

SECTION 5

How Do You Get Behind the Numbers?

Analyzing Strengths and Weaknesses

Thus far, you have examined the financial statements but have not really tried to put any meaning behind your review. Now that you know what the numbers are and where to find them, it is time to get behind the numbers and see what they are really telling you about the business. One of the ways to do this is to calculate a series of ratios and draw conclusions from this analysis. The following discussion of ratio analysis covers a broad range of topics.

Remember that each company will have its unique set of financial objectives and economic parameters around which it must operate. Here we will use a series of ratios to help you in your quest to get behind the numbers. You will have to decide for yourself which of the ratios are most meaningful for the company you are concerned with.

For the sake of organization, the ratios have been categorized into five areas. We will talk about profitability, asset management, liquidity, debt management, and market value. We will complete the analysis by looking at the risk of financial disaster as predicted by the Altman Bankruptcy Prediction Model. In a more comprehensive set of ratios included in this handbook, we focus on liquidity, long-term debt paying ability, profitability, and investor analysis. We also look at ratios unique to banks, utilities, and insurance.

The profitability ratios will focus on how profitable the business is. Asset management ratios study how well the business is managing the resources it has accumulated. Liquidity ratios will answer the questions about whether the business has sufficient short term cash to meet the immediate demands of the business. Debt management relates to

the business's ability to pay off its debt—money it has borrowed from banks or other financial institutions. Market value measures how well the stock market responds to the management of the business. Finally, the Altman Bankruptcy Prediction Model is self explanatory, once you understand the earlier ratios. To demonstrate our analytical methodology, we will use the financial statistics from ABC's 2012 financial reports. You will find it interesting to calculate the same ratios for ABC using their 2011 results (consolidated on the 2012 financial reports). 2011 was a much better year in many ways for them than 2012. **Note: We will include the 2011 results in brackets in the examples that follow.**

Profitability

Every for-profit business seeks to arrive at a positive net difference between its inflows and its outflows from running the business. This difference, or bottom line, is called net income. For a business such as a nonprofit hospital, the profit objective is replaced by either a desire to maximize services provided within the allocated outflows or to render a set service level at the lowest cost in terms of outflow.

Using both the balance sheet and the income statement, we can begin to see just how well a business is performing in this input/output relationship. We can compare the ratios we develop with other similar businesses and/or compare our results with those of prior periods.

A basic measurement of profitability is the relationship between net income (profit) and the sales volume of the organization. This measures how much of each sales dollar goes to the bottom line. For ABC the **return on sales** is:

$$\frac{\text{Net Earnings } \$2.4 \text{ } [\$2.3]}{\text{Sales } \$13.2 \text{ } [\$12.5]} = 18.2 \text{ percent } [18.4\%]$$

A return of 18 percent on each dollar of sales is very good by any standards. This would be called a very profitable business. If ABC can sustain this kind of performance, it is certainly a company to be dealt with by the competition.

Another way to look at the performance is to compare the total business turnover or sales activity to the total resources at risk in the business (the assets). In this case, with \$14.5 [\$13.3] billion in resources, ABC was able to generate \$13.2 [\$12.5] billion in sales, a ratio of less than 1:1. Obviously, in this manufacturing business, it takes a lot of working capital and plant and equipment to drive the sales effort experienced by ABC. **Asset turnover** for ABC is:

$$\frac{\text{Sales } \$13.2 \text{ } [\$12.5]}{\text{Total Assets } \$14.5 \text{ } [\$13.3]} = 0.91 : 1 \text{ } [0.94 : 1]$$

If you consider the resources (assets) we are employing, it is fair to examine how much profit we made in relationship to the total assets. ABC earned a \$2.4 [\$2.3] billion net income while using \$14.5 [\$13.3] billion in resources—a return of 16.6 [17.3] percent. The owners should be very satisfied with this performance since an equivalent investment at 7 [5] percent in government securities would have provided a return of about \$924 [\$725] million before taxes. However, its year on year comparison is cause for concern. ABC's **return on assets** is:

$$\frac{\text{Net Earnings } \$2.4 \text{ } [\$2.3]}{\text{Assets } \$14.5 \text{ } [\$13.3]} = 16.6 \text{ percent } [17.3\%]$$

This business would not be considered highly leveraged in that only \$1.3 billion of the total \$14.5 [\$13.3] billion in resources have been provided by long-term creditors and lenders. Over \$7.4 [\$5.7] billion is being provided by the shareholders via their initial investment and past earnings. Again, observe year on year performance here.

In terms of their equity, the business has given a 32.4 [39.7] percent **return on equity**.

$$\frac{\text{Net Earnings } \$2.4 \text{ } [\$2.3]}{\text{Shareholders' Equity } \$7.4 \text{ } [\$5.8]} = 32.4 \text{ percent } [39.7\%]$$

Another recognized measure of profitability is the statement of net income on a per-share basis. ABC had an average of 1.537 billion shares outstanding at year end and had a net income of \$2.446 [\$2.334] billion. On a per share basis this represents an **EPS** of \$1.59 [\$1.52]:

$$\frac{\text{Net Earnings } \$2.446 \text{ } [\$2.334]}{\text{Shares Outstanding } 1.537} = \$1.59 \text{ } [\$1.52] / \text{Share}$$

It would be fair to ask how much a share of ABC stock would cost today considering it generates \$1.59 [\$1.52] per share in profits. We will look at that ratio in the market value section.

For most organizations today, the pressure is on to collect receivables (money owed for sales made on credit) as early as possible and to carry only the inventory required to meet customer service levels. Obviously, carrying receivables on the books is risky as well as expensive. The longer you allow a customer to owe you money, the greater the chance they will encounter financial difficulty and maybe never pay you for the goods or services you sold them. ABC had \$2.06 [\$1.96] billion in trade receivables. Each day the receivables are allowed to sit idle, ABC is losing the use of the money. At 10 percent annual interest, it costs \$564,000 [\$537,000] per day to carry these receivables.

Another piece of ABC's working capital is its inventory, which totaled \$1.5 billion at year end. As mentioned earlier, it costs money to store and handle inventory, so many businesses are focusing on inventory reduction programs. If it costs 25 percent per year to carry inventory on the shelf (interest, storage, handling, losses). The cost for ABC to carry this inventory is more than a million dollars per day.

Asset Management

ABC's management is evaluated in part on how well it manages its receivables and inventory. Let us now look at some ratios that can tell us how it is doing in this department. Receivables are typically aged to evaluate the likelihood they will ever be collected. It is usual to categorize the receivables as under 30 days old, 30 to 60 days, 60 to 90 days old, and more than 90 days old. The over 90 days old accounts are often at serious risk of never being collected. Another measure of quality for the receivables is the **average collection** period. For ABC this is 57 days. Said another way, on the average, ABC has 57 [58] days sales outstanding (DSO):

$$\frac{\text{Average Receivables } \$2.06 \text{ } [\$1.96] \text{ billion}}{\text{Average Sales per Day } \$36 \text{ } [\$34] \text{ mil } (\$13.2 \text{ } [\$12.5] \text{ bil} / 365)} = 57 \text{ } [58] \text{ DSO}$$

The inventory analysis will often look at the number of times we bought and sold our inventory, called **inventory turnover**. While some large firms, especially those that serve as distributors, carry large quantities and have a relatively low turnover figure, others focus on speeding the turnover by carrying lower quantities and trying to achieve a "just-in-time" inventory system. Remember that inventory is carried in our records at its historical cost (purchased or manufactured) so we have to compare inventory levels to the cost of goods sold to get an accurate picture of inventory turnover. ABC had inventory turnover of 7.8:

$$\frac{\text{Cost of Goods Sold } \$6.0 \text{ } [\$5.4] \text{ bil}}{\text{Average Inventory Balance } \$0.77 \text{ } [\$0.70] \text{ billion} \text{ (finished products only)}} = 7.8 \text{ } [7.7] \text{ times}$$

Another way to look at inventory is to measure the number of days sales in the inventory. If ABC turned its inventory 7.8 times, this represented an average of 47 days **inventory in stock**:

$$\frac{\text{Days in the Year } 365}{\text{Inventory Turnover } 7.8} = 47 \text{ days}$$

Remember that each business has its own set of operational measurements that are critical to its success. As an example, hospitals will be focusing on occupancy rates for their bed capacity,

full time equivalents (FTE) of staffing support, average cost of tests performed on patients, average length of stay for various illnesses, and speed and completeness of collections of their receivables. Banks may be more concerned with the volume of loans outstanding, loan loss reserves needed, delinquency rates, and cost of money. Distributors will on the other hand be concerned with average margins they can charge for various products and the speed with which they can turn their inventory.

Liquidity

Every business is challenged by its cash flow performance. The following ratio examines how well the firm is prepared to meet its near-term cash obligations. The **current ratio** relates the current assets (those due to become cash within a year) to the current liabilities (bills to be paid within a year). For ABC, the ratio is only slightly better than 1:1, a ratio considered low. The key to safety for a company with a low current ratio is the relationship it has with the banks or other lending agencies. If a bill comes due and the firm cannot make the payment, the creditors can force the business into bankruptcy court. ABC's current ratio is:

$$\frac{\text{Current Assets } \$6.4 \text{ } [\$5.6] \text{ bil}}{\text{Current Liabilities } \$4.5 \text{ } [\$5.0] \text{ bil}} = 1.4 : 1 \text{ } [1.1 : 1]$$

This relationship is also examined with the term *working capital*, which is simply the excess of current assets over current liabilities. This represents flexibility the business has in timing its cash receipts and disbursements. The smaller the amount, the more careful the business must be. In ABC's case, the net working capital totals \$1.9 billion. ABC has a strong current ratio, has a proven track record and a good relationship with the financial markets, so it is not overly exposed in terms of liquidity.

Debt Management

In addition to short-term cash flow management, a business must be concerned with its long-term cash management. We can use ratios that compare debt to assets used in the business, or debt to the amount of owners' equity that the business is operating with. A third ratio will look at the relationship between cash flow from operations (less dividends paid) to the long-term debt position. ABC has a **total debt to assets ratio** of 48 [56] percent meaning that 48 percent of the assets are provided by creditors and lenders rather than the owners.

$$\frac{\text{Total Debt } \$7.0 \text{ } [\$7.5] \text{ bil}}{\text{Total Assets } \$14.5 \text{ } [\$13.3] \text{ bil}} = 0.48 \text{ } [0.56] : 1 \text{ } (48\% \text{ } [56\%])$$

The ***long-term debt to owners' equity ratio*** is extremely important, especially to the providers of the debt. They want to be careful that they are not carrying too much risk in the business since they do not share in the profits, but merely get their money and agreed interest charges back. So they like to keep the debt to equity ratio low, placing the risk on the owners. ABC on the other hand may prefer to avoid paying interest and may prefer to grow the firm by retaining its own profits from operations. ABC has a long-term debt to equity ratio of 0.18 : 1:

$$\frac{\text{Long-term Debt \$1.3 bil}}{\text{Owners' Equity \$7.4 bil}} = 0.18 : 1$$

The last debt management ratio we examine is the relationship between cash flow from operations (less dividends paid) and the long-term debt position. In 2012, ABC had \$2.9 billion in operating cash flow and paid out \$1 billion in dividends—net of \$1.9 billion. With \$1.3 billion in long-term debt, ABC's ***cash flow to long-term debt ratio*** is 1.46 : 1. If the long-term debt is due in 15 years, ABC has some flexibility in dealing with this debt. In any event, ABC's performance is sufficient to warrant carrying this much debt. Whether it would want to borrow more is a matter of choice and management's evaluation as to whether it could effectively employ any borrowed money at this time.

$$\frac{\text{CFFO less Dividends \$1.9 bil}}{\text{Long-term Debt \$1.3 bil}} = 1.46 : 1$$

Market Value

For businesses that are available as investments to the public, the market value ratios are important in understanding the business. ABC is publicly traded. At year end 2011 it was being traded at a price about \$16.50 on the NYSE. We earlier calculated ABC's earnings per share as \$1.59 [\$1.52], meaning it was trading at a ***price earnings ratio*** of 10.4 : 1 [10.9 : 1].

$$\frac{\text{Price per Share \$16.50}}{\text{Earnings per Share \$1.57 [\$1.52]}} = 10.4 : 1 \text{ [10.9 : 1]}$$

Another way to look at a public company is to examine the relationship between market value of the firm and the book value of owners' (shareholders'/stockholders') equity in the firm. Market value of the firm is calculated by multiplying the market price (\$16.50) times the average number of shares outstanding (1.558 [1.561] billion). This comes out to \$25.7 [\$25.8] billion.

The book value of owners' equity is \$7.4 [\$5.8] billion, as shown in the balance sheet. The *market to book ratio* for ABC is then 3.5 [10.3] : 1, meaning that the market values ABC's performance at 10.3 times the investment the owners' have made in the business.

$$\frac{\text{Market Value } \$25.7 \text{ } [\$25.8] \text{ billion}}{\text{Owner's Equity } \$7.4 \text{ } [\$5.8] \text{ billion}} = 3.5 : 1 \text{ } [4.4 : 1]$$

Conclusion

Comparison of these ratios to prior periods will show how well the firm has changed its performance. Using other firms as a benchmark you can compare these ratios to similar data for the competition. As you better understand these measurements you will probably develop new ones and discontinue observing some of these. Whatever your technique for analyzing a business, be sure you understand how the numbers were put together and what they really mean. Get behind the numbers and your performance will improve.

The additional ratios that follow cover a range of industries. You should be able to calculate these ratios now that you have completed this guide. If you have difficulty, consult your chief financial officer or your external auditor for assistance.

Now try your hand at calculating the 2012 ratios for ABC and comparing them with the results in this section. Use the following pages for your calculations.

NOTE: In many of the ratios, we showed the two latest years for comparison. The firm is not as successful in the latest year as they were in previous year.

Ratio Calculation Worksheet

Return on sales

$$\frac{\text{Net Earnings \$} \underline{\hspace{2cm}}}{\text{Sales \$} \underline{\hspace{2cm}}} = \underline{\hspace{2cm}} \text{ percent}$$

Asset turnover

$$\frac{\text{Sales \$} \underline{\hspace{2cm}}}{\text{Total Assets \$} \underline{\hspace{2cm}}} = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$$

Return on assets

$$\frac{\text{Net Earnings \$} \underline{\hspace{2cm}}}{\text{Assets \$} \underline{\hspace{2cm}}} = \underline{\hspace{2cm}} \text{ percent}$$

Return on equity

$$\frac{\text{Net Earnings \$} \underline{\hspace{2cm}}}{\text{Shareholders' Equity \$} \underline{\hspace{2cm}}} = \underline{\hspace{2cm}} \text{ percent}$$

Earnings per share (EPS)

$$\frac{\text{Net Earnings \$} \underline{\hspace{2cm}}}{\text{Shares Outstanding } \underline{\hspace{2cm}}} = \$ \underline{\hspace{2cm}} / \text{Share}$$

Average collection period

$$\frac{\text{Average Receivables \$} \underline{\hspace{2cm}}}{\text{Average Sales per Day \$} \underline{\hspace{2cm}} (\$ \underline{\hspace{2cm}} / 365)} = \underline{\hspace{2cm}} \text{ days}$$

Inventory turnover

$$\frac{\text{Cost of Goods Sold \$} \underline{\hspace{2cm}}}{\text{Average Inv Balance \$} \underline{\hspace{2cm}}} = \underline{\hspace{2cm}} \text{ times}$$

Inventory in stock

$$\frac{\text{Days in the Year 365}}{\text{Inventory Turnover } \underline{\hspace{2cm}}} = \underline{\hspace{2cm}} \text{ days}$$

Current ratio

$$\frac{\text{Current Assets } \$\underline{\hspace{2cm}}}{\text{Current Liabilities } \$\underline{\hspace{2cm}}} = \underline{\hspace{2cm}} : 1$$

Total debt to assets ratio

$$\frac{\text{Total Debt } \$\underline{\hspace{2cm}}}{\text{Total Assets } \$\underline{\hspace{2cm}}} = \underline{\hspace{2cm}} : 1 (\underline{\hspace{2cm}}\%)$$

Long-term debt to owners' equity ratio

$$\frac{\text{Long-term Debt } \$\underline{\hspace{2cm}}}{\text{Owners' Equity } \$\underline{\hspace{2cm}}} = \underline{\hspace{2cm}} : 1 (\underline{\hspace{2cm}}\%)$$

Cash flow to long-term debt ratio

$$\frac{\text{CFFO less Dividends } \$\underline{\hspace{2cm}}}{\text{L-T Debt } \$\underline{\hspace{2cm}}} = \underline{\hspace{2cm}} : 1 (\underline{\hspace{2cm}} \text{ X})$$

Price earnings ratio

$$\frac{\text{Price per Share } \$\underline{\hspace{2cm}}}{\text{Earnings per Share } \$\underline{\hspace{2cm}}} = \underline{\hspace{2cm}} : 1$$

Market to book ratio

$$\frac{\text{Market Value } \$\underline{\hspace{2cm}}}{\text{Owner's Equity } \$\underline{\hspace{2cm}}} = \underline{\hspace{2cm}} : 1$$