

## Financial Ratios

Financial ratios are useful indicators of a firm's performance and financial situation. Most ratios can be calculated from information provided by the financial statements. Financial ratios can be used to analyze trends and to compare the firm's financials to those of other firms. In some cases, ratio analysis can predict future bankruptcy.

Financial ratios can be classified according to the information they provide. The following types of ratios frequently are used:

- Liquidity ratios
- Asset turnover ratios
- Financial leverage ratios
- Profitability ratios
- Dividend policy ratios

### Liquidity Ratios

*Liquidity ratios* provide information about a firm's ability to meet its short-term financial obligations. They are of particular interest to those extending short-term credit to the firm. Two frequently-used liquidity ratios are the *current ratio* (or *working capital ratio*) and the *quick ratio*.

The current ratio is the ratio of current assets to current liabilities:

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

Short-term creditors prefer a high current ratio since it reduces their risk. Shareholders may prefer a lower current ratio so that more of the firm's assets are working to grow the business. Typical values for the current ratio vary by firm and industry. For example, firms in cyclical industries may maintain a higher current ratio in order to remain solvent during downturns.

One drawback of the current ratio is that inventory may include many items that are difficult to liquidate quickly and that have uncertain liquidation values. The quick ratio is

an alternative measure of liquidity that does not include inventory in the current assets. The quick ratio is defined as follows:

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

The current assets used in the quick ratio are cash, accounts receivable, and notes receivable. These assets essentially are current assets less inventory. The quick ratio often is referred to as the *acid test*.

Finally, the *cash ratio* is the most conservative liquidity ratio. It excludes all current assets except the most liquid: cash and cash equivalents. The cash ratio is defined as follows:

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Marketable Securities}}{\text{Current Liabilities}}$$

The cash ratio is an indication of the firm's ability to pay off its current liabilities if for some reason immediate payment were demanded.

### Asset Turnover Ratios

Asset turnover ratios indicate of how efficiently the firm utilizes its assets. They sometimes are referred to as efficiency ratios, asset utilization ratios, or asset management ratios. Two commonly used asset turnover ratios are *receivables turnover* and *inventory turnover*.

Receivables turnover is an indication of how quickly the firm collects its accounts receivables and is defined as follows:

$$\text{Receivables Turnover} = \frac{\text{Annual Credit Sales}}{\text{Accounts Receivable}}$$

The receivables turnover often is reported in terms of the number of days that credit sales remain in accounts receivable before they are collected. This number is known as the *collection period*. It is the accounts receivable balance divided by the average daily credit sales, calculated as follows:

$$\text{Average Collection Period} = \frac{\text{Accounts Receivable}}{\text{Average Daily Credit Sales}}$$

$$\frac{\text{Annual Credit Sales}}{365}$$

The collection period also can be written as:

$$\text{Average Collection Period} = \frac{365}{\text{Receivables Turnover}}$$

Another major asset turnover ratio is *inventory turnover*. It is the cost of goods sold in a time period divided by the average inventory level during that period:

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

The inventory turnover often is reported as the *inventory period*, which is the number of days worth of inventory on hand, calculated by dividing the inventory by the average daily cost of goods sold:

$$\text{Inventory Period} = \frac{\text{Average Inventory}}{\text{Annual Cost of Goods Sold} / 365}$$

The inventory period also can be written as:

$$\text{Inventory Period} = \frac{365}{\text{Inventory Turnover}}$$

Other asset turnover ratios include fixed asset turnover and total asset turnover.

### Financial Leverage Ratios

Financial leverage ratios provide an indication of the long-term solvency of the firm. Unlike liquidity ratios that are concerned with short-term assets and liabilities, financial leverage ratios measure the extent to which the firm is using long term debt.

The *debt ratio* is defined as total debt divided by total assets:

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

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Total Assets

The *debt-to-equity* ratio is total debt divided by total equity:

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

Debt ratios depend on the classification of long-term leases and on the classification of some items as long-term debt or equity.

The *times interest earned* ratio indicates how well the firm's earnings can cover the interest payments on its debt. This ratio also is known as the *interest coverage* and is calculated as follows:

$$\text{Interest Coverage} = \frac{\text{EBIT}}{\text{Interest Charges}}$$

where EBIT = Earnings Before Interest and Taxes

### **Profitability Ratios**

Profitability ratios offer several different measures of the success of the firm at generating profits.

The *gross profit margin* is a measure of the gross profit earned on sales. The gross profit margin considers the firm's cost of goods sold, but does not include other costs. It is defined as follows:

$$\text{Gross Profit Margin} = \frac{\text{Sales} - \text{Cost of Goods Sold}}{\text{Sales}}$$

*Return on assets* is a measure of how effectively the firm's assets are being used to generate profits. It is defined as:

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

*Return on equity* is the bottom line measure for the shareholders, measuring the profits earned for each dollar invested in the firm's stock. Return on equity is defined as follows:

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

### **Dividend Policy Ratios**

Dividend policy ratios provide insight into the dividend policy of the firm and the prospects for future growth. Two commonly used ratios are the dividend yield and payout ratio.

The dividend yield is defined as follows:

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

A high dividend yield does not necessarily translate into a high future rate of return. It is important to consider the prospects for continuing and increasing the dividend in the future. The dividend *payout ratio* is helpful in this regard, and is defined as follows:

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

### **Use and Limitations of Financial Ratios**

Attention should be given to the following issues when using financial ratios:

- A reference point is needed. To be meaningful, most ratios must be compared to historical values of the same firm, the firm's forecasts, or ratios of similar firms.
- Most ratios by themselves are not highly meaningful. They should be viewed as indicators, with several of them combined to paint a picture of the firm's situation.
- Year-end values may not be representative. Certain account balances that are used to calculate ratios may increase or decrease at the end of the accounting period because of seasonal factors. Such changes may distort the value of the ratio. Average values should be used when they are available.
- Ratios are subject to the limitations of accounting methods. Different accounting choices may result in significantly different ratio values.

