

Chapter 17: Financial Statement Analysis

INTRODUCTION

Financial ratio: is a relationship between different accounting items that tells something about the firm's activities.

Purpose of Financial Ratios:

1-Analysis: indicate strength and weaknesses of the firm, such as cash adequacy, capital structure, efficiency in operation, returns.

2-Monitoring: help identify possible problems that may face the firm and help follow up on the remedy of those problems.

3-Planning: help determine certain targets and work toward achieving those targets.

Also,

Credit managers use Financial Ratios to estimate the riskiness of potential borrowers.

Financial analysts and Investors use Financial Ratios to evaluate corporate securities

Categories of Financial Ratios

- 1– Leverage Ratios**
- 2– Liquidity Ratios**
- 3– Efficiency Ratios**
- 4– Profitability Ratios**
- 5– Market-based Ratios**

Leverage Ratios

Financial Leverage ratios are an indication of the amount of debt the company is using and how capable is the firm to pay off its debt. The more leveraged the firm, the more risky it is.

1- **Long-term debt ratio = $\frac{\text{long-term debt}}{(\text{long-term debt} + \text{equity})}$**

This ratio is the percentage of long-term debt to the total capital of the firm.

Long-term debt ratio = $\frac{2,397}{(2,397+13,572)} = 0.15$ or 15%

This indicates that 15% of the firm capital is raised by debt and the remaining 85% of the capital is coming from equity.

- Is high debt ratio good or bad?
- Can debt ratio be greater than 1?

2- **Long-term debt -to-equity = $\frac{\text{Long-term debt}}{\text{equity}}$**

This is the ratio of debt financing to equity financing.

Long-term debt -to-equity ratio = $\frac{2,397}{13,572} = 0.18$ or 18%

This indicates that for every dollar of equity financing the firm uses 0.18 dollar of debt financing.

*Industry average =31 %

$$\text{3- Total Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total assets}}$$

This is the ratio of total debt to total assets

$$\text{Total Debt Ratio} = \frac{14,415}{27,987} = 0.52 \text{ or } 52\%$$

This indicates that 52% of the total assets is financed by short and long term debt and the remaining 48% of assets is financed by equity.

$$\text{4- Total debt -to-equity} = \frac{\text{Total Liabilities}}{\text{equity}}$$

This is the ratio of total debt to equity financing.

$$\text{Total debt -to-equity} = \frac{14,415}{13,572} = 1.06 \text{ or } 106\%$$

This indicates that for every dollar of equity financing the firm uses 1.06 dollar of short and long term debt.

***Industry average = 54%**

$$\text{5- Times interest earned ratio} = \frac{\text{EBIT}}{\text{Interest expenses}}$$

(Generally, the higher the better)

This ratio measures the extent to which the firm's current earnings are able to meet current interest payments.

- Earning before interest and tax (EBIT) is operating income

$$\text{Times interest earned ratio} = \frac{5,713}{167} = 34.2 \text{ times}$$

This indicates that every dollar that should be paid as interest expenses there are 34.2 dollars in operating profit that can cover it.

***Industry average =29.74 times.**

6- Cash coverage ratio= $\frac{\text{EBIT} + \text{depreciation}}{\text{interest expenses}}$

(Generally, the higher the better)

This ratio measures the extent to which the firm's current cash flows from operation are able to meet current interest payments.

Liquidity Ratios

Being liquid is same as being able to pay your bills when they become due.

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

(Generally, the higher the better)

This ratio is used to determine if the company have enough liquid assets (cash and marketable securities) and near liquid assets (account receivables and inventory to meet short-term obligations.

Current ratio =8,639/6,752 = 1.28 times

This means that for every dollar the firm owes in the short term there is a 1.28 dollars to pay for it.

***Industry average = 1.19 times**

$$2- \text{ Quick ratio} = \frac{(\text{Cash} + \text{Marketable securities} + \text{Accounts receivable})}{\text{Current liabilities}}$$

(Generally, the higher the better)

Since inventory is the least liquid asset, this ratio excludes it.

*What about prepaid expenses?

$$\text{Quick ratio} = (1,280 + 2,999) / 6,752 = 0.63 \text{ times}$$

*Industry average = 0.87 times

$$3- \text{ Cash ratio} = \frac{\text{Cash} + \text{Marketable securities}}{\text{Current liabilities}}$$

This ratio includes only cash .

$$\text{Cash ratio} = 1,280 / 6,752 = 0.19 \text{ times}$$

$$4- \text{ Net working capital to total assets ratio} = \frac{\text{Net working Capital}}{\text{Total Assets}}$$

Net working capital = current assets – current liabilities

This ratio measure the company's potential reserve of cash.

$$\text{Net working capital} = 8,639 - 6,752 = 1,887$$

$$\text{Net working capital to total assets ratio} = \frac{1,887}{27,987} = 0.07$$

Efficiency Ratios

These ratios indicate how efficient the firm is in using its assets by comparing the asset value to the revenue these assets are producing.

$$\text{1- Asset turnover ratio} = \frac{\text{Sales}}{\text{Average total assets}}$$

(Generally, the higher the better)

Assets turnover ratio is a measurement of how well the firm is utilizing its total assets (i.e. fixed and current assets) to produce sales.

$$\text{Asset turnover} = \frac{29,261}{(27,987 + 25,327) / 2} = 1.1 \text{ times}$$

This indicates that the every dollar in total assets generate 1.1 dollars in revenue.

*Industry average =0.92 times

$$\text{2- Fixed-asset turnover} = \frac{\text{Sales}}{\text{Average fixed assets}}$$

(Generally, the higher the better)

Fixed assets turnover ratio is a measurement of how well the firm is utilizing its fixed assets (i.e. property, plant, equipment and intangibles) to produce sales.

$$\text{Fixed-asset turnover} = \frac{29,261}{(13,589 + 13,211) / 2} = 2.18$$

This indicates that the every dollar in fixed assets generate 2.18 dollars in revenue.

$$\mathbf{3- \text{Average collection period} = \frac{\text{average accounts receivable}}{\text{average daily sales}}}$$

This ratio measures the average number of days an account receivables remain outstanding (not paid yet). In other words, how frequent does the firm get its money back.

$$\mathbf{\text{Average collection period} = \frac{(2,999 + 2,830) / 2}{(29,261 / 365)} = 36.4 \text{ days}}$$

The collection period for this company is 36 days. It takes the company 36 days to get its money back from customers.

$$\mathbf{4- \text{Inventory turnover} = \frac{\text{Cost of sales}}{\text{Average inventory}}}$$

This ratio measures the number of times per year (on average) inventory get sold and new inventory are created.

$$\mathbf{\text{Inventory turnover} = \frac{12,142}{(1,541 + 1,412)/2} = 8.2 \text{ times}}$$

This indicates that the supply of inventory is completely depleted and then restored 8.2 times a year.

*Industry average = 7.49 times

*Is too high Inventory turnover necessarily a good sign?

$$\text{5- Days' sales in inventories} = \frac{\text{Average inventory}}{\text{Cost of sales} / 365}$$

This ratio measures the number of days the inventory can be sold by .

$$\text{Days' sales in inventories} = \frac{(1,541 + 1,412)/2}{12,142 / 365} = 44.4 \text{ days}$$

This indicates that on average the company has sufficient inventory to maintain sales for 44.4 days.

Profitability Ratios

Profitability Ratios measure how effectively a firm's management is generating profits on sales, total assets, and stock holders' equity.

$$\text{1- Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}$$

(Generally, the higher the better)

This ratio measures how profitable the firm's sales are after all expenses, including taxes and interest are deducted.

$$\text{Profit margin} = \frac{4,212}{29,261} = 0.144 \text{ or } 14.4\%$$

The net profit of the firm from its sales activities is 14.4%.

*Industry average =17 %

$$\mathbf{2- \text{ Operating Profit Margin} = \frac{\text{Net Income} + \text{Interest}}{\text{Sales}}}$$

This ratio measures how profitable the firm's sales are after deducting all expenses except interest expenses.

$$\mathbf{\text{Profit margin} = \frac{4,212 + 167}{29,261} = 0.15 \text{ or } 15\%}$$

The operating profit of the firm from its sales activities is 15%. This profit is divided between debt holders as interest payments and equity holders as net income.

$$\mathbf{3- \text{ Return on Assets (ROA)} = \frac{\text{Net Income} + \text{Interest}}{\text{average total assets}}}$$

(Generally, the higher the better)

This ratio measures how much each dollar invested by the firm earns at the end of the year.

$$\mathbf{\text{ROA} = \frac{4,212 + 167}{(27,987 + 25,327)/2} = 0.164 \text{ or } 16.4\%}$$

The firm earns 16.4% return on its investment a year.

Industry average = 14.96%

$$\mathbf{4- \text{ Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{average equity}}}$$

(Generally, the higher the better)

This ratio measures how much each dollar invested by the shareholders earns at the end of the year.

$$\text{ROE} = \frac{4,212}{(13,572 + 11,874) / 2} = 0.331 \text{ or } 33.1\%$$

Equity holders earn 33.1% return on their investment a year.

Industry average = 31.06%

$$\text{5- Payout Ratio} = \frac{\text{dividends}}{\text{Net income}}$$

The payout ratio is the proportion of net income that is paid out to shareholders as dividends.

$$\text{Payout Ratio} = \frac{1,329}{4,212} = 0.316 \text{ or } 31.6\%$$

31.6% of the net income is paid to shareholders as dividends and the remaining 68.4% of the net income is kept in the firm as retained earnings.

$$\text{6- Plowback ratio} = 1 - \text{payout ratio} = 1 - 0.316 = 0.684.$$

The Plowback ratio is the proportion of net income that is kept in the firm as retained earnings and not distributed to shareholders.

$$\begin{aligned} \text{7- Growth in equity} &= \text{Plowback ratio} * \text{ROE} \\ &= 0.684 * 0.331 = 0.227 \text{ or } 22.7\% \end{aligned}$$

The firm is expected to grow at 22.7% for sometime.

8. The Du Pont System

Designed to show relationships between: return on assets, asset turnover, the profit margin and leverage.

$$\text{ROA} = \frac{\text{NI} + \text{Interest}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} = \frac{\text{NI} + \text{Interest}}{\text{Assets}}$$

↓
↓

Operating profit Margin Asset Turnover

$$\text{ROE} = \frac{\text{NI} + \text{Interest}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{assets}}{\text{equity}} \times \frac{\text{net income}}{\text{NI} + \text{interest}}$$

↓
↓
↓
↓

Operating profit Margin Asset Turnover leverage ratio debt burden

$$\text{ROE} = \text{ROA} \times \text{Leverage Ratio} \times \text{Debt burden}$$

* The use of debt work as a multiplier of ROA that benefit equity holders.

* Debt help increase ROE only when ROA is higher than the interest rate on debt.

Market-Based Ratios

These ratios evaluate the firm's stock price. These are indicators of what investors think of their previous and future earnings.

$$1- \text{P/E ratio} = \frac{\text{Market price per share}}{\text{Current earnings per share(EPS)}}$$

$$\text{EPS} = \frac{\text{Net Income}}{\text{Number of shares outstanding}}$$

Price/earnings (P/E) ratio shows how much investors are willing to pay per dollar of reported profits.

P/E ratio = 22.35

Investors are paying 22.35 dollars for each dollar they earn in the firm.

If two firms have the same earnings and size, why would one have higher P/E ratio than the other?

- The lower the firm risk, the higher the P/E ratio should be.
- The better the growth prospects of the firm's earnings, the greater the P/E ratio.

2- **Market to book (M/B) = $\frac{\text{Market price per share}}{\text{Book value per share}}$**

Book Value per share = $\frac{\text{Common equity}}{\text{Number of shares outstanding}}$

This ratio measures the how much equity holdings worth in the market relative to their original value. Higher ratio indicates that shareholders earn higher return in the firm than the return they require on their investments.

M/B = 6.68

The stock price is 6.68 times higher than its book value.

3- **Dividend yield = $\frac{\text{Dividends per share}}{\text{Market price per share}}$**

Dividend yield = 5% , Your return from dividends is 5% .

Measuring company performance

Economic Value Added (EVA®) or Residual Income

$$\text{EVA} = (\text{Return on capital} - \text{Cost of capita}) * \text{total capital}$$

Compares the dollar return generated by the firm to the expected return on investors' capital

Market Value Added = Market value of equity – book value of equity

- Check out the ranking of the MVAs of 1000 firms at this Web site:
www.sternstewart.com

Common-Size Financial Statements

Common-size balance sheet

- Shows assets and liabilities as a percent of total assets

Common-size income statement

- Shows income and expense items as a percent of net sales