

Accounting Ratios

→ Ratio is an arithmetical expression of relationship between two independent variables.

→ Ratio, when calculated on the basis of accounting information, are called Accounting Ratios.

• Expression of Ratio

Ratio $\Rightarrow 1\frac{1}{2} \rightarrow 5:1$

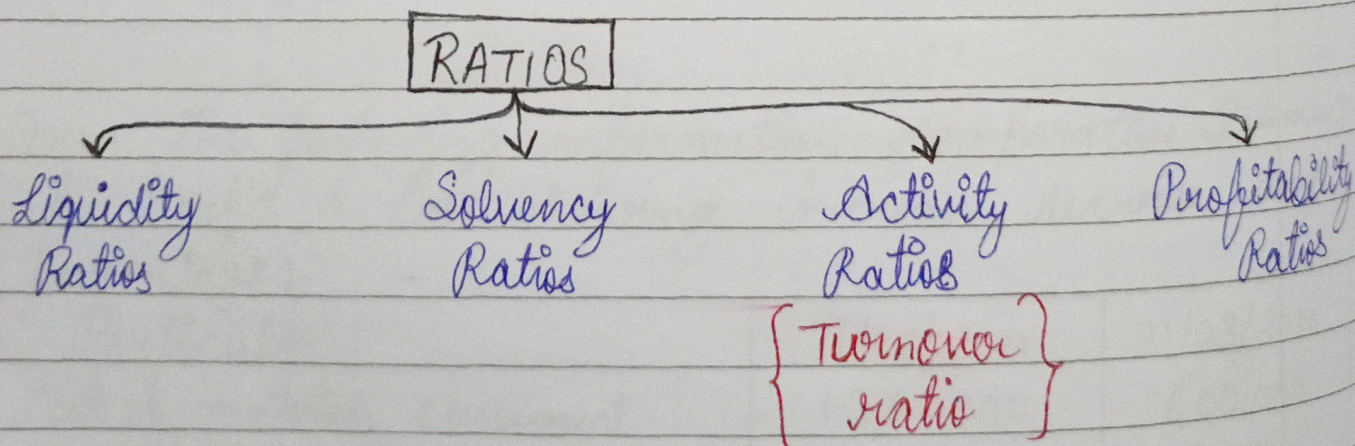
Percentage $\Rightarrow 1\frac{1}{2} \times 100 = 500\%$

Times $\Rightarrow 1\frac{1}{2} = 5 \text{ times}$

Fraction $\Rightarrow \frac{3}{4} \text{ or } 0.75$

• Objectives of Ratio Analysis

- (i) To simplify accounting information.
- (ii) To determine liquidity (short term or long term)
- (iii) To assess the operational efficiency of business.
- (iv) To analyse the profitability of the business.



(A) LIQUIDITY RATIOS

(i) **Current Ratio** =
$$\frac{\text{current assets (पैसा आरकग)}}{\text{current liabilities (पैसा जायगा)}}$$

- It shows the safety margin of current liabilities { it helps in assessing short term solvency }
- It is expressed in **Pure ratio**.
- Ideal ratio is **2:1**.
- While calculating current assets remember:-
 - Exclude loose tools and store & spares in inventories
 - Deduct provision for doubtful debts from sundry debtors.

$$\text{Working capital} = \text{current assets} - \text{current liabilities}$$

(ii) **Liquid ratio / Quick ratio / Acid test ratio.**

$$= \frac{\text{Liquid ratio assets}}{\text{current liabilities}}$$

$$\text{Liquid assets} = \text{current assets} - \text{Inventories} - \text{Prepaid expenses.}$$

{closing}

- It is expressed as **pure ratio**
- Ideal ratio = **1:1**
- It provides a measures of capacity of the business to meet its short term obligations.

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(B) SOLVENCY RATIOS {assess long term solvency}

(i) Debt equity ratio = $\frac{\text{Non-current liabilities}}{\text{shareholder's fund}}$

- It measures the indebtedness of an enterprise and gives an idea to long term lender regarding the extend of security of debt.
- A low debt equity ratio reflects more security.
- It's expressed as pure ratio.
- Ideal ratio = 2:1

(ii) Total assets to debt ratio = $\frac{\text{Total assets}}{\text{Non-current liabilities}}$

It measures the extent of coverage of long term debts by assets.

Higher the ratio, better it is.

It is expressed as pure ratio

~~Total ratio~~

(iii) Proprietary ratio = $\frac{\text{Shareholder's fund}}{\text{Total assets}}$

- It measures the proportion of total assets financed by owners.
- It is expressed in Pure ratio or percentage.
- ~~Total ratio~~
- Higher the ratio, better it is.

(iv) Interest coverage ratio = $\frac{\text{Net profit before interest \& tax}}{\text{Interest on long term debts}}$

- It shows the availability of profits to cover interest on long term debts.
- It is expressed in **TIMES**.
- Higher the ratio, better it is.

* IMPORTANT POINTS

$$\textcircled{i} \text{ Capital employed} = \text{Shareholder fund} + \text{Non-current liabilities}$$

$$\text{OR}$$

$$= \text{Total assets} - \text{current liabilities}$$

$$\textcircled{ii} \text{ Total debt} = \text{Non-current liabilities} + \text{current liabilities}$$

$$\textcircled{iii} \text{ Total assets} = \text{Total debt} + \text{shareholders fund}$$

$$\text{OR}$$

$$= \text{NCL} + \text{CL} + \text{SHF}$$

$$\text{OR}$$

$$= \text{NCA} + \text{CA}$$

Ques1 Working capital ₹ 600000, Total debt ₹ 2700000, Non-current liabilities ₹ 24,00,000. Calculate current ratio.

Ans-

$$\text{Total ~~assets~~ debt} = \text{NCL} + \text{CL}$$

$$2700000 = 2400000 +$$

$$\text{CL} = 300000$$

$$\text{Working capital} = \text{CA} - \text{CL}$$

$$600000 = \text{CA} - 300000$$

$$900000 = \text{CA}$$

$$\text{Current ratio} = \frac{\text{CA}}{\text{CL}} = \frac{900000}{300000} \Rightarrow \boxed{3:1}$$

Ques 2 Current liabilities of a company are ₹ 600000. It's current ratio is 3:1 and liquid ratio is 1:1. Calculate value of inventory.

Ans 1 $CR = \frac{CA}{CL}$ (current assets)
(current liabilities)

$$\frac{3}{1} = \frac{CA}{CL}$$

$$3CL = CA$$

② $\text{Liquid ratio} = \frac{\text{liquid asset}}{\text{current liabilities}}$

$$\frac{1}{1} = \frac{LA}{CL}$$

$$CL = LA$$

$$\begin{aligned} \text{Liquid asset} &= \text{current asset} - \text{inventories} - \text{Prepaid expenses} \\ CL &= 3CL - \text{inventories} - 0 \\ 600000 &= 1800000 - \text{inventories} \end{aligned}$$

$$\boxed{\text{Inventories} = 12,00,000}$$

Ques 3 Current liability of a company are ₹ 1,50,000. It's current ratio is 3:1 and acid test ratio is 1:1. Calculate value of current assets, liquid assets and inventory.

Ans - $\left(\frac{3}{1}\right) CR = \frac{CA}{CL} \Rightarrow 3CL = CA$

$$\begin{aligned} \text{current assets} &\Rightarrow 3 \times 150000 \\ &= \boxed{4,50,000} \end{aligned}$$

$$LR \left(\frac{1}{1}\right) = \frac{LA}{CL} \Rightarrow CL = LA$$

$$\boxed{\text{Liquid asset} = 1,50,000}$$

$$\begin{aligned} \text{LA} &= \text{CA} - \text{inventory} - 0 \\ 150000 &= 450000 - \text{inventory} \end{aligned}$$

$$\boxed{\text{Inventory} = 300000}$$

Ques 4 Capital employed ₹ 800000, shareholder's fund ₹ 200000. Calculate debt to equity ratio.

Ans-

$$\begin{aligned} \text{Capital employed} &= \text{SHF} + \text{NCL} \\ 800000 &= 200000 + \text{NCL} \\ \text{NCL} &= 600000 \end{aligned}$$

$$\begin{aligned} \text{Debt equity ratio} &= \frac{\text{NCL}}{\text{SHF}} \\ &= \frac{600000}{200000} \Rightarrow \boxed{3:1} \end{aligned}$$

Ques 5 Total debt ₹ 15,00,000, current liabilities ₹ 500000, capital employed ₹ 15,00,000. Calculate total assets to debt ratio.

Ans-

$$\begin{aligned} \text{Total debt} &= \text{NCL} + \text{CL} \\ 1500000 &= \text{NCL} + 500000 \\ \boxed{\text{NCL} = 10,00,000} \end{aligned}$$

$$\begin{aligned} \text{Capital employed} &= \text{SHF} + \text{NCL} \\ 1500000 &= \text{SHF} + 10,00,000 \\ \boxed{\text{SHF} = 500000} \end{aligned}$$

$$\begin{aligned} \text{Total asset} &= \text{Total debt} + \text{SHF} \Rightarrow 1500000 + 500000 = 2000000 \\ \text{Total assets to debt ratio} &\Rightarrow \frac{\text{Total assets}}{\text{NCL}} = \frac{20,00,000}{10,00,000} \\ &\Rightarrow \boxed{2:1} \end{aligned}$$

Ques 6

Calculate proprietary ratio

share capital $\rightarrow \text{₹} 300000$

Non-current assets $\rightarrow \text{₹} 1320000$

Reserves & surplus $\rightarrow \text{₹} 180000$

current assets $\rightarrow \text{₹} 600000$

Ans - Proprietary ratio = $\frac{\text{SHF}}{\text{Total assets}}$

$$= \frac{300000 + 180000}{1320000 + 600000}$$

$$= \frac{480000}{1920000} \times 100$$

$$= 25\%$$

Ques 7

Calculate interest coverage ratio

Net profit after interest & tax $\text{₹} 120000$, Rate of income tax 40%, 15% debentures $\text{₹} 100000$, 12% mortgage loan $\text{₹} 100000$.

Ans - Interest coverage ratio = $\frac{\text{Net profit before interest \& tax}}{\text{Interest on long term debt}}$

$$\star \text{ Net profit before tax} = \frac{\text{Net profit after tax}}{100\% - \text{tax \%}}$$

$$= \frac{120000}{100\% - 40\%} = \frac{120000}{60\%}$$

$$= \frac{120000 \times 100}{60}$$

$$= 200000$$

$$\star \text{ Add (+) Interest on long term debt} = 27000$$

$$= 227000$$

Net profit before interest & tax

$$12\% (100000) + 15\% (100000)$$

$$ICR = \frac{227000}{27000} = 8.407$$

$\Rightarrow 8.41 \text{ times}$

Ques 8 From the following, calculate interest coverage ratio:

Net profit after tax ₹ 70,00,000
 6% debentures ₹ 20,00,000
 Tax rate $\rightarrow 30\%$

Ans -

$$\text{Net profit before tax} = \frac{\text{Net profit after tax}}{100\% - \text{tax}\%}$$

$$\Rightarrow \frac{700000}{100\% - 30\%} = \frac{700000}{70\%}$$

$$= \frac{700000 \times 100}{70}$$

$$= 10,00,000$$

Add (+) Interest on long term debts = + 1,20,000
 (6% of 20,00,000)

Net profit before interest & tax 11,20,000

$$ICR = \frac{\text{Net profit before interest \& tax}}{\text{Interest on long term debt}}$$

$$= \frac{11,20,000}{1,20,000}$$

$= 9.33 \text{ times}$

Ques 9 Ratio of current assets ₹ 875000 to current liabilities ₹ 350000 is 2.5:1. The firm wants to maintain current ratio of 2:1 by purchasing goods on credit. Compute amount of goods that should be purchased on credit.

Ans - $\frac{CA}{CL} = \frac{875000}{350000} = 2.5 : 1$

Let amount of goods to be purchased = x

$$\frac{\text{New CA} = 875000 + x}{\text{New CL} = 350000 + x} = \frac{2}{1}$$

$$875000 + x = 700000 + 2x$$

$$x = 175000$$

Ques 10 A firm had current assets of ₹ 500000. It paid current liabilities of ₹ 100000 and the current ratio became 2:1. Determine current liabilities and working capital before and after payment made.

Ans - $CA = ₹ 500,000$

$$\frac{\text{New CA} = 400000}{\text{New CL} = x} = \frac{2}{1}$$

$$\frac{400000}{2} = x$$

$$\text{New CL} = 200000$$

$$CL (\text{before payment}) = 300000$$

$$\begin{aligned} \text{Working capital} &= CA - CL \\ &= 500000 - 300000 \\ &= 200000 \quad \{ \text{Before payment} \} \end{aligned}$$

$$\begin{aligned} WC &= CA - CL \\ &= 400000 - 200000 \\ &= 200000 \quad \{ \text{after payment} \} \end{aligned}$$

③

ACTIVITY RATIO / TURNOVER RATIO

(i)

$$\text{Inventory turnover ratio} = \frac{\text{cost of revenue from operation [cost of goods sold]}}{\text{Average Inventory}}$$

$$\bullet \text{ Cost of RFO} = \frac{\text{RFO}}{[\text{Net sales}]} - \text{gross profit}$$

OR

$$= \frac{\text{RFO} + \text{gross loss}}{\text{OR}}$$

$$= \text{opening inventory} + \text{net purchases} + \text{direct expenses} - \text{closing inventory}$$

OR

$$= \text{cost of material consumed} + \text{purchases} + \text{change in inventory} + \text{direct expenses}$$

↓
{ opening - closing }

$$\bullet \text{ Average Inventory} = \frac{\text{opening inventory} + \text{closing inventory}}{2}$$

→ It determines the ~~to~~ numbers of times inventory is converted into RFO.

→ It is expressed in times.

(ii)

Trade receivables turnover ratio

$$= \frac{\text{Credit revenue from operation [Net credit sales]}}{\text{Average trade receivables}}$$

$$\rightarrow \frac{\text{opening TR} + \text{closing TR}}{2}$$

- It indicates the number of times receivables are turned over and converted into cash.
- Higher ratio indicates speedy collection from trade receivable.
- It is expressed in times.

- Debt collection period = $\frac{12 \text{ months} / 365 \text{ days}}{\text{TR turnover ratio}}$

(iii)

Trade payables turnover ratio

$$= \frac{\text{Net credit purchase}}{\text{Average trade payable}}$$

$$\frac{\text{opening TR} + \text{closing TR}}{2}$$

- It shows number of times on an average, trade payables are settled in an accounting period.
- Higher the ratio, better it is.
- It is expressed in times.

- Average payment period = $\frac{12 \text{ months} / 365 \text{ days}}{\text{TRP turnover ratio}}$

(iv)

Working capital turnover ratio

$$= \frac{\text{RFO}}{\text{working capital}}$$

OR,

$$= \frac{\text{cost of RFO}}{\text{working capital}}$$

- It indicates whether working capital has been efficiently utilised in generating revenue.
- Higher the ratio, better it is.
- It expressed in **times**.

Extra introduce

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Not in
book

Solvency Ratio

① Debt to capital employed ratio

$$= \frac{\text{Non-current liabilities}}{\text{Capital employed}}$$

* Low ratio provides more security to lenders.

Activity Ratio

① Net assets turnover ratio
 {capital employed turnover ratio}

$$= \frac{\text{RFO}}{\text{capital employed}}$$

② Fixed assets turnover ratio

$$= \frac{\text{RFO}}{\text{fixed assets (net)}}$$

* Higher the ratio, better it is.

Ques-1 From the following, calculate inventory turnover ratio:

Opening inventory → ₹ 200000	Closing inventory → ₹ 60000
Purchases → ₹ 460000	Wages → ₹ 30000
Carriage inwards → ₹ 20000	Freight outwards → ₹ 37500

Ans-

$$\text{IVR} = \frac{\text{cost of RFO}}{\text{Average inventory}} \Rightarrow$$

$$\begin{aligned}
 \text{Cost of RFO} &= \text{Opening inventory} + \text{Net purchases} + \text{Direct expenses} - \text{closing inventory} \\
 &= 200000 + 460000 + [20000 + 30000] - 60000 \\
 &= 660000 - 10000 \\
 &= 6,50,000
 \end{aligned}$$

$$\text{Avg. Inventory} = \frac{200000 + 60000}{2} = 130000$$

$$\text{Inventory turnover ratio} \Rightarrow \frac{650000}{130000} = 5 \text{ times}$$

Ques 2 ₹ 300000 is the cost of revenue from operation. Investment Turnover Ratio is 8 times. Inventory in beginning is 2 times more than the inventory in the end. Calculate value of opening & closing Inventories.

Ans- $\text{ITR} = \frac{\text{Cost of RFO}}{\text{Avg. inventories}}$

$$8 = \frac{300000}{\text{Avg. Inventory}}$$

$$\text{Avg. Inventory} = \frac{300000}{8} = 37,500$$

$$\text{Avg. Inventory} = \frac{\text{Opening} + \text{closing}}{2}$$

$$37500 = \frac{3x + x}{2}$$

$$37500 \times 2 = 4x$$

$$\frac{75000}{4} = x$$

$$\boxed{\text{₹} 18,750 = \text{closing inventory}}$$

$$3x = \text{opening}$$

$$3 \times 18750$$

$$\boxed{\text{Opening inventory} = \text{₹} 56,250}$$