

Ratio Analysis -

In continuation of my last class....

let us first recollect the manner in which we can present the financial reports systematically and with more distinct information. Such statements are known as classified financial statement.

INCOME STATEMENT		STATEMENT OF PROPRIETORS' FUND	
	<u>Rs.</u>		<u>Rs.</u>
Sales	XX	Fixed Assets	XX
<u>Less</u> Cost of Goods sold	XX	Working Capital :	
Gross Profit	XX	Current Assets	XX
<u>Less</u> Operating Expenses (including depreciation)	XX	<u>Less</u> Current Liab.	XX
Earnings before Int. & Tax (EBIT)	XX	Capital Employed (CE)	XX
<u>Less</u> : Interest	XX	Non-Trade Investment	XX
EBT	XX	Total	XX
<u>Less</u> : Tax	XX	(-) Long Term Borrowing (LTB)	(-)XX
PAT or EAT	XX	Proprietor's Fund (PF)	XX
		Represented by :	
• Non-operating/other income, if any, to be added after arriving the figure of EBT.		Equal Share Capital	XX
• Cost of Goods sold = Sales – GP		Pref. Share Capital	XX
• GP = NP + Operating exps. Or EBIT + Operating exps.		Reserve & Surplus	XX
		Note: CE ≠ PF; Equality occurs if there is no investment and LTB. * Proprietors' Fund (PF) = Equity = Net worth	

Now let us consider few ratios (Given according to purpose)

For Short term Solvency & Liquidity :

$$1. \quad \text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liab.}} = \frac{CA}{CL}$$

A relatively high value of CR is considered as an indication that the firm is liquid and has the ability to pay its bills; otherwise it is considered that the firm will find difficulty in paying its bills. The CR represents a margin of safety for creditors. But it fails to give a concrete picture of liquidity as it is test of quantity, not quality – it does not measure the quality of assets.

$$2. \quad \text{Quick or Liquid or Acid Test Ratio} = \frac{CA - \text{Stock} - \text{Prepayments}}{CL - \text{Bank O/D}^{**}}$$

Quick ratio is more penetrating test of liquidity than the CR as it measures the quality of assets. To get a fair idea one should compare both Current ratio and Quick ratio.

$$3. \quad \text{Inventory to Working Capital Ratio} = \frac{\text{Inventory}}{\text{Working Capital}}$$

It measures the extent of overstocking, if any.

For Long-term Solvency or Capitalisation :

1. $Debt\ Equity(D/E)\ ratio = \frac{Long\ Term\ Debt}{Equity}$ or $\frac{Total\ Debt}{Equity}$ and, $Debt\ Ratio = \frac{Total\ Debt}{Total\ Assets}$

It shows the extent to which debt financing has been used in the business. A high D/E ratio implies greater risk of long-term solvency and risk of financial breakeven. Again upto a certain level, increase in D/E ratio also increases EPS. Thus, there is a need to strike a proper balance between the use of debt and equity – i.e., a trade-off between return and risk.

2. $proprietary\ ratio = \frac{proprietor's\ Fund}{Total\ Assets}$ and, other variation is, $Asset - proprietorship = \frac{F.A}{P.F}$.

- a modification of the D/E ratio. It shows the extent of fund contributed by the owners towards assets of the business.

3. $Capital\ Gearing\ Ratio = \frac{L.T.Debt + pref.\ Capital}{Equity\ Capital}$, i.e., $\frac{Fixed\ int\ erest\ bearing\ capital}{Other\ Capital}$

It establishes the relationship between fixed interest bearing capital and equity capital. It measures under/over trading on equity.

For managerial efficiency - activity / turnover ratio :

1. $Stock\ Turnover = \frac{Cost\ of\ Goods\ sold}{Stock\ (preferably\ average)}$ or $\frac{Sales}{Stock}$ (in time)

OR $Velocity = \frac{Stock}{Cost\ of\ Good\ sold\ p.m.}$ (in month)

It shows how rapidly the inventory is turning into receivable through sales and indicates the efficiency of the firms' inventory management. Higher ratio is indicative of good inventory management. A low ratio indicates accumulation of obsolete stock and is a threat to the firm's liquidity position.

2. $Debtors\ Turnover = \frac{Credit\ Sales}{Receivable}$ (in times)

OR $Velocity = \frac{Receivable}{Credit\ Sales\ p.m.}$ (in month)

It measures the quality of debtors since it indicates the rapidity or slowness of their collectibility. The shorter the period, the better is the quality of debtors. An excessively long collection period implies a too liberal and inefficient credit & collection performance. This certainly impairs the firm's debt paying capacity.

3. $Creditors\ Turnover = \frac{Credit\ Purchases}{Payables}$ (in times)

OR $Velocity = \frac{Payables}{Credit\ Purchases\ p.m.}$ (in month)

A high ratio indicates that creditors are not paid in time while a low ratio gives an idea that the business is not taking full advantage of credit period allowed by creditors.

4. $Fixed\ Asset\ Turnover = \frac{Cost\ of\ Goods\ Sold}{Fixed\ Assets}$ (in times) OR $\frac{Sales}{Fixed\ Assets}$

It indicates the adequacy of sales in relation to the investment in FA – it measures the efficiency of utilising firm's investment in FA. A high ratio indicates efficient utilisation of FA in generating sales.

5. $Capital\ Employed\ Turnover = \frac{Sales\ or\ COGS}{Capital\ Employed}$ (in times)

This ratio indicates the firm's ability of generating sales per rupee of long term investment. The higher the ratio, the more efficient is the utilisation of owners' and long term creditors' fund.

$$6. \text{ Working Capital Turnover} = \frac{\text{Sales}}{\text{Net Working Capital}} \text{ (in times)}$$

The higher the ratio, the lower is the blockage in Working Capital and the greater are the profits. But a very high ratio indicates overtrading.

A note on above turnover ratios -

Such ratios may be expressed in times and also in days or months. Let us take the example of Debtors Turnover: Let credit sales = Rs.730,000 and Receivables (Debtors+B/R)= Rs.80,000.

Ratios under two approaches are -

a) Debtors turnover (in times) = $730,000/80,000 = 9.125$

b) Debtors turnover (in days) = $80,000 / (730000/365) = 80,000/\text{per day sale Rs.2000} = 40$

From above two ratios, we observe that the first approach indicates rolling, i.e., money locked in debtors are collected 9.125 times a year; while, second approach indicates the period of collection, which is 40 days.

Now, we can calculate one from the other as: Collection period = $365 \text{ days}/9.125 \text{ times} = 40 \text{ days}$

For Profitability :

A. Profitability on turnover -

1. $G.P. \text{ ratio} = \frac{GP}{Sales}$, an indicator of profitability.

It indicates the average spread between the cost of goods sold and the sales revenue. A high GP margin relative to the industry average implies that the firm is able to produce at relatively lower cost and also reflects the efficiency with which management produces each unit of product.

2. $NP \text{ ratio} = \frac{NP}{Sales}$, a measure of the firm's overall ability to turn each rupee of sales into net profit. This ratio is very useful to the proprietor and investors as it indicates overall profitability of the concern.

B. Profitability on Investment -

3. Return on Assets (ROA) = $NP / \text{Total Assets}$, a measure of the profitability of all financial resources invested in the firm's assets or on total funds without any regard to the sources of funds.

4. Return on Capital Employed (ROCE) = $\frac{EBIT}{\text{Capital Employed}}$ OR $\frac{PAT}{CE}$

It is the most important profitability ratio as it reflects the overall efficiency with which capital is used. It indicates how well management has used the funds supplied by outsiders & owners. The higher the ratio, the more efficient the firm in using funds entrusted to it. The ratio should be compared with ratios of similar business/industry average to reveal the relative operating efficiency of the firm.

5. Return on Shareholders Equity (ROSE) = $\frac{PAT}{\text{Shareholders' Equity}}$

This ratio indicates how well the firm has used the resources of the owners. It reflects the extent to which the objective of the owner has been accomplished. This ratio is of great interest to present as well as prospective shareholders and also to management, which has the responsibility to maximising the owners' worth.

Other Misc. ratios :

1. Earnings per share (EPS) = (EAT – Pref. Div.) / No. of Equity Shares.
2. Dividend Per Share (DPS) = Eq. Div. Declared / No. of Equity Shares.
3. Pay out Ratio = DPS/EPS
4. P/E ratio = Market price per share / EPS.
5. Operating Expense ratio = Operating Exps. / Sales.
6. Operation ratio = (Cost of Goods sold + Operating Exps.) / Sales.

In examination, there may be three types of questions –

- 1) To calculate different ratios for purposes mentioned and to comment on those
- 2) To compare the position of a company over a period of two years (say) or of two different companies
- 3) From some given ratios and a few information (in absolute number), classified Income Statement and Balance Sheet are to be prepared. [this part tests your ability to link various items and ratios to find hidden figures]

Few worked out problems

- 1) Calculate the average collection period from following details by adopting 360 days in a year:

Average inventory	Rs. 3,60,000
Receivables	Rs. 2,30,000
Inventory turnover ratio = 6; G.P ratio = 10%, and, Credit sales to Total sales = 80%	

Solution:

- Inventory turnover = Cost of goods sold/Average inventory = 6
 Or, Cost of goods sold = 360,000*6 = Rs.21,60,000
 Add. GP (10/90) [10% on sale means 10/90 of cost] Rs. 2,40,000
 Therefore, Sales Rs. 24,00,000
- Credit sale = 80% of Total sales = 24,00,000*80% = Rs. 19,20,000
- So, Average collection period
 = Receivables / Credit sale per day [credit sale per day = 1920,000/360 = Rs.5,333
 = 230,000/5,333 = **43 days (approx.)**

- 2) If current assets = Rs.1,50,000; current liabilities = Rs 1,29,000 and FA to NW = 0.7, find FA.

Solution:

- Current Assets (CA) – Current Liabilities (CL) = Working Capital (WC) = Rs.21,000
- Now, look at balance sheet position,
 Net worth (NW) + Long-term Loan (LTB) + CL = FA + CA
 Or, NW + LTB = FA + (CA-CL)
Or, NW = FA + WC, in absence of information on LTB, we assume it to be zero['0'].....(i)

$$\text{Or, } \frac{NW}{NW} = \frac{FA}{NW} + \frac{WC}{NW}, \text{ dividing both sides by NW}$$

$$\text{Or, } 1 = 0.7 + \frac{21,000}{NW}; \text{ Or, } NW = 70,000 \text{ and so, } FA = NW * 0.7 = \text{Rs.}49,000$$

Alternatively,

$$\frac{FA}{NW} = 0.7, \text{ or, } \frac{FA}{FA + WC} \text{ [from equation (i)]} = 0.7 \text{ and hence, } FA = \text{Rs.}49,000$$

2A) Suppose in the above problem, Long-term borrowing is given to be Rs.6,000.

In that case the solution will be –

$$NW + LTB = FA + (CA-CL)$$

$$\text{Or, } NW + 6,000 = FA + 21,000$$

$$\text{Or, } NW - FA = 15,000$$

$$\text{Or, } NW - 0.7 NW = 15,000 \text{ [as, } FA/NW = 0.7; FA = 0.7 NW]$$

$$\text{Or, } NW = 15,000/0.3 = \text{Rs.}50,000; \text{ and } FA = 0.7 * 50,000 = \text{Rs.}35,000.$$

[You can also prepare a rough Balance Sheet to have better control over the figures and their relations]

3) You are given the following ratios -

Current ratio 2.5, Liquidity ratio 1.5, Net Working Capital Rs. 3,00,000, Stock Turnover (on cost) 6, Ratio of GP & Sales 20%, Turnover to Fixed Assets (FA)= 2, Average debt collection period 2 mths, FA to Net Worth (NW) = 0.80, Reserve & Surplus to Capital = 0.5.

Draw up the Proprietors' Fund showing details therein.

Solution:

Workings -

Particulars	Amount (Rs.)
• Net working capital (WC) = CA – CL = 300,000, Or, CA = 300,000+CL.....(i)	
• Current ratio = CA/CL = 2.5, Or, CA = 2.5 CL(ii)	
Solving equation (i) and (ii), CL =	
CA = CL*2.5 =	200,000
	500,000
• Liquidity ratio = (CA-Stock)/CL = 1.5, therefore, putting the values of CA and CL, Stock =	200,000
• Stock turnover = CoGS/ Stock = 6; So, CoGS = Stock *6 = Rs. 1200,000	
Add. Gross Profit (12,00,000*20/80) <u>Rs. 300,000</u>	
Sales =	1500,000
• Turnover to FA = 2, Or, FA (Fixed Assets) = Turnover / 2 =	750,000
• From average debt collection period, Debtors = 2 mths credit sales =1500,000*2/12	250,000
• We also get, WC + FA = Capital Employed (CE), or, CE = 300,000+750,000 =	1050,000
• FA to NW = 0.80; Or, NW = FA/0.80 = 750,000/0.8 =	937,500
• As, CE > NW, Long-term borrowing (LTB) = CE – NW = 1050,000 – 937,500	112,500
• Reserves to Capital = 0.5, means Reserve and Capital (making up NW) are in 1:2 So, Reserve = NW * 1/3 =	312,500
And, Capital = NW * 2/3 =	625,000
• CA = Stock + Debtors + Bank; so, we get Bank = CA – (Stock + Debtors) =	50,000

Statement of Proprietors Fund as at

Particulars	Rs.	Rs.
Fixed Assets		750,000
Working Capital:		
Current Assets – Stock	200,000	
Debtors	250,000	
Bank	50,000	
	500,000	
Less. Current Liabilities	200,000	300,000
CAPITAL EMPLOYED		1050,000
Less. Long-term borrowing		112,500
Proprietors' Fund		9,37,500
Represented as:		
Share Capital		625,000
Reserves and Surpluses		312,500
		937,500

4) The following ratio of C Ltd and their corresponding industry average are available:

	<u>C. Ltd</u>	<u>Industry</u>
Current ratio	1.75	2.10
Liquid ratio	0.85	2.25
Stock to Working Capital	25%	20%
Inventory turnover	6.5	8.2
Debt Collection period	35 days	40 days
Return on Assets	9.2%	8.7%
Creditors turnover	3	4

You are required to comment whether the ratios of C.Ltd. are favourable as compared to the industry average.

Solution:

Ratio	Comparative position	Remarks
Current ratio	lower than the average	Unfavourable
Liquid ratio	Lower than the average	Unfavourable
Stock to WC	Higher than the average; means more fund is blocked in inventory	Unfavourable
Inventory Turnover	Less than the average; means taking more time for conversion	Unfavourable
Debt collection period	less than the average; implies receivables are collected early which will block lesser fund	Favourable
Return on Asset	Greater than the average; so earns profit on asset invested at higher rate	Favourable
Creditors Turnover	Lower than the average; implies that the company is paying creditor in $12/3=4$ months and the industry in $12/4=3$ months. So lesser money will be blocked	Favourable