period* indicates that the firm is slow to collect from its customers. As usual, high and low are relative terms and must be compared to industry averages.

Debt Ratios

The basic *debt ratio* indicates the share of financing that came from borrowing instead of equity (stocks). This value is highly variable. Some managers prefer to borrow heavily; others rely on equity. Relatively high values imply that it will be difficult for the firm to borrow additional money—an important piece of data if you are looking to invest heavily in new technology. The *times interest earned* ratio measures the firm's ability to pay interest costs from operating income. If the ratio is low, the firm is struggling to cover its debt payments.

Exercises

1. Find a balance sheet and income statement (try http://www.sec.gov/edgar), copy the data into a spreadsheet, and compute the basic financial ratios.

2. Choose two similar-sized firms in different industries (check the Fortune 500 list), and compare the DuPont ratios to see if they pursue different strategies.

3. Find profit and debt ratios for three different industries (try *Wall Street Journal* or Hoover). Briefly explain why the values are different in each industry.

4. Find a small firm and a large firm in the same industry and briefly describe the differences in their basic financial ratios.

5. Find financial data on one firm and compute its basic financial ratios for the last five years (using quarterly or annual data). Describe any patterns or trends