

Unit 31
Ratio Analysis: Debt Management and Performance

- ILO1. Assessing Debt**
- ILO2. Assessing Profitability**
- ILO3. Assessing Market Performance**

ILO1. Assessing Debt

Managers require analytical debt information to help them with profit forecasting, strategy and other functions. We will consider a number of ratios, and debt measurements using our Brix corporation and their data below.

BRIX CORPORATION	
This Year	
Earnings before interest expense and income taxes	\$ 84,000
Interest expense	7,300
Stockholders' equity	
Beginning of year	180,000
End of year	234,390
Total liabilities	112,000

Fig 31.1 Information for Debt Management

The first measure is called the times interest earned ratio. It is one of the most utilized measures as it gauges a company's ability to pay debt. Generally, a ratio greater than 1 is satisfactory.

$$\text{Times Interest Earned} = \frac{\text{Earnings before Interest Expense and Income Taxes}}{\text{Interest Expense}}$$

Fig 31.2 Times Interest Earned Formula

$$\text{Times Interest Earned} = \frac{\$84,000}{\$7,300} = 11.5 \text{ times}$$

Fig 31.3 Times Interest Earned Calculation

The second is called the debt to equity ratio. This examines the proportion of debt and equity to the balances on a company financial position statement. This particularly useful for external stakeholders, as they are encouraged by increasing debt if the rate of return on its assets is greater than the rate paid to creditors. In contrast, creditors prefer decreasing amounts of debt and greater equity as higher levels of equity means security.

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

Fig 31.4 Debt to Equity Ratio

$$\text{Debt-to-Equity Ratio} = \frac{\$112,000}{\$234,390} = 0.48$$

Fig 31.5 Debt to Equity Calculation

The third ratio is the equity multiplier. This also examines company equity, as it identifies the proportion of assets that are funded by company equity. In order to do this, it looks at the average amount of equity.

$$\text{Equity Multiplier} = \frac{\text{Average Total Assets}}{\text{Average Stockholders' Equity}}$$

Fig 31.6 Equity Multiplier

$$\text{Equity Multiplier} = \frac{(\$300,000 + \$346,390) \div 2}{(\$180,000 + \$234,390) \div 2} = 1.56$$

Fig 31.7 Equity Multiplier Calculation

ILO2. Assessing Profitability

Managers also use data to assess a company's degree of profitability. We will use Brix corporation data again for our example.

BRIX CORPORATION	
This Year	
Number of common shares outstanding	
Beginning of year	17,000
End of year	27,400
Tax rate	30%
Net income	\$ 53,690
Stockholders' equity	
Beginning of year	180,000
End of year	234,390
Dividends per share	2
Dec. 31 market price per share	20
Interest expense	7,300
Total assets	
Beginning of year	300,000
End of year	346,390

Fig 31.8 Information for Profitability Analysis

The first measure of profitability is called the gross margin percentage. This is described below, and has particular emphasis on retail industry as the cost of goods sold does not include fixed costs that are usually associated with service industry. Our example using Brix follows.

$$\text{Gross Margin Percentage} = \frac{\text{Gross Margin}}{\text{Sales}}$$

Fig 31.9 Gross Margin Percentage

$$\text{Gross Margin Percentage} = \frac{\$494,000 - \$140,000}{\$494,000} = 71.6\%$$

Fig 31.10 Gross Margin Percentage Calculation

The second ratio is the net profit margin percentage. This measure considers company performance taking into account such factors such as cost of goods sold, selling and administrative expenses, interest expense, and tax. We use Brix to illustrate this process.

$$\text{Net Profit Margin Percentage} = \frac{\text{Net Income}}{\text{Sales}}$$

Fig 31.11 Net Profit Margin Percentage

$$\text{Net Profit Margin Percentage} = \frac{\$53,690}{\$494,000} = 10.9\%$$

Fig 31.12 Net Profit Margin Percentage Calculation

The third ratio used by managers to gauge profitability is the return on total assets model. In this ratio we include the interest expense into our calculations. This allows for better comparison of companies with different levels of debt. Brix is included to demonstrate this.

$$\text{Return on Total Assets} = \frac{\text{Net Income} + [\text{Interest Expense} \times (1 - \text{Tax Rate})]}{\text{Average Total Assets}}$$

Fig 31.13 Return on Assets

$$\text{Return on Total Assets} = \frac{\$53,690 + [\$7,300 \times (1 - .30)]}{(\$300,000 + \$346,390) \div 2} = 18.19\%$$

Fig 31.14 Return on Assets Calculation

The fourth and final measurement to analyze is the return on equity. This formula determines how efficiently the company's investments are in generating net income.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Stockholders' Equity}}$$

Fig 31.15 Return on Equity

$$\text{Return on Equity} = \frac{\$53,690}{(\$180,000 + \$234,390) \div 2} = 25.91\%$$

Fig 31.16 Return on Equity Calculation

A thought to consider when using such measures, is the idea of financial leverage. This leverage results from comparing the rate of return from investments, with the rate of return necessary to pay creditors. If a positive leverage is found, then the return on assets is greater than capital owing to credits, therefore the company can afford to carry some debt. If a negative leverage exists, in other words the return from assets is less than the return needed for creditors, then stockholders and other investors will be at a loss.

ILO3. Assessing Market Performance

To make this market analysis, we will specific data from Brix illustrated below.

BRIX CORPORATION	
This Year	
Number of common shares outstanding	
Beginning of year	17,000
End of year	27,400
Stockholders' equity	\$ 234,390
Dividends per share	\$ 2
Dec 31. market price per share	\$ 20

Fig 31.17 Information for Market Performance Measurement

The first market performance tool is the earnings per share calculation. This is used as the earnings found, is used as the benchmark for future dividends, and as justification for price changes of the stock. When considering the formula, pay attention to the average number of common shares outstanding. This is found by measuring the outstanding shares from the beginning of the year and adding the end of year balance, and dividing by two. We show this process with Brix's data

$$\text{Earnings per Share} = \frac{\text{Net Income}}{\text{Average Number of Common Shares Outstanding}}$$

Fig 31.18 Earnings Per Share

$$\text{Earnings per Share} = \frac{\$53,690}{(17,000 + 27,400)/2} = \$2.42$$

Fig 31.19 Earnings Per Share Calculation

The second market performance appraisal method is the price earnings ratio. The is considered an evaluation of future performance, as a higher ratio indicates that buyers are willing to pay a higher price for the stock as they consider it will rise in value in the future.

$$\text{Price-Earnings Ratio} = \frac{\text{Market Price Per Share}}{\text{Earnings Per Share}}$$

Fig 31.20 Price Earning Ratio

$$\text{Price-Earnings Ratio} = \frac{\$20.00}{\$2.42} = 8.26 \text{ times}$$

Fig 31.21 Price Earning Ratio Calculation

The third ratio is for those investors wishing to generate a passive income from their portfolios. For these type of investors it benefits them to have a large dividend payout ratio. Conversely, investors hopeful of market price growth would rather a smaller ratio. We show this example with Brix below.

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

Fig 31.22 Dividend Payout Ratio

$$\text{Dividend Payout Ratio} = \frac{\$2.00}{\$2.42} = 82.6\%$$

Fig 31.23 Dividend Payout Ratio Calculation

The next ratio is the dividend yield ratio. This measures the rate of return for investors based on dividends, when purchasing stocks at market prices.

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

Fig 31.24 Dividend Yield Ratio

$$\text{Dividend Yield Ratio} = \frac{\$2.00}{\$20.00} = 10.00\%$$

Fig 31.25 Dividend Yield Ratio Calculation

The fifth and final measure is the book value per share. This is a longitudinal measure as it looks at historical costs of shares. It considers the amount of capital that would be shared between stockholders if the company sold its portfolio of assets at the carrying amount and the funds were used to retire creditors. The book value per share for Brix is illustrated.

$$\text{Book Value per Share} = \frac{\text{Common Stockholders' Equity}}{\text{Number of Common Shares Outstanding}}$$

Fig 31.26 Book Value Per Share

$$\text{Book Value per Share} = \frac{\$234,390}{27,400} = \$8.55$$

Fig 31.27 Book Value Per Share Calculation

An extra point of consideration is how the market price of \$20 per share does not equal the book value price of \$8.55. This is where you must recall that the book value price is based on previous costs, whereas the market price is directed at future earnings, and future dividends.



References:

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