

## NOTE RATIO ANALYSIS

It refers to the systematic use of ratios to interpret the financial statements in terms of the operating performance and financial position of a firm. It involves comparison for a meaningful interpretation of the financial statements.

In view of the needs of various uses of ratios the ratios, which can be calculated from the accounting data are classified into the following broad categories

- A. Liquidity Ratio      Turnover Ratio
- B. Solvency or Leverage ratios      Profitability ratios

### A. LIQUIDITY RATIO

It measures the ability of the firm to meet its short-term obligations, that is capacity of the firm to pay its current liabilities as and when they fall due. Thus these ratios reflect the short-term financial solvency of a firm. A firm should ensure that it does not suffer from lack of liquidity. The failure to meet obligations on due time may result in bad credit image, loss of creditors confidence, and even in legal proceedings against the firm on the other hand very high degree of liquidity is also not desirable since it would imply that funds are idle and earn nothing. So therefore it is necessary to strike a proper balance between liquidity and lack of liquidity.

The various ratios that explains about the liquidity of the firm are

1. Current Ratio
2. Acid Test Ratio / quick ratio
3. Absolute liquid ration / cash ratio

#### 1. CURRENT RATIO

The current ratio measures the short-term solvency of the firm. It establishes the relationship between current assets and current liabilities. It is calculated by dividing current assets by current liabilities.

$$\text{Current Ratio} = \frac{\text{Current Asset}}{\text{Current Liabilities}}$$

*Current assets include cash and bank balances, marketable securities, inventory, and debtors, excluding provisions for bad debts and doubtful debtors, bills receivables and prepaid expenses. Current liabilities includes sundry creditors, bills payable, short- term loans, income-tax liability, accrued expenses and dividends payable.*

#### 2. ACID TEST RATIO / QUICK RATIO

It has been an important indicator of the firm's liquidity position and is used as a complementary ratio to the current ratio. It establishes the relationship between quick assets and current liabilities. It is calculated by dividing quick assets by the current liabilities.

$$\text{Acid Test Ratio} = \frac{\text{Quick Assets}}{\text{Current liabilities}}$$

*Quick assets are those current assets, which can be converted into cash immediately or within reasonable short time without a loss of value. These include cash and bank balances, sundry debtors, bill's receivables and short-term marketable securities.*

#### 3. ABSOLUTE LIQUID RATION / CASH RATIO

It shows the relationship between absolute liquid or super quick current assets and liabilities. Absolute liquid assets include cash, bank balances, and marketable securities.

$$\text{Absolute liquid ratio} = \frac{\text{Absolute liquid assets}}{\text{Current liabilities}}$$

### B. TURNOVER RATIO

Turnover ratios are also known as activity ratios or efficiency ratios with which a firm manages its current assets. The following turnover ratios can be calculated to judge the effectiveness of asset use.

1. Inventory Turnover Ratio    Debtor Turnover Ratio
2. Creditor Turnover Ratio    Assets Turnover Ratio

### **1. INVENTORY TURNOVER RATIO**

This ratio indicates the number of times the inventory has been converted into sales during the period. Thus it evaluates the efficiency of the firm in managing its inventory. It is calculated by dividing the cost of goods sold by average inventory.

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average Inventory}}$$

*The average inventory is simple average of the opening and closing balances of inventory. (Opening + Closing balances / 2). In certain circumstances opening balance of the inventory may not be known then closing balance of inventory may be considered as average inventory*

### **2. DEBTOR TURNOVER RATIO**

This indicates the number of times average debtors have been converted into cash during a year. It is determined by dividing the net credit sales by average debtors.

$$\text{Debtor Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Trade Debtors}}$$

*Net credit sales consist of gross credit sales minus sales return. Trade debtor includes sundry debtors and bill's receivables. Average trade debtors (Opening + Closing balances / 2)*

When the information about credit sales, opening and closing balances of trade debtors is not available then the ratio can be calculated by dividing total sales by closing balances of trade debtor

$$\text{Debtor Turnover Ratio} = \frac{\text{Total Sales}}{\text{Trade Debtors}}$$

### **3. CREDITOR TURNOVER RATIO**

It indicates the number of times sundry creditors have been paid during a year. It is calculated to judge the requirements of cash for paying sundry creditors. It is calculated by dividing the net credit purchases by average creditors.

$$\text{Creditor Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Average Trade Creditor}}$$

*Net credit purchases consist of gross credit purchases minus purchase return*

When the information about credit purchases, opening and closing balances of trade creditors is not available then the ratio is calculated by dividing total purchases by the closing balance of trade creditors.

$$\text{Creditor Turnover Ratio} = \frac{\text{Total purchases}}{\text{Total Trade Creditors}}$$

### **4. ASSETS TURNOVER RATIO**

The relationship between assets and sales is known as assets turnover ratio. Several assets turnover ratios can be calculated depending upon the groups of assets, which are related to sales.

- a) Total asset turnover .Net asset turnover Fixed asset turnover
- b) Current asset turnover Net working capital turnover ratio

#### **a. TOTAL ASSET TURNOVER**

This ratio shows the firms ability to generate sales from all financial resources committed to total assets. It is calculated by dividing sales by total assets.

$$\text{Total asset turnover} = \frac{\text{Total Sales}}{\text{Total Assets}}$$

**b. NET ASSET TURNOVER**

This is calculated by dividing sales by net assets.

$$\text{Net asset turnover} = \frac{\text{Total Sales}}{\text{Net Assets}}$$

Net assets represent total assets minus current liabilities. Intangible and fictitious assets like goodwill, patents, accumulated losses, deferred expenditure may be excluded for calculating the net asset turnover.

**c. FIXED ASSET TURNOVER**

This ratio is calculated by dividing sales by net fixed assets.

$$\text{Fixed asset turnover} = \frac{\text{Total Sales}}{\text{Net Fixed Assets}}$$

*Net fixed assets represent the cost of fixed assets minus depreciation.*

**d. CURRENT ASSET TURNOVER**

It is divided by calculating sales by current assets

$$\text{Current asset turnover} = \frac{\text{Total Sales}}{\text{Current Assets}}$$

**e. NET WORKING CAPITAL TURNOVER RATIO**

A higher ratio is an indicator of better utilization of current assets and working capital and vice-versa (a lower ratio is an indicator of poor utilization of current assets and working capital). It is calculated by dividing sales by working capital.

$$\text{Net working capital turnover ratio} = \frac{\text{Total Sales}}{\text{Working Capital}}$$

*Working capital is represented by the difference between current assets and current liabilities.*

**C. SOLVENCY OR LEVERAGE RATIOS**

The solvency or leverage ratios throw light on the long term solvency of a firm reflecting its ability to assure the long term creditors with regard to periodic payment of interest during the period and loan repayment of principal on maturity or in predetermined instalments at due dates. There are thus two aspects of the long-term solvency of a firm.

- a. Ability to repay the principal amount when due
- b. Regular payment of the interest.

The ratio is based on the relationship between borrowed funds and owner's capital it is computed from the balance sheet, the second type are calculated from the profit and loss a/c. The various solvency ratios are

1. Debt equity ratio ; Debt to total capital ratio Proprietary (Equity) ratio
2. Fixed assets to net worth ratio Fixed assets to long term funds ratio
3. Debt service ([Interest coverage](#)) ratio

**1. DEBT EQUITY RATIO**

Debt equity ratio shows the relative claims of creditors (Outsiders) and owners (Interest) against the assets of the firm. Thus this ratio indicates the relative proportions of debt and equity in financing the firm's assets. It can be calculated by dividing outsider funds (Debt) by shareholder funds (Equity)

$$\text{Debt equity ratio} = \frac{\text{Outsider Funds (Total Debts)}}{\text{Shareholder Funds or Equity (net worth)}}$$

The outsider fund includes long-term debts as well as current liabilities. The shareholder funds include equity share capital, preference share capital, reserves and surplus including accumulated profits. However fictitious assets like accumulated deferred expenses etc should be deducted from the total of these items to shareholder funds. The shareholder funds so calculated are known as *net worth* of the business.

## 2. **DEBT TO TOTAL CAPITAL RATIO**

$$\text{Debt to total capital ratio} = \frac{\text{Total Debts}}{\text{Total Assets}}$$

## 3. **PROPRIETARY (EQUITY) RATIO**

This ratio indicates the proportion of total assets financed by owners. It is calculated by dividing proprietor (Shareholder) funds by total assets.

$$\text{Proprietary (equity) ratio} = \frac{\text{Shareholder funds}}{\text{Total assets}}$$

## 4. **FIXED ASSETS TO NET WORTH RATIO**

This ratio establishes the relationship between fixed assets and shareholder funds. It is calculated by dividing fixed assets by shareholder funds.

$$\text{Fixed assets to net worth ratio} = \frac{\text{Fixed Assets} \times 100}{\text{Net Worth}}$$

## 5. **FIXED ASSETS TO LONG TERM FUNDS RATIO**

Fixed assets to long term funds ratio establishes the relationship between fixed assets and long-term funds and is calculated by dividing fixed assets by long term funds.

$$\text{Fixed assets to long term funds ratio} = \frac{\text{Fixed Assets} \times 100}{\text{Long-term Funds}}$$

## 6. **DEBT SERVICE (INTEREST COVERAGE) RATIO**

This shows the number of times the earnings of the firms are able to cover the fixed interest liability of the firm. This ratio therefore is also known as Interest coverage or time interest earned ratio. It is calculated by dividing the earnings before interest and tax (EBIT) by interest charges on loans.

$$\text{Debt Service Ratio} = \frac{\text{Earnings before interest and tax (EBIT)}}{\text{Interest Charges}}$$

## **PROFITABILITY RATIOS**

The profitability ratio of the firm can be measured by calculating various profitability ratios. General two groups of profitability ratios are calculated.

- a. Profitability in relation to sales.
- b. Profitability in relation to investments.

### **Profitability in relation to sales**

1. Gross profit margin or ratio    2. Net profit margin or ratio
2. Operating profit margin or ratio    4. Operating Ratio
3. Expenses Ratio

### 1. **GROSS PROFIT MARGIN OR RATIO**

It measures the relationship between gross profit and sales. It is calculated by dividing gross profit by sales.

$$\text{Gross profit margin or ratio} = \frac{\text{Gross profit} \times 100}{\text{Net sales}}$$

*Gross profit is the difference between sales and cost of goods sold.*

### 2. **NET PROFIT MARGIN OR RATIO**

It measures the relationship between net profit and sales of a firm. It indicates management's efficiency in manufacturing, administering, and selling the products. It is calculated by dividing net profit after tax by sales.

$$\text{Net profit margin or ratio} = \frac{\text{Earning after tax} \times 100}{\text{Net Sales}}$$

### **3. OPERATING PROFIT MARGIN OR RATIO**

It establishes the relationship between total operating expenses and net sales. It is calculated by dividing operating expenses by the net sales.

$$\text{Operating profit margin or ratio} = \frac{\text{Operating expenses} \times 100}{\text{Net sales}}$$

Operating expenses includes cost of goods produced/sold, general and administrative expenses, selling and distributive expenses.

### **4. EXPENSES RATIO**

While some of the expenses may be increasing and other may be declining to know the behavior of specific items of expenses the ratio of each individual operating expenses to net sales should be calculated. The various variants of expenses are

$$\text{Cost of goods sold} = \frac{\text{Cost of goods sold} \times 100}{\text{Net Sales}}$$

$$\text{Administrative Expenses Ratio} = \frac{\text{Administrative Expenses} \times 100}{\text{Net sales}}$$

$$\text{Selling and distribution expenses ratio} = \frac{\text{Selling and distribution expenses} \times 100}{\text{Net sales}}$$

### **5. OPERATING PROFIT MARGIN OR RATIO**

Operating profit margin or ratio establishes the relationship between operating profit and net sales. It is calculated by dividing operating profit by sales.

$$\text{Operating profit margin or ratio} = \frac{\text{Operating Profit} \times 100}{\text{Net sales}}$$

*Operating profit is the difference between net sales and total operating expenses. (Operating profit = Net sales – cost of goods sold – administrative expenses – selling and distribution expenses.)*

### **PROFITABILITY IN RELATION TO INVESTMENTS**

1. Return on gross investment or gross capital employed
2. Return on net investment or net capital employed
3. Return on shareholder's investment or shareholder's capital employed.
4. Return on equity shareholder investment or equity shareholder capital employed.

#### **1. RETURN ON GROSS CAPITAL EMPLOYED**

This ratio establishes the relationship between net profit and the gross capital employed. The term gross capital employed refers to the total investment made in business. The conventional approach is to divide Earnings After Tax (EAT) by gross capital employed.

$$\text{Return on gross capital employed} = \frac{\text{Earnings After Tax (EAT)} \times 100}{\text{Gross capital employed}}$$

#### **2. RETURN ON NET CAPITAL EMPLOYED**

It is calculated by dividing Earnings Before Interest & Tax (EBIT) by the net capital employed. The term net capital employed in the gross capital in the business minus current liabilities. Thus it represents the long-term funds supplied by creditors and owners of the firm.

$$\text{Return on net capital employed} = \frac{\text{Earnings Before Interest \& Tax (EBIT)} \times 100}{\text{Net capital employed}}$$

Net capital employed

### **3. RETURN ON SHARE CAPITAL EMPLOYED**

This ratio establishes the relationship between earnings after taxes and the shareholder investment in the business. This ratio reveals how profitability the owners' funds have been utilized by the firm. It is calculated by dividing Earnings after tax (EAT) by shareholder capital employed.

$$\text{Return on share capital employed} = \frac{\text{Earnings after tax (EAT)} \times 100}{\text{Shareholder capital employed}}$$

### **4. RETURN ON EQUITY SHARE CAPITAL EMPLOYED**

Equity shareholders are entitled to all the profits remaining after the all outside claims including dividends on preference share capital are paid in full. The earnings may be distributed to them or retained in the business. Return on equity share capital investments or capital employed establishes the relationship between earnings after tax and preference dividend and equity shareholder investment or capital employed or net worth. It is calculated by dividing earnings after tax and preference dividend by equity shareholder's capital employed.

$$\text{Return on equity share capital employed} = \frac{\text{Earnings after tax (EAT), preference dividends} \times 100}{\text{Equity share capital employed}}$$

### **EARNINGS PER SHARE**

IT measure the profit available to the equity shareholders on a per share basis. It is computed by dividing earnings available to the equity shareholders by the total number of equity share outstanding

$$\text{Earnings per share} = \frac{\text{Earnings after tax} - \text{Preferred dividends (if any)}}{\text{Equity shares outstanding}}$$

### **DIVIDEND PER SHARE**

The dividends paid to the shareholders on a per share basis in dividend per share. Thus dividend per share is the earnings distributed to the ordinary shareholders divided by the number of ordinary shares outstanding.

$$\text{Dividend per share} = \frac{\text{Earnings paid to the ordinary shareholders}}{\text{Number of ordinary shares outstanding}}$$

### **DIVIDENDS PAY OUT RATIO (PAY OUT RATIO)**

It measures the relationship between the earnings belonging to the equity shareholders and the dividends paid to them. It shows what percentage shares of the earnings are available for the ordinary shareholders are paid out as dividend to the ordinary shareholders. It can be calculated by dividing the total dividend paid to the equity shareholders by the total earnings available to them or alternatively by dividing dividend per share by earnings per share.

$$\text{Dividend pay our ratio (Pay our ratio)} = \frac{\text{Total dividend paid to equity share holders}}{\text{Total earnings available to equity share holders}}$$

Or dps/eps

### **DIVIDEND AND EARNINGS YIELD**

While the earnings per share and dividend per share are based on the book value per share, the yield is expressed in terms of market value per share. The dividend yield may be defined as the relation of dividend per share to the market value per ordinary share and the earning ratio as the ratio of earnings per share to the market value of ordinary share.

$$\text{Dividend Yield} = \frac{\text{Dividend Per share}}{\text{Market value of ordinary share}}$$

$$\text{Earnings yield} = \frac{\text{Earnings per share}}{\text{Market value of ordinary share}}$$

### **PRICE EARNING RATIO**

The reciprocal of the earnings yield is called price earnings ratio. It is calculated by dividing the market price of the share by the earnings per share.

$$\text{Price earnings (P/E) ratio} = \frac{\text{Market price of share}}{\text{Earnings per share}}$$