# Chapter No. 4

## Introduction to Financial Ratios and Trend Analysis

### 4.1    Introduction to Financial Ratios

Financial ratios are useful indicators of a firm's performance and financial situation. Most ratios can be calculated from the information provided by the financial statements of the company. 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. Ratios do not make conclusions (Ramachandran and Kakani, 2015). Only important ratios used in the present study are being defined in the paragraphs below.

### 4.2    Classification of financial ratios

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

- Liquidity ratios

- Asset turnover ratios

- Financial leverage ratios

- Profitability ratios

- Dividend policy ratios

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

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

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:

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

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.

## 4.2.2 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.

Debtors turnover or Accounts receivables turnover is an indication of how quickly the firm collects its debts or accounts receivables or trade receivables. It indicates the velocity of circulation of the trade receivables and is defined as follows:

$$\text{Debtors Turnover} \quad = \quad \frac{\text{Annual Credit Sales}}{\text{Trades Receivable}}$$

The debtors 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 or trade receivable balance divided by the average daily credit sales, calculated as follows:

$$\text{Average Collection Period} \quad = \quad \frac{\text{Trades Receivable}}{\text{Annual Credit Sales} / 365}$$

The collection period can also be written as:

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

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:

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

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, fixed assets to net worth and total asset turnover which are defined below:

$$\text{Fixed Asset Turnover} = \frac{\text{Total Revenue}}{\text{Total fixed assets}}$$

This ratio indicates how efficiently the firm is utilising its fixed assets to generate revenues. A lower ratio indicates under utilisation of fixed assets.

Fixed Assets to Net Worth ratio establishes the relationship between fixed assets and shareholders funds. It indicates what percentage of owner's funds are invested in the fixed assets and can be defined as

$$\text{Fixed Assets to Net Worth} = \frac{\text{Total fixed assets}}{\text{Shareholder's funds}}$$

Total Assets Turnover can be defined as

$$\text{Total Assets Turnover} = \frac{\text{Total Revenue}}{\text{Average total assets}}$$

This ratio measures the efficiency of assets and is also known as the asset utilisation ratio.

### 4.2.3 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:

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

The debt-to-equity ratio is defined as total debt divided by total equity:

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

The total debt includes current liabilities and long term liabilities. The total equity comprises of share holder's fund.

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

### 4.2.4  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:

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

Net profit ratio is the ratio of net profit to the sales. It is expressed as percentage and is used to measure the overall profitability. It is defined as

Net Profit ratio = Net profit / Sales

Operating profit ratio is defined as ratio of Profit before Interest & Taxes to total revenue or sales. It can be expressed as

Operating profit ratio = PBIT / Sales

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

Return on assets = Net Income / Total assets

Return on Investment (RoI) is the bottom line measure for the shareholders, measuring the profits earned for each rupee invested in the firm. Return on Investment  is defined as follows:

Return on Investment = Net Income / Shareholder's funds

### 4.2.5 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:

$$\text{Payout ratio} = \text{Dividend per share} / \text{Earnings per share}$$

Where dividend per share is the amount of dividend announced or paid per share and earning per share is the ratio of profit after tax (PAT) to number of equity shares

## 4.3 Trend analysis

### 4.3.1 Introduction

Trend analysis is one of the tools for the analysis of the company's monetary statements for the investment purposes. Investors use this analysis tool a lot in order to determine the financial position of the business. In trend analysis, the financial statements of the company are compared with each other for the several years after converting them in the percentage. Hence, trend analysis is concerned with the collection of information for multiple time periods and plotting the information for further review and decision making.

The objective of this analysis is to find out or spot actionable patterns in the presented information and then to look further into the reasons for that.

In investment and business fields, trend analysis is typically used in two ways, which are as follows:

- Revenue and cost analysis: Revenue and cost information from a company's income statements can be plotted on a trend line for multiple reporting periods and examined for trends and inconsistencies. For example, a sudden dip in the net profit in one period followed by usual spike in the next period may indicate that sudden dip in the net profit could be due to accounting for exceptional items in that period. Thus, trend analysis is quite useful for examining preliminary financial statements for inaccuracies, to see if adjustments should be made before the statements are released for general use.

- Investment analysis: An investor can create a trend line of historical share prices, and use this information to project the future changes in the stock price. The trend line can be associated with other information for which a cause-and-effect relationship may exist, to see if the causal relationship can be used as a predictor of future stock prices. Trend analysis can also be used for the entire stock market, to detect signs of a impending change from a bull to a bear market, or the reverse.

When used internally (the revenue and cost analysis function), trend analysis is one of the most useful management tools available. The following are examples of this type of usage:

➢ Examine revenue patterns to see if sales are declining for certain products, customers, or sales regions.

➢ Examine expenses on various heads and see the pattern.

➤ Examine individual items of expenses to see for any unusual expenditures in a reporting period which require further scrutiny.

➤ Examine trend of profit margin to see any hiccup and/or use the trend for estimating future growth in profit.

### 4.3.2 Methods of Trend analysis

Trend analysis can be done in two ways:

**Simple base year method**: In this method, the first year of the financial information is set as base year and each item in that statement can be considered to represent 100 percent. Then for succeeding year, every item is calculated as percentage of the base year figure.

**Progressive base year method**: In this method, instead of finding percentages of various items in relation to a single base year, the percentages are calculated with regard to items in the preceding year.

### 4.3.3 Advantages of Trend analysis

Trend analysis has a great advantage that it can also be used to predict the future events. This is possible by forecasting the future cash flow based on the data available of the past. With the help of trend analysis, you can predict the future and track the variances to add performance. When trend analysis is being used to predict the future, it is to be kept in mind that the factors which had impacted a particular data point may no longer be doing so to the same extent in the next period or so on. This means prediction of the future based on extrapolation of a historical time series may not necessarily yield a valid result. Thus, there is a requirement for doing adequate additional research which will accompany the trend analysis while it is being used for making predictions.

Apart from investments and financial data of the company, the trend analysis is also a useful tool that can be used effectively for the projections. This allows the company to conduct market research and draw trends to forecast the demand of different products. This helps in the marketing purposes, and company can deduce results to select the right marketing approach to address the issues. Trend analysis can pretty much apply to all the techniques, which requires forecasting therefore, that it is a very useful tool in business.

## 4.4    Use of financial ratios and trend Analysis

Financial statement analysts usually evaluate company's performance over a period of time.  Financial ratios on its own will give little or no meaningful information but when combined with trend analysis can be insightful e.g. financial ratios of three previous years will give more information. It is agreed that trend analysis establishes the pattern for elements in the financial statement over a period and will give an indication of grey areas in the financial statement. For instance, the interest cover ratio for a particular year may be acceptable but the trend analysis may indicate steady rise over the period which is an indication of increasing leverage. This is of particular concern for equity holders and potential investors of that company.

The combination of financial ratios and trend analysis is used by analysts in determining financial risks of companies. This combination is so insightful in revealing many grey areas in a financial statement.

## 4.5    Limitations of Financial Ratios

Financial ratios are being widely used in the industry for analysing financial statements but there are certain limitations like:

- 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.