

# **FINANCIAL RATIO ANALYSIS**

**BY.DR.SAYLEE GHARGE**

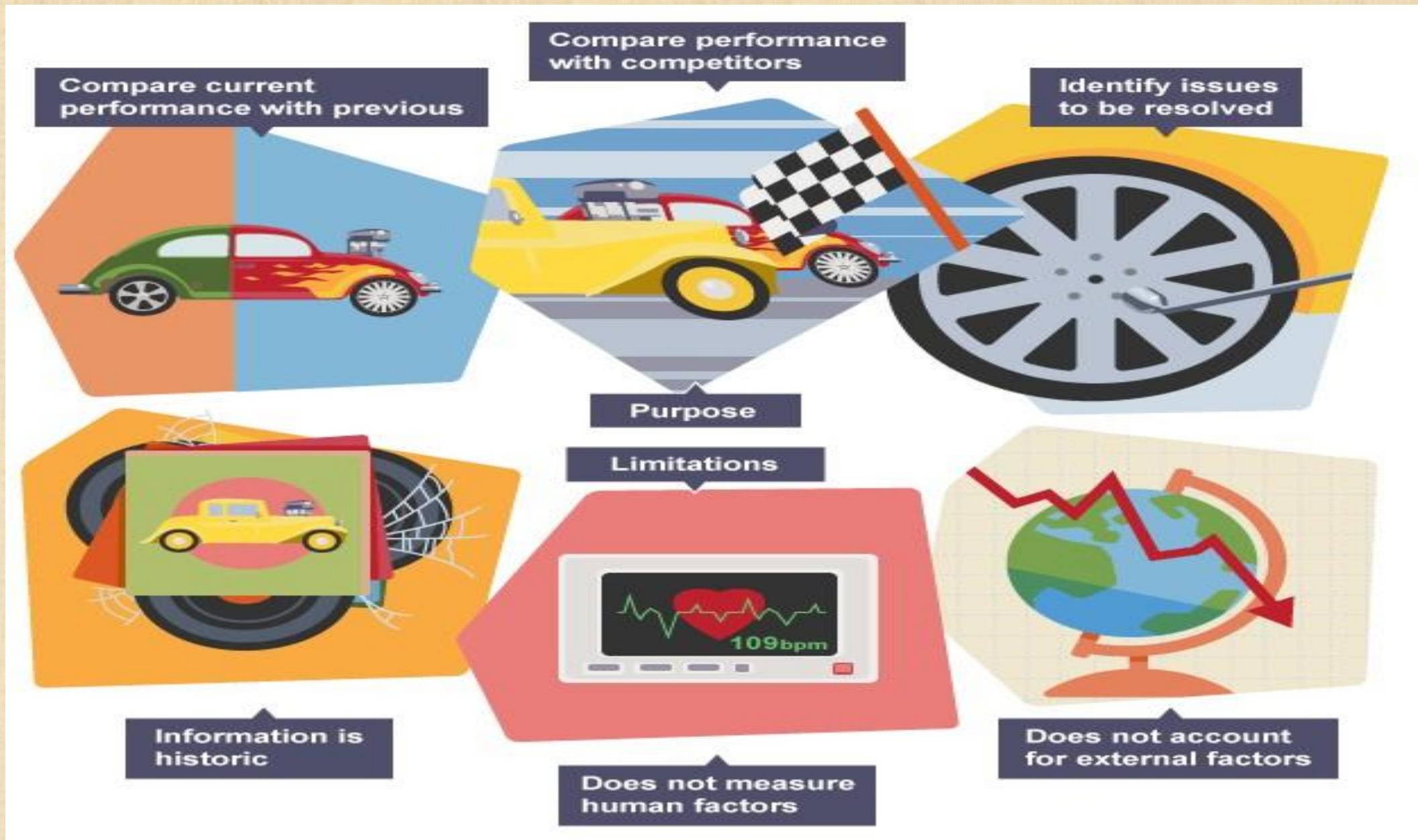
Reference: Financial Management (Theory and practice) by Prasanna Chandra

# Introduction

- Financial statements is often not enough to form conclusive judgments about firm performance, financial statements do provide important clues about what needs to be examined in greater detail.
- Analysis of financial statements is of interest to lenders (short-term as well as long-term), investors, security analysts, managers, corporate boards, regulators etc.
- Financial statement analysis may be done for a variety of purposes, which may range from a simple analysis of the short-term liquidity position of the firm to a comprehensive assessment of the strengths and weaknesses of the firm in various areas.
- It is helpful in assessing corporate excellence, judging creditworthiness, forecasting bond ratings, predicting bankruptcy, and assessing market risk.

# Introduction

- A ratio is an arithmetical relationship between two figures.
- Financial ratio analysis is a study of ratios between various items or groups of items in financial statements. Ratio analysis refers to the analysis of various pieces of financial information in the financial statements of a business.
- They are mainly used by external analysts to determine various aspects of a business, such as its **profitability, liquidity, and solvency**.
- Analysts rely on current and past financial statements to obtain data to evaluate the financial performance of a company.
- They use the data to determine if a company's financial health is on an upward or downward trend and to draw comparisons to other competing firms.



# Ratio Analysis

Utility of the Ratio Analysis are:

**1. Easy to understand the financial position of the firm:** The ratio analysis facilitates the parties to read the changes taken place in the financial performance of the firm from one time period to another.

**2. Measure of expressing the financial performance and position:** It acts as a measure of financial position through Liquidity ratios and Leverage ratios and also a measure of financial performance through Profitability ratios and Turnover Ratios.

**3. Intra-firm analysis on the financial information over many number of years:** The financial performance and position of the firm can be analyzed and interpreted within the firm in between the available financial information of many number of years; which portrays either increase or decrease in the financial performance.

# Ratio Analysis

**4. Inter-firm analysis on the financial information within the industry:** The financial performance of the firm is studied and interpreted along with the similar firms in the industry to identify the presence and status of the respective firm, among others.

**5. Possibility for Financial planning and control:** It not only guides the firm to earn in accordance with the financial forecasting but also facilitates the firm to identify the major source of expense which drastically has greater influence on the earnings.

# **Limitations of the Ratio Analysis**

**1. It is dependent tool of analysis:** The perfection and effectiveness of the analysis mainly depends upon the preparation of accurate and effectiveness of the financial statements. It is subject to the availability of fair presentation of data in the financial statements.

**2. Ambiguity in the handling of terms:** If the tool of analysis taken for the study of inter firm analysis on the profitability of the firms lead to various complications. To study the profitability among the firms, most required financial information are profits of the enterprise.

# **Limitations of the Ratio Analysis**

The profit of one enterprise is taken for analysis is Profit After Taxes (PAT) and another is considering Profit Before Interest and Taxes (PBIT) and third one is taking Net profit for study consideration. The term profit among the firms for the inter firm analysis is getting complicated due to ambiguity or poor clarity on the terminology.

**3. Qualitative factors are not considered:** Under the ratio analysis, the quantitative factors only taken into consideration rather than qualitative factors of the enterprise. The qualitative aspects of the customers and consumers are not considered at the moment of preparing the financial statements but while granting credit on sales is normally considered.

# Limitations of the Ratio Analysis

**4. Not ideal for the future forecasts:** Ratio analysis is an outcome of analysis of historical transactions known as Postmortem Analysis. The analysis is mainly based on the yester performance which influences directly on the future planning and forecasting ; it means that the analysis is mainly constructed on the past information which will also resemble the same during the future analysis.

**5. Time value of money is not considered:** It does not give any room for time value of money for future planning or forecasting of financial performance; the main reason is that the fundamental base for forecasting is taken from the yester periods which never denominate the timing of the benefits

Financial ratios have been classified in several ways. We divide them into five broad categories as follows:

- Liquidity ratios
- Solvency/Leverage ratios
- Activity/Turnover ratios
- Profitability ratios
- Valuation ratios

To facilitate the discussion of various ratios the financial statement of Horizon Limited, shown in Exhibits 4.1 and 4.2, will be used

**Exhibit 4.1**
**Horizon Limited: Profit and Loss Account for the Year Ending  
31st March 20X1**
*(Rs. in crore)*

	<b>20X1</b>	<b>20X0</b>
<b>Net sales</b>	701	623
<b>Cost of goods sold</b>	552	475
Stocks	421	370
Wages and salaries	68	55
Other manufacturing expenses	63	50
<b>Gross profit</b>	149	148
<b>Operating expenses</b>	60	49
Depreciation	30	26
General Administration	12	11
Selling	18	12
<b>Operating profit</b>	89	99
<b>Non-operating surplus/deficit</b>	—	6
<b>Profit before interest and tax</b>	89	105
<b>Interest</b>	21	22
<b>Profit before tax</b>	68	83
<b>Tax</b>	34	41
<b>Profit after tax</b>	34	42
<b>Dividends</b>	28	27
<b>Retained earnings</b>	6	15
<b>Per share data ( in rupees)</b>		
Earning per share	2.27	2.80
Dividend per share	1.87	1.80
Market price per share	21.0	20.0
Book value per share	17.47	17.07

**Exhibit 4.2****Horizon Limited: Balance Sheet as on 31st March 20X1**

(Rs. in crore)

	<b>20X1</b>	<b>20X0</b>
<b>I. Sources of funds</b>		
1. Shareholders' funds	262	256
(a) Share capital (Rs. 10 par)	150	150
(b) Reserves and surplus	112	106
2. Loan funds		
(a) Secured loans	143	131
(i) Due after 1 year	108	91
(ii) Due within 1 year	35	40
(b) Unsecured Loans	69	25
(i) Due after 1 year	29	10
(ii) Due within 1 year	40	15
3. Deferred tax liability	14	—
	488	412
<b>II. Application of funds</b>		
1. Fixed assets	330	322
2. Investments	24	10
(a) Long term investments	21	7
(b) Current investments	3	3
3. Current assets, loans and advances	234	156
(a) Inventories	105	72
(b) Sundry debtors	114	68
(c) Cash and bank balance	10	6
(d) Loans and advances	5	10
Less: Current liabilities and provisions	105	81
Net current assets	129	75
4. Miscellaneous expenditures and losses	5	5
Total	488	412

# Liquidity Ratios

Liquidity refers to the ability of a firm to meet its obligations **in the short run, usually one year.** Liquidity ratios are generally based on the relationship between current assets (the sources for meeting short-term obligations) and current liabilities (the obligations which will mature in the short-run).

The important liquidity ratios are:

- ✓ Current ratio
- ✓ Acid-test ratio/ Quick ratio
- ✓ Cash ratio

# Liquidity Ratios

**1. Current Ratio:** A very popular ratio, the current ratio is defined as:

$$\frac{\text{Current assets}}{\text{Current liabilities}}$$

Current assets include cash, current investments, debtors, inventories (stocks), loans and advances, and pre-paid expenses.

Current liabilities represent liabilities that are expected to mature in the next twelve months. These comprise (i) loans, secured or unsecured, that are due in the next twelve months and (ii) current liabilities and provisions.

**Horizon Limited's current ratio for 20X1 is 237/180 = 1.32**

# Liquidity Ratios

- ✓ The current ratio measures the ability of the firm to meet its current liabilities – current assets get converted into cash during the operating cycle of the firm and provide the funds needed to pay current liabilities. Apparently, **the higher the current ratio, the greater the short-term solvency**. However, in interpreting the current ratio the composition of current assets must not be overlooked.
- ✓ A firm with a high proportion of current assets in the form of cash and debtors is more liquid than one with a high proportion of current assets in the form of inventories even though both the firms have the same current ratio.
- ✓ The general norm for current ratio in India is 1.33. Internationally it is 2.

# Liquidity Ratios

**2. Acid-test Ratio** Also called the **quick ratio**, the acid-test ratio is defined as:

$$\frac{\text{Quick assets}}{\text{Current liabilities}}$$

Quick assets are defined as current assets excluding inventories.

**Horizon's acid-test ratio for 20X1 is:  $(237-105)/180 = 0.73$**

The acid-test ratio is a stringent measure of liquidity. It is based on those current assets which are highly liquid - inventories are excluded from the numerator of this ratio because inventories are deemed to be the least liquid component of current assets.

# Liquidity Ratios

**3. Cash Ratio :** Because cash, bank balances and short-term marketable securities are the most liquid assets of a firm, financial analysts look at cash ratio, which is defined as:

$$\text{Cash ratio} = \frac{\text{Cash and bank balances} + \text{Current investments}}{\text{Current liabilities}}$$

**Horizon's cash ratio for 20X1 is:  $(10+3)/180 = 0.07$**

Clearly, the cash ratio is perhaps the most stringent measure of liquidity.

Indeed, one can argue that it is overly stringent. Lack of immediate cash may not matter if the firm can stretch its payments or borrow money at short notice.

# Net Working Capital Ratio

- ✓ The difference between current assets and current liabilities excluding short-term bank borrowing is called net working capital (NWC) or net current assets (NCA).
- ✓ NWC is sometimes used as a measure of a firm's liquidity. It is considered that, between two firms, the one having the larger NWC has the greater ability to meet its current obligations. This is not necessarily so; the measure of liquidity is a *relationship*, rather than the difference between current assets and current liabilities.
- ✓ NWC, however, measures the firm's potential reservoir of funds. It can be related to net assets (or capital employed):

$$\text{NWC ratio} = \frac{\text{Net working capital (NWC)}}{\text{Net assets (NA)}}$$

# Solvency/Leverage Ratios

Financial leverage refers to the use of debt finance. While debt capital is a cheaper source of finance, it is also a riskier source of finance. **Leverage ratios help in assessing the risk arising from the use of debt capital.**

Two types of ratios are commonly used to analyze financial leverage:

- ✓ Structural ratios
- ✓ Coverage ratios

**Structural ratios** are based on the **proportions of debt and equity in the financial structure of the firm**. The important structural ratios are:

- ✓ Debt-equity ratio
- ✓ Debt-assets ratio
- ✓ Equity Multiplier

# Solvency/Leverage Ratios

**Coverage ratios** show the relationship between debt servicing commitments and the sources for meeting these burdens. The important coverage ratios are:

- ✓ Interest coverage ratio,
- ✓ Fixed charges coverage ratio,
- ✓ Debt service coverage ratio.

**Debt-equity Ratio:** The debt-equity ratio shows the relative contributions of creditors and owners. It is defined as: **Debt/Equity**

**Horizon's debt-equity ratio for the 20X1 year-end is:  $212 / 262 = 0.809$**

The numerator of this ratio consists of all debt, short-term as well as long-term, and the denominator consists of net worth plus preference capital, plus deferred tax liability.

# Leverage Ratios

In general, **the lower the debt-equity ratio, the higher the degree of protection enjoyed by the creditors.** In using this ratio, however, the following points should be borne in mind:

- The book value of equity may be an understatement of its true value in a period of rising prices. This happens because assets are carried at their historical values less depreciation, not at current values.
- Some forms of debt (like term loans, secured debentures, and secured short-term bank borrowing) are usually protected by charges on specific assets and hence enjoy superior protection.

# Leverage Ratios

**Debt-asset Ratio:** The debt-asset ratio measures the extent to which borrowed funds support the firm's assets. It is defined as:

$$\frac{\text{Debt}}{\text{Assets}}$$

The numerator of this ratio includes all debt, short-term as well as long-term, and the denominator of this ratio is the total of all assets (the balance sheet total).

**Horizon's debt-asset ratio for 20X1 is: 212 / 488 = 0.43**

This ratio is related to the debt-equity ratio as follows:

$$\frac{\text{Debt}}{\text{Assets}} = \frac{\text{Debt}/\text{Equity}}{1 + \text{Debt} / \text{Equity}}$$

In view of the above relationship, the interpretation of the debt ratio is similar to that of the debt equity ratio.

# Leverage Ratios

## **Equity Multiplier:    Equity Multiplier: Total Assets/Equity**

With debt ratio of 50%,equity will be 0.5 times the total assets and so equity multiplier will become  $2(1/0.5)$ .The interpretation of equity multiplier is the same as that of debt ratio and debt equity ratio.

### **Problem:**

A company has total assets worth 58 lakh. The equity capital including reserves amounts to 28 lakh and debt portion is 30 lakh.

Find Debt Equity ratio and equity multiplier.

# Leverage Ratios

**Interest Coverage Ratio (Times Interest Earned-TIE)** is defined as:

$$\frac{\text{Profit before interest and taxes}}{\text{Interest}}$$

**Horizon's interest coverage ratio for 20X1 is:  $89/21 = 4.23$**

Note that profit before interest and taxes is used in the numerator of this ratio because the ability of a firm to pay interest is not affected by tax payment, as interest on debt funds is a tax-deductible expense.

A high interest coverage ratio means that the firm can easily meet its interest burden even if profit before interest and tax suffers a considerable decline.

# Leverage Ratios

A low interest coverage ratio may result in financial embarrassment when profits before interest and tax declines. This ratio is widely used by lenders to assess a firm's debt capacity. Further, it is a major determinant of bond rating.

Though widely used, this ratio is not a very appropriate measure of interest coverage because the source of interest payment is cash flow before interest and taxes, not profit before interest and taxes. In view of this, we may use a **modified interest coverage ratio:**

$$\frac{\text{Profit before interest and taxes} + \text{Depreciation}}{\text{Debt interest}}$$

Horizon's modified interest coverage ratio for 20X1 is;  $119 / 21 = 5.67$ .

# Leverage Ratios

**Fixed Charges Coverage Ratio:** This ratio shows how many times the cash flow before interest and tax covers all fixed financing charges. It is defined as:

$$\frac{\text{Profit before interest and tax} + \text{Depreciation}}{\text{Interest} + \frac{\text{Repayment of loan}}{1 - \text{Tax rate}}}$$

In the denominator of this ratio only the repayment of loan is adjusted upwards for the tax factor because the loan repayment amount, unlike interest, is not tax deductible. Horizon's tax rate has been assumed to be 50 percent.

**Horizon's fixed charges coverage ratio for 20X1 is:**

$$\frac{119}{21 + \frac{75}{0.50}} = 0.70$$

# Leverage Ratios

This ratio measures debt servicing ability comprehensively because it considers both the interest and the principal repayment obligations. The ratio may be amplified to include other fixed charges like lease payment and preference dividends.

The fixed charge coverage ratio has to be interpreted with care because short-term loan funds like working capital loans and commercial paper tend to be self-renewing in nature and hence do not have to be ordinarily repaid from cash flows generated by operations. Hence, a fixed charge coverage ratio of less than 1 need not be viewed with much concern.

# Leverage Ratios

**Debt Service Coverage Ratio:** Used by financial institutions in India, the debt service coverage ratio (DSCR) is defined as:

$$\frac{\text{Profit after tax} + \text{Depreciation} + \text{Other non-cash charges} + \text{Interest on term loan} + \text{Lease rentals}}{\text{Interest on term loan} + \text{Lease rentals} + \text{Repayment of term loan}}$$

Financial institutions calculate the average DSCR for the period during which the term loan for the project is repayable and regard a **DSCR of 1.5 to 2.0 as satisfactory.**

# Turnover Ratios/Activity Ratios/Efficiency Ratios

Turnover ratios, also referred to as activity ratios or asset management ratios, measure **how efficiently the assets are employed by a firm**. These ratios are based on the relationship between the level of activity, represented by sales or cost of goods sold, and the levels of various assets. The important turnover ratios are:

- ✓ Inventory turnover,
- ✓ Average collection period,
- ✓ Receivables turnover,
- ✓ Fixed assets turnover,
- ✓ Total assets turnover

# Turnover Ratios/Activity Ratios/Efficiency Ratios

**Inventory Turnover or stock turnover**, measures how fast the inventory is moving through the firm and generating sales.

It is defined as:

$$\frac{\text{Cost of good sold}}{\text{Average inventory}}$$

Horizon's inventory turnover for 20X1 is:

$$\frac{552}{(105 + 72)/2} = 6.24$$

The inventory turnover reflects the efficiency of inventory management. The **higher the ratio, the more efficient the management of inventories and vice versa**. However, this may not always be true.

# Turnover Ratios/Activity Ratios/Efficiency Ratios

- ✓ A high inventory turnover may be caused by a low level of inventory which may result in frequent stockouts and loss of sales and customer goodwill.
- ✓ Since inventories tend to change over the year, we use the average of the inventories at the beginning and the end of the year.
- ✓ In general, averages may be used when a flow figure (such as cost of goods sold) is related to a stock figure (such as inventories).

# Turnover Ratios/Activity Ratios/Efficiency Ratios

**Debtors' Turnover:** This ratio shows how many times sundry debtors (accounts receivable) turn over during the year. It is defined as:

$$\frac{\text{Net credit sales}}{\text{Average sundry debtors}}$$

If the figure for net credit sales is not available, one may have to make do with the net sales figure.

**Horizon's debtors' turnover for 20X1 is:  $701 / [(114 + 68) / 2] = 7.70$**

Obviously, the higher the debtors' turnover the greater the efficiency of credit management

# Turnover Ratios/Activity Ratios/Efficiency Ratios

**Average Collection Period** The average collection period represents the number of days' worth of credit sales that is locked in sundry debtors. It is defined as:

$$\frac{\text{Average sundry debtors}}{\text{Average daily credit sales}}$$

If the figure for credit sales is not available, one may have to make do with the net sales figure.

Horizon's average collection period for 20X1 is:

$$[(114 + 68) / 2] \div (701 / 365) = 47.4 \text{ days}$$

Note that the average collection period and the debtors' turnover are related as follows:

$$\text{Average collection period} = \frac{365}{\text{Debtors' turnover}}$$

# Turnover Ratios/Activity Ratios/Efficiency Ratios

- ✓ The average collection period may be compared with the firm's credit terms to judge the efficiency of credit management.
- ✓ For example, if the credit terms are 2/10, net 55, an average collection period of 55 days means that the collection is slow, and an average collection period of 40 days means that the collection is prompt.
- ✓ An average collection period which is shorter than the credit period allowed by the firm needs to be interpreted carefully.
- ✓ It may mean efficiency of credit management or excessive conservatism in credit granting that may result in the loss of some desirable sales.

NOTE: 2/10 net 55 means that if the amount due is paid within 10 days, the customer will enjoy a 2% discount. Otherwise, the amount is due in full within 55 days.

# Turnover Ratios/Activity Ratios/Efficiency Ratios

**Fixed Assets Turnover:** This ratio measures sales per rupee of investment in fixed assets. It is defined as:

$$\frac{\text{Net sales}}{\text{Average net fixed assets}}$$

Horizon's fixed assets turnover ratio for 20X1 is:

$$701 \div [(330 + 322) / 2] = 2.15$$

This ratio is supposed to measure the efficiency with which fixed assets are employed - a high ratio indicates a high degree of efficiency in asset utilisation and a low ratio reflects inefficient use of assets. However, in interpreting this ratio, one caution should be borne in mind. When the fixed assets of the firm are old and substantially depreciated, the fixed assets turnover ratio tends to be high because the denominator of the ratio is very low.

# Turnover Ratios/Activity Ratios/Efficiency Ratios

**Total Assets Turnover:** It is the output-capital ratio in economic analysis, the total assets turnover is defined as:

$$\frac{\text{Net sales}}{\text{Average total assets}}$$

Horizon's total assets turnover ratio for 20X1 is:

$$701 \div [(488 + 412) / 2] = 1.56$$

This ratio measures how efficiently assets are employed, overall.

# Profitability Ratios

Profitability reflects the result of business operations.

There are two types of profitability ratios:

- ✓ Profit margins ratios
- ✓ Rate of return ratios

Profit margin ratios show the relationship between profit and sales. Since profit can be measured at different stages, there are several measures of profit margin.

The most popular profit margin ratios are:

- ✓ Gross profit margin ratio,
- ✓ Operating profit margin ratio,
- ✓ Net profit margin ratio.

# Profitability Ratios

Rate of return ratios reflect the relationship between profit and investment. The important rate of return measures are:

- ✓ Return on assets
- ✓ Earning power
- ✓ Return on capital employed
- ✓ Return on equity.

# Profitability Ratios

## Gross Profit Margin Ratio :

The gross profit margin ratio is defined as:

$$\frac{\text{Gross profit}}{\text{Net sales}}$$

Gross profit is defined as the difference between net sales and cost of goods sold.

Horizon's gross profit margin ratio for 20X1 is:

$$149 / 701 = 0.213 \text{ or } 21.3 \text{ percent}$$

This ratio shows the margin left after meeting manufacturing costs. It measures the efficiency of production as well as pricing. To analyse the factors underlying the variation in gross profit margin the proportion of various elements of cost (labour, materials, and manufacturing overheads) to sales may be studied in detail.

# Profitability Ratios

**Operating Profit Margin Ratio** The operating profit margin ratio is defined as:

$$\frac{\text{Operating profit}}{\text{Net sales}}$$

Horizon's operating profit margin ratio for 20 x 1 is:  $89/701 = 0.127$  or 12.7 percent

This ratio shows the margin left after meeting manufacturing expenses, selling, and administration expenses (SG&A), and depreciation charges.

It reflects the operating efficiency of the firm.

# Profitability Ratios

**Net Profit Margin Ratio** The net profit margin ratio is defined as:

$$\frac{\text{Net profit}}{\text{Net sales}}$$

**Horizon's net profit margin ratio for 20X1 is:  $34 / 701 = 0.049$  or 4.9 percent**

- ✓ This ratio shows the **earnings left for shareholders** (both equity and preference) as a percentage of net sales.
- ✓ It measures the overall efficiency of production, pricing, administration, selling, financing, and tax management.
- ✓ Jointly considered, the gross and net profit margin ratios provide a valuable understanding of the cost and profit structure of the firm and enable the analyst to identify the sources of business efficiency/ inefficiency

# Profitability Ratios

**Return on Assets** The return on assets (**ROA**) is defined as:

$$\text{ROA} = \frac{\text{Profit after tax}}{\text{Average total assets}}$$

Horizon's ROA for 20X1 is:  $34 \div [(412 + 488) / 2] = 7.6 \text{ percent}$

Though widely used, **ROA** is an odd measure because its numerator measures the return to shareholders (equity and preference) whereas its denominator represents the contribution of all investors (shareholders as well as lenders).

# Profitability Ratios

**Earning Power**, The earning power is defined as:

$$\text{Earning power} = \frac{\text{Profit before interest and tax}}{\text{Average total assets}}$$

Horizon's earning power for 20X1 is:  $89 \div [(412 + 488)/2] = 0.198$  or 19.8 percent

Earning power is a measure of business performance which is not affected by interest charges and tax burden. It abstracts away the effect of capital structure and tax factor and focuses on operating performance. Hence it is eminently suited for inter-firm comparison. Further, it is internally consistent. The numerator represents a measure of pre-tax earnings belonging to all sources of finance and the denominator represents total financing.

## Earnings per Share (EPS)

The **earnings per share** (EPS) is calculated by dividing the profit after taxes by the total number of ordinary shares outstanding

$$\text{EPS} = \frac{\text{Profit after tax}}{\text{Number of shares outstanding}}$$

## Dividend per Share (DPS or DIV)

The net profits after taxes belong to shareholders. But the income, which they really receive, is the amount of earnings distributed as cash dividends. Therefore, a large number of present and potential investors may be interested in DPS, rather than EPS. DPS is the earnings distributed to ordinary shareholders divided by the number of ordinary shares outstanding:

$$\text{DPS} = \frac{\text{Earnings paid to shareholders (dividend)}}{\text{Number of ordinary shares outstanding}}$$

# Dividend Pay out Ratio

$$\begin{aligned}\text{Payout ratio} &= \frac{\text{Equity dividends}}{\text{Profit after tax}} \\ &= \frac{\text{Dividends per share}}{\text{Earnings per share}} = \frac{\text{DPS}}{\text{EPS}}\end{aligned}$$

# Profitability Ratios

**Return on Capital Employed (ROCE)** The return on capital employed is defined as:

$$\text{ROCE} = \frac{\text{Profit before interest and tax (1 - Tax rate)}}{\text{Average total assets}}$$

The numerator of this ratio is profit before interest and tax (1-tax rate), is also called net operating profit after tax (NOPAT).

**Horizon's ROCE for 20X1 is:**  $89 (1 - 0.5) \div [(412 + 488) / 2] = 0.099$  or 9.9 percent

ROCE is the post-tax version of earning power. It is also referred to as the **return on invested capital (ROIC)**. It considers the effect of taxation, but not the capital structure. It is internally consistent. Its merit is that it is defined in such a way that it can be compared directly with the post-tax weighted average cost of capital of the firm.

# Profitability Ratios

**Return on Equity** A measure of great interest to equity shareholders, the return on equity (**ROE**) is defined as:

$$\frac{\text{Equity earnings}}{\text{Average equity}}$$

The numerator of this ratio is equal to **profit after tax less preference dividends**. The denominator includes all contributions made by equity shareholders (paid-up capital + reserves and surplus). This ratio is also called the **return on net worth**.

**Horizon's return on equity for 20X1 is:**  $34 \div [(262 + 256) / 2] = 0.131$  or 13.1 per cent

The **return on equity measures the profitability of equity funds invested in the firm**. Because maximizing shareholder wealth is the dominant financial objective, ROE is the most important measure of performance in an accounting sense.

# Profitability Ratios

- ✓ It is influenced by several factors: earning power, debt-equity ratio, average cost of debt funds, and tax rate. ROA and ROE are commonly used measures. Hence these measures may be properly referred to as return on book assets and return on book equity.
- ✓ The historical valuation of assets imparts an upward bias to profitability measures during an inflationary period. This happens because the numerator of these measures represents current values, whereas the denominator represents historical values.

# Valuation Ratios

Valuation ratios (Market ratios) indicate how the equity stock of the company is assessed in the capital market. Since the market value of equity reflects the combined influence of risk and return, valuation ratios are the most comprehensive measures of a firm's performance.

The important valuation ratios are:

- ✓ Yield
- ✓ Price-earnings ratio,
- ✓ Market value to book value ratio
- ✓ q ratio.

# Valuation Ratios

**Yield :** A measure of total return to equity shareholders,

Yield is defined as:

$$\frac{\text{Dividend} + \text{Price change}}{\text{Initial price}}$$

Horizon's yield for 20X1 was:

$$\frac{1.80 + (21.0 - 20.0)}{20.0} = 0.14 \text{ or } 14 \text{ percent}$$

$$1.87 + (21-20)/20 = 0.1435$$

**Yield represents the rate of return actually earned by equity shareholders.** It is compared with the rate of return required by equity shareholders.

**Price-earnings(P/E) Ratio** Perhaps the most popular financial statistic in stock market, the price-earnings ratio is defined as:

$$\frac{\text{Market price per share}}{\text{Earnings per share}}$$

# Valuation Ratios

The market price per share may be the price prevailing on a certain day or the average price over a period. The earnings per share is simply: profit after tax less preference dividend divided by the number of outstanding equity shares.

Horizon' price-earnings ratio at the end of 20X1 is:

$$21.0 / 2.27 = 9.25$$

The price-earnings ratio (or the price-earnings multiple as it is commonly referred to) is a summary measure which primarily reflects the following factors: growth prospects, risk characteristics, shareholder orientation, corporate image, and the degree of liquidity.

# Valuation Ratios

**EV-EBITDA Ratio** A widely used multiple in company valuation, the EV-EBTTDA ratio is defined as:

$$\frac{\text{Enterprise value (EV)}}{\text{Earnings before interest, taxes, depreciation, and amortisation (EBITDA)}}$$

EV is the sum of the market value of equity and the market value of debt. The market value of equity is simply the number of outstanding equity shares times the price per share. As far as debt is concerned, if it is in the form of traded debt securities, its market value can be observed. If the debt is in the form of loans, its market value has to be imputed. Generally, a rupee of loan is deemed to have a rupee of market value.

Horizon's EV-EBITDA ratio for 20X1 is:

$$\frac{15 \times 21 + 212}{119} = 4.43$$

EV-EBTTDA is supposed to reflect profitability, growth, risk, liquidity, and corporate image.

# Valuation Ratios

**Market Value to Book Value Ratio** Another popular stock market statistic, the market value to book value is defined as:

$$\frac{\text{Market value per share}}{\text{Book value per share}}$$

Horizon's market value to book value ratio at the end of 20X1 was:

$$21.00/17.47 = 1.20$$

In a way, this ratio reflects the contribution of a firm to the wealth of society. When this ratio exceeds 1 it means that the firm has contributed to the creation of wealth in the society - if this ratio is, say, 2, the firm has created a wealth of one rupee for every rupee invested in it. When this ratio is equal to 1, it implies that the firm has neither contributed to nor detracted from the wealth of society.

# Valuation Ratios

It may be emphasized here that if the market value to book value ratio is equal to 1, all the three ratios, namely, return on equity, earnings-price ratio and total yield, are equal.

**Q Ratio** Proposed by James Tobin, the q ratio is defined as:

$$\frac{\text{Market value of equity and liabilities}}{\text{Estimated replacement cost of assets}}$$

The q ratio resembles the market value to book value ratio. However, there are two key differences: (i) The numerator of the q ratio represents the market value of equity as well as debt, not just equity, (ii) The denominator of the q ratio represents all assets.

# Working Capital Ratios

Working capital is the outlay needed to carry out the **day to day operations** of the company once the broad fixed assets are in place. Thus, companies have to arrange for funds in respect of cash balance required to carry on operations, the stock of inventory and the amount locked up because customers take sometime to pay after the sale has been made.

**Number of days of inventory:** It shows inventory level in terms of the number of days of sales. At first step calculate daily sales (Annual sales/365) .The inventory is then divided by the daily sales.

**Number of days of Inventory:  $\frac{\text{Inventory}}{\text{Daily sales}}$**

# Working Capital Ratios

**Days sales outstanding (DSO):** With this ratio, companies calculate the number of days of sale that is represented by the receivables that are to be collected.

**Days sales outstanding: Receivables / (Sales/365)**

Companies keep monitoring this regularly. Long delays in the receipts of dues result in loss of interest on working capital and also the risk of the account defaulting(becoming bad debt). It calculates the daily sales first and divides the receivables with this daily sales. **If this number exceeds the number of days stipulated in our invoice of sale as the days allowed for payment, we have reason to be worried.**

A comparison of DSO over the past few years and also with that of the competitors will throw light on the pace of collection and the need for any action to remedy the situation.

# Working Capital Ratios

**Days Payable:** Calculate the number of days of purchases that remain unpaid by us, by using the days payable ratio. This is calculated as:

**Purchases/Daily sales**

The ratio needs to be compared with the contracted days by which we need to make payments against our purchases.

Suppose the average invoice period for our purchases in 30 days and we have the above ratio as 22, then it would suggest that we are paying faster than strictly necessary.

**Exhibit 4.3****Comparison of Ratios of Horizon Limited with Industry Average**

<i>Ratio</i>	<i>Formula</i>	<i>Horizon Limited</i>	<i>Industry average</i>
<b>Liquidity</b>			
■ Current ratio	$\frac{\text{Current assets}}{\text{Current Liabilities}}$	1.32	1.26
■ Acid-test ratio	$\frac{\text{Quick assets}}{\text{Current liabilities}}$	0.73	0.69

Horizon Limited has a favorable liquidity position. All the liquidity ratios of Horizon Limited are higher than the industry average.

**Exhibit 4.3****Comparison of Ratios of Horizon Limited with Industry Average**

<i>Ratio</i>	<i>Formula</i>	<i>Horizon Limited</i>	<i>Industry average</i>
<b>Leverage</b>			
■ Debt-equity ratio	$\frac{\text{Debt}}{\text{Equity}}$	0.81	1.25
■ Debt-ratio	$\frac{\text{Debt}}{\text{Assets}}$	0.45	0.56
■ Interest coverage ratio	$\frac{\text{EBIT}}{\text{Interest}}$	4.23	4.14

Leverage ratios of Horizon Limited are a shade lower than the industry average.

<i>Ratio</i>	<i>Formula</i>	<i>Horizon Limited</i>	<i>Industry average</i>
<b>Turnover</b>			
■ Inventory turnover	$\frac{\text{Net sales}}{\text{Average inventory}}$	6.24	6.43
■ Accounts receivable turnover	$\frac{\text{Net credit sales}}{\text{Average accounts receivable}}$	7.70	7.50
■ Fixed assets turnover	$\frac{\text{Net sales}}{\text{Average net fixed assets}}$	2.15	2.23
■ Total assets turnover	$\frac{\text{Net sales}}{\text{Average total assets}}$	1.56	1.26

Turnover ratios of Horizon Limited are more or less comparable with the industry average.

**Exhibit 4.3****Comparison of Ratios of Horizon Limited with Industry Average**

<b>Ratio</b>	<b>Formula</b>	<b>Horizon Limited</b>	<b>Industry average</b>
<b>Profitability</b>			
■ Gross profit margin ratio	$\frac{\text{Gross profit}}{\text{Net sales}}$	21.3%	18.0%
■ Net profit margin ratio	$\frac{\text{Net profit}}{\text{Net sales}}$	4.9%	4.0%
■ Return on assets	$\frac{\text{Net profit}}{\text{Average total assets}}$	7.6%	6.9%
■ Earning power	$\frac{\text{PBIT}}{\text{Average total assets}}$	19.8%	17.7%
■ Return on capital employed	$\frac{\text{PBIT (1-T)}}{\text{Average total assets}}$	9.9%	8.8%
■ Return on equity	$\frac{\text{Equity earnings}}{\text{Average net worth}}$	13.1%	11.9%

Profit margin ratios of Horizon Limited are somewhat higher than the industry average.

The rate of return measures of Horizon Limited are also higher than the industry average.

<i>Ratio</i>	<i>Formula</i>	<i>Horizon Limited</i>	<i>Industry average</i>
<b>Valuation</b>			
■ Price-earnings ratio	$\frac{\text{Market price per share}}{\text{Earnings per share}}$	9.25	8.26
■ Yield	$\frac{\text{Dividend} + \text{Price change}}{\text{Initial price}}$	14.0%	13.1%
■ Market value to book value ratio	$\frac{\text{Market price per share}}{\text{Book value per share}}$	1.20	1.06

Valuation ratios of Horizon Limited compare slightly favorably in relation to industry average.

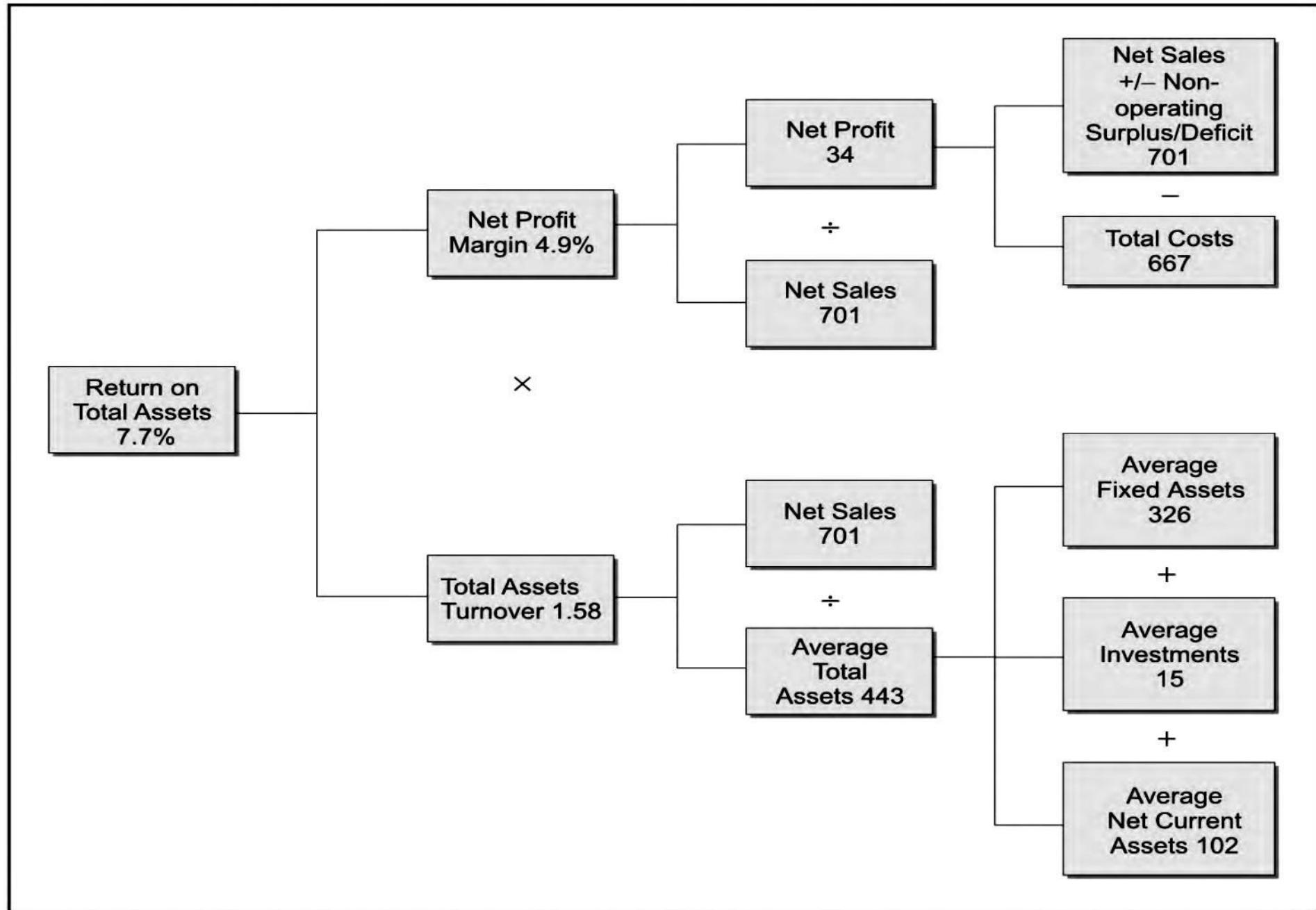
**Exhibit 4.4****Time Series of Certain Financial Ratios**

	1	2	3	4	5
Debt-equity ratio	0.91	0.98	0.65	0.61	0.81
Total asset turnover ratio	1.51	1.59	1.58	1.53	1.56
Net profit margin (%)	8.8	11.6	9.8	6.6	4.9
Return on equity (%)	25.4	30.7	24.5	16.7	13.1
Price-earnings ratio	18.6	15.3	10.3	7.1	9.3

Exhibit 4.4 presents certain selected ratios for Horizon Limited for a period of five years.

- The debt-equity ratio improved for 2 years in succession but deteriorated in the last year.
- The total assets turnover ratio remained more or less the same.
- The net profit margin ratio improved impressively in the second year but subsequently declined somewhat steeply over the remaining three years.
- The return on equity followed the pattern of the net profit margin ratio.
- The price-earnings ratio deteriorated steadily over time except in the last year.

**Exhibit 4.5** DuPont Chart Applied to Horizon Limited



# DuPONT ANALYSIS

- ✓ Such a decomposition helps in understanding how the return on total assets is influenced by the net profit margin and the total assets turnover ratio.
- ✓ The upper side of the DuPont chart shows the details underlying the net profit margin ratio.
- ✓ An examination of this side may indicate areas where cost reductions may be affected to improve the net profit margin.
- ✓ If this is supplemented by comparative common size analysis, it becomes relatively easier to understand where cost control efforts should be directed.

# DuPONT ANALYSIS

- ✓ The lower side of the DuPont chart throws light on the determinants of the total assets turnover ratio.
- ✓ If this is supplemented by a study of component turnover ratios (inventory turnover, debtors' turnover, and fixed assets turnover), a deeper insight can be gained into efficiencies/inefficiencies of asset utilisation.
- ✓ The basic DuPont analysis may be extended to explore the determinants of the return on equity (ROE).

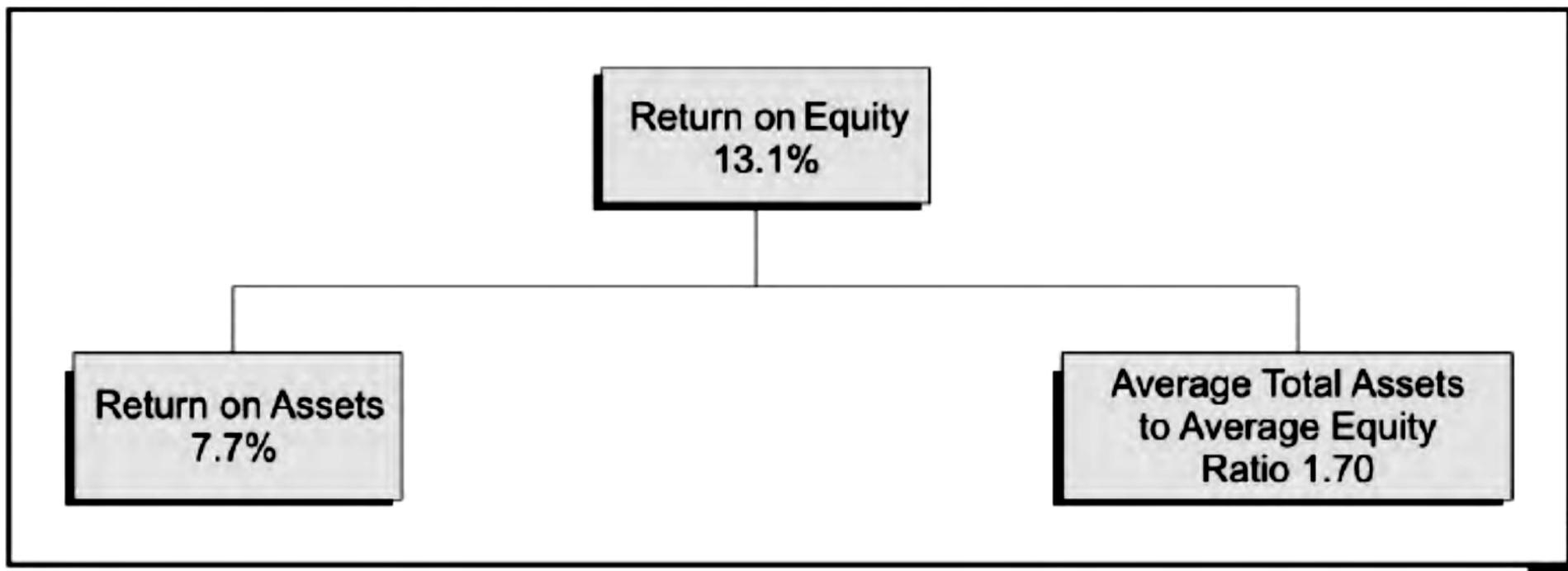
$$\frac{\text{Net profit}}{\text{Average equity}} = \frac{\text{Net profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average equity}} \times \frac{\text{Average equity}}{(1 + \text{Debt/Equity})}$$

Total Assets turn over ratio

# DuPONT ANALYSIS

The extension of DuPont chart as applicable to Horizon Limited is shown in Exhibit 4.6.

**Exhibit 4.6 Extension of DuPont Chart**



# SUMMARY

- ✓ Financial ratio analysis, the principal tool of financial statement analysis, is a study of ratios between items or groups of items in financial statements.
- ✓ Financial ratios may be divided into five broad types: **liquidity ratios**, leverage ratios, turnover ratios, profitability ratios, and valuation ratios.
- ✓ Liquidity refers to the ability of the firm to meet its obligations in the short run, usually one year.
- ✓ Current ratio and acid-test ratio are the important liquidity ratios.
- ✓ Leverage refers to the **use of debt finance**. Debt-equity ratio, interest coverage ratio, and fixed charges coverage ratio are the important leverage ratios.

# SUMMARY

- ✓ Turnover refers to the efficiency of asset use. Inventory turnover ratio, receivables turnover ratio, fixed assets turnover ratio, and total assets turnover ratio are the important turnover ratios.
- ✓ Profitability reflects the final result of business operations. Gross profit margin ratio, net profit margin ratio, return on assets, earning power, return on capital employed, and return on equity are the most important profitability ratios.
- ✓ Valuation refers to the assessment of the firm by the capital market. Price-earnings ratio and market value - book value ratio are the most important valuation ratios.
- ✓ For judging whether the ratios are high or low, cross-section analysis and time-series analysis are used.

# SUMMARY

In common size analysis, the items in the balance sheet are stated as percentages of total assets and the items in the profit and loss account are stated as percentages of sales.

- According to DuPont analysis, return on equity is expressed as a product of net profit margin, total asset turnover, and asset-equity ratio.
- Properly combined, financial ratios may be used to assess corporate excellence, judge creditworthiness, predict bankruptcy, value equity shares, predict bond ratings, and measure market risk.
- While financial statement analysis can be a very useful tool, there are certain problems and issues encountered in such analysis that call for care, circumspection, and judgment.
- Comprehensive business analysis calls for going beyond conventional financial measures to consider qualitative factors relevant for evaluating the performance and prospects of a company.