Ratio Analysis and the Firm

A number of conceptual frameworks are used in analyzing a firm but an assessment of the financial condition is critical in evaluating company strengths and weaknesses. By the use of ratio analysis, we can analyze at least four areas of financial performance: (1) the liquidity of the firm, (2) the relative efficiency of its management, (3) the debt position of the firm, and (4) the profitability of the firm.

A few notes about financial analysis:

- The ratios calculated for analysis should never be evaluated in a vacuum or in static terms. Of true significance to the analyst are **trends over time and comparisons with firms in the same or related industries.** Typically, no fixed minimum or maximum values exist below which ratios should not fall or about which they should rise.
- The ratios must be viewed not only in terms of the nature of the firm's own business over time, but also in the relation to its industry. Obviously, whenever a ratio of a particular firm is substantially out of line with those common in the industry, the analyst should be alert to either potential financial difficulty or unusual financial strength. Industry ratios (by NAICS/SIC codes) can readily be found in many publications, including Annual Statement Studies by Robert Morris and Associates and various Dun and Bradstreet publications. Where you do not rely on NAICS data to classify your industry, you can assess your firm's performance relative to the industry by comparing the ratios of your company to those of a top performer in the industry.

. In terms of the actual financial analysis, the analysis process should look like this:

- The two primary sources of financial data for ratio analysis are the balance sheet and the income statement. The **first** step should be to look at these documents and try to "eyeball" significant variations from year to year. What, if anything, just looks unusual?
- The **second** step, before calculating the four categories of ratios described below, is to make an initial assessment of the overall performance of the firm by determining the annual growth rates in **Sales, Net Income and Earnings Per Share**. For example, by what percentage have sales increased or decreased in the last 3-5 years?
- Now, calculate the ratios. The four categories of ratios include:

  1. **LIQUIDITY RATIOS** – used to measure the firm's ability to meet its maturing short-term obligations.

  A. **Current Ratio** = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

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

The higher the current ratio, the less likely the company will be to default on its current obligations. The current ratio should be **at least 1**, such that current assets are greater than current liabilities.

Current assets, however, commonly provide either no direct return to the company or return smaller than could be obtained if refunds were invested in long term areas. Therefore, the company may be incurring an opportunity cost—i.e., it could be losing additional profit—by typing up funds in current assets rather than by taking

advantage of higher yield, longer-term financial opportunities. Consequently, a current ratio that is too high is a red flag as well.

The Quick Ratio provides an indication of the ability of the company to satisfy its obligations immediately without considering inventories, which are not readily transformed into cash.

2. **ACTIVITY RATIOS** – used to measure how effectively a firm is using its resources.

A. **Inventory Turnover** = $\frac{\text{Sales}}{\text{Inventory}}$

Inventory ratios measure the firm's efficiency in holding inventory, measured by the number of times net sales exceed average inventory levels during the year, or the number of times that inventory turns over. Generally, the higher the inventory turnover, the more inventory turns over and the more efficient the inventory management of a firm. However, a relatively high inventory turnover ratio may be the result of too low a level of inventory with resulting frequent stockouts and consequent of sales.

B. **Accounts Receivables Turnover** = $\frac{\text{Sales}}{\text{Accounts Receivable}}$

Number of Day's Sales in Accounts Receivable = $\frac{\text{Accounts Receivable}}{\text{Average Sales per Day}}$

Average Sales per Day = $\frac{\text{Total Sales}}{360}$

The greater the accounts receivable turnover, the smaller the amount of capital the company has "tied up" in accounts receivable, and the greater the amount of capital that may be otherwise invested.

The number of day's sales in accounts receivable represents the average length of time that the firm must wait after making a sale before receiving cash. Although too high an average collection period is usually questionable, a very low average collection period may not necessarily be good. It may be that credit policy of the firm is excessively restrictive and thereby impedes sales efforts.

C. **Assets Turnover** = $\frac{\text{Total Sales}}{\text{Total Assets}}$

This ratio provides a measure of the utilization of the firm's assets and its sales productivity. A ratio below the industry average indicates that the company may not be generating a sufficient volume of sales to be competitive in its industry, given the size of its asset investment. In addition, this ratio is of significant value in planning for the future, in that it may specify the level of asset investment required to produce a given level of sales.

3. **LEVERAGE RATIOS** – used to measure the extent to which the firm has financed its operations from outside creditors.

A. **Debt to Equity Ratio** = $\frac{\text{Total Debt}}{\text{Total Equity}}$

B. **Long-term Debt to Equity Ratio** = $\frac{\text{Long-term debt}}{\text{Equity}}$

C. **Debt Ratio** = $\frac{\text{Total Debt}}{\text{Total Assets}}$

Debt ratios measure the percentages of funds provided by creditors to total equity or total assets. Leverage refers to the fact that the debt has a fixed interest change which

will either magnify profits or losses. If firms can borrow money at a lower interest rate than the return they can make on those funds, then profits will be magnified. If, however, firms do not generate enough money to cover interest and principal payments, then the losses are magnified. **Consequently, not having enough debt may deter firm performance but having too much debt is not desirable either.** The decision to add debt depends on the company's current debt position.

Creditors prefer moderate debt ratios, since the lower the ratio, the greater the cushion against creditors' losses in the event of liquidation. But because the size of the debt-to-equity ratio also has a direct relationship to the financial structure of the firm, a very low ratio may indicate that the firm may not be using debt as effectively as they could. A closely-held firm that wished to remain that way will more likely to have a higher debt ratio than a firm that is willing to finance itself by issuing additional shares of stock.

4. **PROFITABLILITY RATIOS** – used to measure management's overall effectiveness.

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

Operating Profit Margin = $\frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Sales}}$

Net Profit Margin = $\frac{\text{Net Profit After Taxes}}{\text{Sales}}$

Gross profit margin measures margin available to cover operating expenses and yield a profit. The operating profit margin gives us an indication of profitability without concern for taxes or interest. The net profit margin identifies the relative effectiveness of

the firm's management after taking into account all costs and all income taxes. It tells us the after tax profits per dollar of sales. Generally, you want profit margins to be higher, but the target range depends on the industry averages.

Return on Total Assets = Net Profit After Taxes (net income)
Total Assets

Return on Stockholder's Equity = Net Profit After Taxes (net income)
Stockholder's Equity

Return on assets (ROA) reflects the after-tax profits per dollar of assets. This ratio is also called return on investment (ROI). Return of Stockholder's Equity (ROE) reflects the rate of return or profitability of stockholders' investment, the after-tax profits per dollar of stockholders' investment in the firm.