
UNIT 5 TECHNIQUES OF FINANCIAL ANALYSIS

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5.0 OBJECTIVES

The objectives of this unit are to:

- explain the need for analysing financial statements;
- know different methods of analysing the financial statements;
- understand how investors and others examine the performance of the company through ratio analysis;
- explain a few advanced financial analysis models with the help of ratio analysis; and
- caution the users of financial statements for some of the limitations of financial statement analysis.

5.1 INTRODUCTION

In the previous units you would have been familiarised by many terms like what is a firm, an entity, profit, loss, balance sheet, profit and loss account etc. You would have seen that any business unit contains three major activities – namely; operating, financing, and investing. All the three activities transactions are contained in three major financial statements namely, the Balance Sheet, the Profit and Loss Account, and the Cash Flow Statement. While the Balance Sheet reveals the statement of wealth at any given point of time, Profit and Loss Account reveals the income earned and expenses incurred during the financial year. Cash Flow Statement reflects the cash inflow or outflow of the above three major activities mentioned.

Most small investors like you invest in shares of varied companies with minimum knowledge on the company itself. However, in most cases it so happens that the small investors who do not understand much about the financial reports take the help of the mutual funds. You would be reading more about mutual funds in some other course. To familiarise you with the term, mutual funds are trusts or entities managed by investment trusts and registered under the Trust Act. They pool the money of the small investor and do the investment in shares and debentures or bonds on behalf of them. Most often than not, the mutual funds give better returns to the individual and small investors in comparison to the returns they would have earned had they invested by themselves. This is because the mutual funds are specialists in investing and gain significant experience and expertise in investing as against the naive investors. The main reason being investors often do not find the time to analyse and evaluate the financial credence of the company. This requires a basic understanding of the financial statements disclosed by the company. Hence, a layman who wishes to invest in companies or prefer to have any sort of dealings with the company has to perform an analysis of the financial statements. This holds good for any stakeholder of the company, be it the employee, or the shareholder, or the supplier, the Government, the Tax authorities, the bankers and lenders etc. The lending institutions need to analyse the financial statements to make sure the company would be able to repay the loans. Similarly, the shareholder would like to analyse the financial statements to find out the prospects of the company and whether it would pay sufficient returns for the money invested. The Government would also be interested in analyzing the financial statements of the company to check whether the company is performing well like the other companies in the same industry or whether it is functioning as a sick company. Hence the details taken out of the financial statement analysis differs based on who analyse the financial statements. Given the various objective of financial statement analysis lets move on to find out how exactly financial statement analysis is performed.

Check Your Progress A

- 1) Who and why would any one perform financial statement analysis?
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- 2) Being an employee of your company, would you be interested in the analysis of the financial statements of your company? If yes, why and what would be analysing?
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5.2 TECHNIQUES OF FINANCIAL ANALYSIS

Investors buy shares based on all kinds of information about a company. For example, it may be that a particular firm has invented a new drug, or is a takeover candidate, or has started exports to a boom region of the world or has discovered new seams of gold. Any of these factors may be sufficient to give the shares a big short-term boost.

But, despite all this, it is important to realise that profits are the key to a company's long-term performance. Without profits a company cannot invest in growth, cannot repay loans and cannot pay dividends. Eventually, its very survival may be in doubt. And so most analysis is directed towards understanding the company's profits.

Financial analysis is done to try and predict the future performance of a company. This of course has some limits. This is because your analysis will essentially be of historical figures; yet you are trying to forecast the future. However, there are experts who use technical analysis to predict the future stock prices using historical data, where mostly the reality is not predicted. Also, you would have noticed that analysis by some of the world's top economists was unable to predict the recent Asian economic implosion. So you should be aware of the fact that there are some pretty important limitations to what you can expect from financial analysis.

Apart from this, it's highly important to check whether the company is operating efficiently. In the sense that it does not suffice by investing in the growth. It is equally important that the company operates efficiently in comparison to its competitors.

It is also necessary to analyse the debt levels and how these may affect the company's performance. When interest rates are low it can make good strategic sense for a company to borrow heavily in order to invest for growth. But once interest rates start heading up again it may be that the company's profits come under threat, and it is important to gauge its ability to repay its loans.

So mostly financial analysis would be directed towards three major areas—Profitability, Productivity and Risk (determined by leverage or debt equity mix).

In order to perform the analysis, we need to do some sort of comparison. Generally the comparison done could be of the following types : 1) Comparing the performance of the interested company with the competitors, 2) Comparison with the benchmark (either the competitor or some other benchmark company, 3) Comparison with the industry averages, and 4) Comparing the performance of the company over the years. Second and third type of comparison is called *cross section analysis* and fourth type of comparison is called *time series analysis*.

Hence this sort of analysis requires some organized techniques such as:

- 1) Common size statement analysis
- 2) Ratio analysis
- 3) Comparative Statement Analysis (Cross Section analysis)
- 4) Trend Analysis (Time Series analysis)
- 5) Du Pont Analysis (Structured Ratio Analysis).

All the above are widely used techniques by experts across the world. You will be learning the above techniques in detail in the coming sections.

Check Your Progress B

- 1) List out the different techniques of performing financial analysis?
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- 2) List out the major components that you would concentrate while analysing the financial statements.
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- 3) Suppose if you are interested in investing in any of the software company. How would you decide which company to invest in the software industry. List some of the factors that you would analyse and the procedure of analysis.
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5.3 COMMON SIZE STATEMENTS

When comparing your company with industry figures, make sure that the financial data for each company reflect comparable price levels, and that it was developed using comparable accounting methods, classification procedures, and valuation bases.

Such comparisons should be limited to companies engaged in similar business activities. When the financial policies of two companies differ, these differences should be recognized in the evaluation of comparative reports. For example, one company leases its properties while the other purchases such items; one company finances its operations using long-term borrowing while the other relies primarily on funds supplied by shareholders and by ploughing back the earnings. Financial statements for two companies under these circumstances are not wholly comparable.

Hence, you require some comparable basis to overcome this problem. Hence we use common size statement. Common Size Statement represents a financial statement that displays all items as a percentage of a common base figure. Such a statement may be useful for noting changes in the relative size of the various elements.

In other words, it is a statement in which all items are expressed as a percentage of a Base figure, which is used for analyzing trends and changing relationship among Financial statement items. For example, all items in each year’s income statement could be presented as a percentage of Net sales. This technique is quite useful when you are comparing your business to other businesses or to averages from an entire industry, because differences in size are neutralized by reducing all figures to common-size ratios. Industry statistics are frequently published in common-size form.

When performing a ratio analysis (you would be learning in detail about this in the next section) of financial statements, it is often helpful to adjust the figures to common-size numbers. To do this, one has to change each line item on a statement to a percentage of the total. For example, on a balance sheet, each figure is shown as a percentage of total assets, and on an income statement, each item is expressed as a percentage of sales.

Hypothetical Common-Size Income Statement

	2003	2002	2001
Sales	100%	100%	100%
Cost of Sales	65%	68%	70%
Gross Profit	35%	32%	30%
Expenses	27%	27%	26%
Taxes	2%	1%	1%
Profit	6%	4%	3%

The following gives the common size financial statements of ABC Industries Ltd.

Common Size balance Sheet Ratios of ABC Industries Ltd.

Year	2003-04	2002-03	2001-02	2000-01	1999-2000
SOURCES OF FUNDS :					
Share Capital	2.78	2.27	4.23	5.28	5.15
Reserves and Surplus	57.80	56.99	55.07	49.55	48.51
Total Shareholders Funds	60.59	59.26	59.30	54.83	53.65
Secured Loans	23.49	30.54	16.34	23.48	23.76
Unsecured Loans	15.92	10.20	24.37	21.69	22.59
Total Debt	39.41	40.74	40.70	45.17	46.35
Total Liabilities	100.00	100.00	100.00	100.00	100.00
APPLICATION OF FUNDS :					
Gross Block	100.84	100.57	101.83	95.40	80.90
Less: Accum. Depreciation	36.82	32.45	47.55	36.13	29.03
Net Block	64.01	68.12	54.27	59.27	51.87
Capital Work in Progress	3.98	3.30	2.06	1.30	14.91
Investments	13.41	8.29	27.01	23.79	18.63
CURRENT ASSETS, LOANS AND ADVANCES :					
Inventories	14.98	10.71	9.24	7.15	6.11
Sundry Debtors	5.94	5.86	4.55	3.30	1.98
Cash and Bank Balance	0.29	3.79	0.40	4.24	21.24
Loans and Advances	25.07	22.00	22.44	16.10	7.38
Less: Current Liab. and Prov.					
Current Liabilities	24.83	19.60	16.51	12.61	19.77
Provisions	2.94	2.61	3.47	2.55	2.36
Net Current Assets	18.50	20.16	16.66	15.64	14.59
Miscellaneous Expenses not w/o	0.09	0.14	0.00	0.00	0.00
Total Assets	100.00	100.00	100.00	100.00	100.00

Note : All items under the 'Use of Funds' side have been presented as a percentage of Total Assets and all items under the 'Sources of Funds' are presented as a percentage of Total liabilities.

Common Size Ratios of Income Statement of ABC Industries Ltd.

Year	2003-04	2002-03	2001-02	2000-01	1999-2000
Income :					
Sales Turnover	100.00	100.00	100.00	100.00	100.00
Other Income	2.37	2.64	4.27	6.16	5.92
Stock Adjustments	4.86	-2.00	1.38	2.17	-1.43
Total Income	107.23	100.64	105.65	108.33	104.49
Expenditure :					
Raw Materials	68.42	62.08	53.71	44.98	32.01
Excise Duty	8.77	7.23	11.21	15.47	18.16
Power and Fuel Cost	1.44	1.63	4.29	2.77	2.54
Other Manufacturing Expenses	2.97	3.22	4.54	6.85	9.73
Employee Cost	1.23	1.18	1.80	2.26	3.32
Selling and Administration Expenses	4.99	4.19	5.10	4.72	5.90
Miscellaneous Expenses	0.72	1.15	0.86	1.34	1.70
Less: Preoperative Expenditure Capitalised	0.01	0.00	0.01	0.02	0.11
Profit before Interest, Depreciation and Tax	18.70	19.98	24.16	29.95	31.23
Interest and Financial Charges	3.10	4.02	5.28	6.36	6.86
Profit before Depreciation and Tax	15.59	15.96	18.87	23.59	24.37
Depreciation	5.66	6.20	6.80	8.07	8.05
Profit Before Tax	9.93	9.75	12.08	15.52	16.32
Tax	1.74	2.61	0.59	0.36	0.28
Profit After Tax	8.19	7.14	11.49	15.17	16.04
Adjustment below Net Profit	0.00	0.01	0.00	0.00	0.00
P & L Balance brought forward	5.44	4.76	7.56	7.15	9.86
Appropriations	6.96	5.91	9.66	11.34	15.24
P & L Bal. carried down	6.67	6.00	9.38	10.98	10.66
Equity Dividend	1.39	1.46	1.95	2.43	3.30
Preference Dividend	0.04	0.00	0.02	0.22	0.22
Corporate Dividend Tax	0.18	0.00	0.20	0.29	0.38
Equity Dividend (%)	0.10	0.10	0.18	0.25	0.35
Earning Per Share (Rs.)	0.06	0.07	0.11	0.14	0.17
Book Value	0.40	0.52	0.49	0.65	0.94
Extraordinary Items	0.01	0.70	0.05	0.32	0.06

Note : All figures are expressed as a percentage of sales.

Vertical analysis is the computation of percentages, ratios, turnovers, and other measures of financial position and operating results for one fiscal period. When these figures are compared with those from other periods, it becomes horizontal analysis. For instance if you would have done the above conversion into percentages for ABC industries for only year 2003 then it would have been Vertical analysis. But what has been presented to you is the Horizontal Analysis of the common size financial statements.

Activity 3

- 1) Visit any company’s website and download the annual report. Prepare common size statement for two year period and write down your understanding.

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- 2) What do you think is the purpose for the Common Size Financial Statement?

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- 3) Take any software firm and a manufacturing firm and perform common size financial statement. Examine the difference and explain why they are different.

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5.4 COMPARATIVE STATEMENTS

When you first look at a company’s current financial figures it can be quite overwhelming and, more often than not, a little confusing. But, if you were to compare that data to that of the business’s historical performance, it becomes significantly more meaningful. Hence it would make more sense to compare the company’s current financial numbers with monthly, quarterly, or annual data from previous fiscal years. In this process you should notice some trends that will help you map out the future of your business.

This is done the same way common size financial statement is done but a little differently. A hypothetical example would help you understand the importance of the same. The following example gives the comparative financial statements of a hypothetical XYZ company. Despite calculating the percentage for each of the year that is the vertical analysis, the horizontal analysis has also been performed in the sense that the conversion is done over the years. This facilitates in comparing the performance over the year but also with the industry average. The industry average has also been given for the XYZ Company.

XYZ Company
Comparative Income Statement
for Fiscal Years Ended December

(Rs. in Thousands)

	Audited 1999		Audited 2000		Audited 2001		Audited 2002		Audited 2003		Industry Average	
	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%
Sales	33,013.0	100.0	33,395.0	100.0	37,021.0	100.0	40,733.0	100.0	43,412.0	100.0	43,412.0	100.0
Cost of Sales	19,305.0	58.5	19,891.0	59.6	21,836.0	59.0	23,779.0	58.4	27,142.0	62.5	27,142.0	62.5
Gross Profit	13,708.0	41.5	13,504.0	40.4	15,185.0	41.0	16,954.0	41.6	16,270.0	37.5	16,270.0	37.5
Operating Expenses	12,875.0	39.0	12,516.0	37.5	13,728.0	37.1	15,657.0	38.4	15,862.0	36.5	15,862.0	36.5
Operating Profit	833.0	2.5		2.9	1,457.0	3.9	1,297.0	3.2	408.0	1.0	408.0	1.0
Interest Expense	726.0	2.2	647.0	1.9	522.0	1.4	526.0	1.3	566.0	1.3	566.0	1.3
Other Income	83.0	0.3	373.0	1.1	33.0	0.1	30.0	0.1	189.0	0.4	189.0	0.4
Pre-Tax Profit	190.0	0.6	714.0	2.1	968.0	2.6	801.0	2.0	31.0	0.1	31.0	0.1
Taxes	151.0	0.5	226.0	0.7	27.0	0.1	21.0	0.1	2.0	0.0	2.0	0.0
Net Profit	39.0	0.1		1.4	941.0	2.5	780.0	1.9	29.0	0.1	29.0	0.1
Depreciation	769.0	2.3		2.1	612.0	1.7	540.0	1.3	520.0	1.2	520.0	1.2
Sales to Assets	2.4		3.0		3.2		3.3		3.2		3.2	
% Return on Assets (Before Tax)	1.4		6.5		8.3		6.5		0.2		0.2	3.4
% Return on Equity (Before Tax)	12.1		38.5		39.8		24.7		1.2		1.2	13.7
Pre-Tax Interest Cover	1.3		2.1		2.9		2.5		1.1		1.1	

XYZ Company
Comparative Balance Sheet
for Fiscal Years Ended December.....

	Audited 1999		Audited 2000		Audited 2001		Audited 2002		Audited 2003		Industry Average
	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
Assets											
Cash	733.0	6.4	600.0	6.6	494.0	5.1	180.0	1.7	232.0	2.0	6.8
Other Current	727.0	6.3	499.0	5.5	712.0	7.3	724.0	7.0	888.0	7.8	2.5
Accounts Receivable	2,789.0	24.2	2,186.0	24.1	2,137.0	22.0	2,155.0	20.9	2,220.0	19.4	17.2
Inventories	4,949.0	42.9	4,027.0	44.4	4,778.0	49.1	5,795.0	56.2	5,909.0	51.7	40.3
Total Current Assets	9,198.0	79.8	7,312.0	80.6	8,121.0	83.5	8,854.0	85.8	9,249.0	80.9	66.8
Net Fixed Assets	1,875.0	16.3	1,401.0	15.4	1,319.0	13.6	1,280.0	12.4	2,070.0	18.1	25.9
Other Assets	0.0	0.0	0.0	0.0	97.0	1.0	74.0	0.7	0.0	0.0	7.0
Notes Receivable	90.0	0.8	82.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Intangibles	363.0	3.1	278.0	3.1	193.0	2.0	107.0	1.0	116.0	1.0	
Total Assets	11,526.0	100.0	9,073.0	100.1	9,730.0	100.1	10,315.0	99.8	11,435.0	99.9	100.0
Total Liabilities and Equity											
Other Current Liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Notes Payable	2,500.0	21.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
Current Maturities	999.0	8.7	294.0	3.2	304.0	3.1	265.0	2.6	99.0	0.9	2.0
Accounts Payable	1,313.0	11.4	992.0	10.9	1,182.0	12.1	1,751.0	17.0	922.0	8.1	15.8
Accrued Expenses	1,300.0	11.3	1,179.0	13.0	1,221.0	12.5	1,158.0	11.2	1,646.0	14.4	
Taxes Payable	410.0	3.6	594.0	6.5	377.0	3.9	507.0	4.9	0.0	0.0	
Notes Payable-Officer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Current Liabilities	6,522.0	56.7	3,059.0	33.6	3,084.0	31.6	3,681.0	35.7	2,667.0	23.4	35.5
Long-Term Debt	3,174.0	27.5	3,902.0	43.0	4,082.0	42.0	3,392.0	32.9	6,261.0	54.8	20.2
Subord. Long-Term Debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Deferred Taxes	257.0	2.2	257.0	2.8	129.0	1.3	0.0	0.0	0.0	0.0	
Total Liabilities	9,953.0	86.4	7,218.0	79.4	7,295.0	74.9	7,073.0	68.6	8,928.0	78.2	55.7
Equity	1,573.0	13.6	1,855.0	20.4	2,435.0	25.0	3,242.0	31.4	2,507.0	21.9	39.5
Total Liab. & Equity	11,526.0	100.0	9,073.0	99.8	9,730.0	99.9	10,315.0	99.9	11,435.0	100.0	100.0
Working Capital	2,676.0	23.2	4,253.0	46.9	5,037.0	51.8	5,173.0	50.2	6,582.0	57.6	
Retained Earnings	39.0	0.3	488.0	39.0	941.0	9.7	780.0	7.6	(764.0)	(6.7)	
Current Ratio	1.4		2.4		2.6		2.4		3.5		2.0
Quick Ratio	0.7		1.1		1.1		0.8		1.3		0.7
Debt to Worth	6.3		3.9		3.0		2.2		3.6		1.6

Activity 1

- 1) Carefully read the comparative income statement of XYZ and write down how the company has performed over the 5 year period and also its performance in comparison to the industry.

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- 2) Visit any company’s website and download their income statement for 5 year period. Perform horizontal analysis. Collect the industry average for the company and list down the performance of the company with respect to the industry average.

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- 3) List down the usefulness of the comparative financial statements.

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5.5 TREND ANALYSIS

The earlier sections had exposed you to analyzing statements using horizontal and vertical form as well as using the common size financial statements in the comparative form. The horizontal analysis performed there, comparing the performance of the XYZ company over the five year period indicates the time series analysis or rather trend analysis. This is called as trend analysis because we are trying to see if there is a pattern in the performance of the company over the year which could help us forecast the performance of the company for the future. Why this is useful? Its utmost useful because we are not only interested in the past performance whereas our utmost interest lies in finding whether the company will continue to perform the same way or in a better way in the coming years. Similar analysis is done for investing in stocks. There are experts in Technical Analysis who perform similar analysis of analyzing the trend of the price movement of the stock and predicting the future stock price. Similar analysis is done here as well. But how and where can we use the trend analysis of the financial statements?

Trend analysis is a key to recognizing potential problems of a borrower. This is important during the initial review of a loan application, as well as part of on-going monitoring of a loan that has already been disbursed. Sound companies and weak ones may have displayed some of the same trends, however, it is a pattern of many negative trends that indicates a potential problem that needs to be evaluated further.

Trend analysis involves spreading the financial statements and comparing similar operating periods (i.e. year to year). This comparative analysis allows the reviewer to identify both positive and negative trends. Once a pattern of negative trends are identified further action should be taken. For a potential loan, additional information or a detailed explanation should be obtained. The trends should be weighed carefully in making or rejecting the loan. For loans that have already been made, a

pattern of negative trends requires fast action. Current financial information may indicate a problem that will enable the reviewer time to react. The following is a general discussion of some trends to look for in the review of financial statements:

- 1) **Decreasing cash position:** This could be a lower level of cash or cash as a percentage of total assets. Look for changes in deposit activity, draws on uncollected funds, declining average monthly balances, etc.
- 2) **Slowdown in receivables collection:** Could be an indication of distractions in the business, neglect, changes in collection policies, etc.
- 3) **Significant increases in accounts receivable:** This could be in the dollar amount, percentage of assets or in accounts receivable to a single customer (need aging of accounts receivable to determine).
- 4) **Rising inventories:** Either in the dollar amount or as a percentage of total assets. This may be an indication of a need to liquidate excessive or obsolete inventory, lack of attention to purchasing, slowing of sales, etc.
- 5) **Slowdown in inventory turnover:** This could indicate a slowdown in sales, overbuying, production problems, and/or problems in the purchasing policies of the business.
- 6) **Changes in sales terms/sales policies:** Look for changes from cash sales to instalment sales, leasing instead of selling, and other similar changes.
- 7) **A decline in liquid assets:** This could be a dollar decline or a decline in current assets (cash, accounts receivable, etc.) to total assets. As current assets decline or become less liquid, a business may experience difficulties meeting current liabilities.
- 8) **Changes in the concentration of fixed assets:** Both declining and rising concentrations of fixed assets should be reviewed. A decline could indicate that funds needed to purchase fixed assets are being used for other purposes. This can be a significant problem if a business is not replacing, renovating or rehabilitating fixed assets as needed. A rise in fixed assets could be a problem when done at the expense of other assets/operational need. Levels of fixed assets should be compared to both historical financial statements and industry averages.
- 9) **Revaluation of assets:** A revaluation of assets on the financial statements needs to be justified. If not justified, it impacts the financial picture of the company.
- 10) **Changes in liens of assets:** Evidence of new subordinated debt should be a concern. It could indicate a deteriorating financial situation.
- 11) **A high or increasing concentration of assets in intangibles:** The value of intangible assets is difficult to establish. Typically, intangible assets are eliminated from the financial review.
- 12) **Increases in current debt:** A rise that is tied to a concentration in trade debt or no corresponding increase in assets should be viewed as a risk factor. Increases in long-term debt: Increases in long term debt must be reviewed carefully. If repayment is dependent on higher than historical or reasonable projected sales, a concern should be raised.
- 13) **An increase or major gap between gross and net sales:** result or lower quality, production problems, out-of-date product lines and other related production and/or market factors.

- 14) **An increase in debt to capital:** This is of particular concern when the current ratio is low. Undercapitalized firms will typically exhibit poor working capital conditions.
- 15) **Increase in cost of goods sold:** An increase may indicate problems in the operation or other expense areas.
- 16) **Decline in profits compared to sales:** The decline may be a result of poor cost controls, management problems, failure to pass on increases in costs, etc.
- 17) **Increases in bad debt:** An increase as a percentage of sales usually indicates poor collection procedures, management problems and/or deterioration of the quality of the customer.
- 18) **Assets rising faster than sales:** This is an indication that increased assets are not creating increases in sales.
- 19) **Assets rising faster than profits:** Assets are investments designed to create profits. Concerns should be raised when increased assets are not resulting in higher profits.
- 20) **Significant variations in other areas of the financial statements:** Marked changes should always be examined!
- 21) **An increase or major gap between gross and net sales:** Result of lower quality, production problems, out-of-date product lines and other related production and/or market factors.
- 22) **An increase in debt to capital:** This is of particular concern when the current ratio is low. Undercapitalized firms will typically exhibit poor working capital conditions.
- 23) **Increase in cost of goods sold:** An increase may indicate problems in the operation or other expense areas.
- 24) **Decline in profits compared to sales:** The decline may be a result of poor cost controls, management problems, failure to pass on increase in costs, etc.
- 25) **Increases in bad debt:** An increase as a percentage of sales usually indicates poor collection procedures, management problems and/or deterioration of the quality of the customer.
- 26) **Assets rising faster than sales:** This is an indication that increased assets are not creating increases in sales.
- 27) **Assets rising faster than profits:** Assets are investments designed to create profits. Concerns should be raised when increased assets are not resulting in higher profits.
- 28) **Significant variations in other areas of the financial statements:** Marked changes should always be examined!

Apart from the above analysis one could adopt a simpler form of performing trend analysis. This is done by performing what is called as the Index Number Trend analysis.

Index-Number Trend Series

If you are trying to analyze financial data that span a long period of time, mechanically trying to compare financial statements can turn into quite a cumbersome task. If you find yourself in this boat, try to create an index-number trend series to alleviate some of your confusion.

First, choose a base year to which all other financial data will be compared. Usually, the base year is the earliest year in the group being analyzed, or it can be another year you consider particularly appropriate.

Next, express all base year amounts as 100 percent. Then state corresponding figures from following years as a percentage of the base year amounts. Keep in mind that index-numbers can be computed only when amounts are positive.

Hypothetical Example

	2001	2002	2003
Sales	100,000	150,000	175,000
Index-Number Trend	100%	150%	175%

The index-number trend series technique is a type of horizontal analysis that can provide you with a long range view of your firm's financial position, earnings, and cash flow. It is important to remember, however, that long-range trend series are particularly sensitive to changing price levels. For instance, the price level could increase to greater extent for some years. A horizontal analysis that ignored such a significant change might suggest that your sales or net income increased dramatically during the period when, in fact, little or no real growth occurred.

Data expressed in terms of a base year can be very useful when comparing your company's figures to those from government agencies and sources within your industry or the business world in general, because they will often use an index-number trend series as well. When making comparisons, be sure the samples you use are in the same base period. If they aren't, simply change one so they match.

5.6 RATIO ANALYSIS

We have seen that most of us are interested in the bottom line of the company. Or in other words analysing the profitability of a company. While the profit figure is important, it however, does not give the complete picture of the performance of the company. So one should not use the bottom line figure alone as a barometer for some sort of an indicator. That would have severe repercussions. Take for instance two companies A and B of the same industry. A has earned a profit of Rs. 100 Crs. And B has earned Rs. 1000 Crs. for the financial year 2003. Now one would on the face of it say that Company B is better than company A. However, if it should be wise enough to compare the profit earned with the level of investment made to earn the profit. For instance, company A had spent about 500 Crs to earn Rs 100 Cr. Profit and Company B had spent about Rs. 1000 Cr. to earn Rs. 1000 Cr. profit. So its clear that profitability of company A is higher than company B. In that the profit earned to the investment ratio is higher for company A ($100/500 = 20\%$) compared to company B ($1000/10000 = 10\%$). Hence one should look at profitability and not just profit figures. So the key point is that one has to look into appropriate ratios not just absolute figures for comparison. Hence ratio analysis would help understand the financial results better.

This often means working out a range of ratios. By doing so, a large amount of complex information can be condensed into easily digestible and standardized form, and numerous comparisons between different years for a single company, between companies of varying sizes or between industries can be made. (Note that a ratio in isolation generally has little meaning).

And it is important to note that ratios are just signals, or clues, rather than the answers to complex questions about a company. Some might direct you to a

specific problem within the company, but many tell you no more than that something needs further investigation.

A ratio can be expressed in various ways, including as a percentage, a fraction, a “times” figure, a number of days, a rate or as a simple number.

The various ratios that are generally used have been summarized below.

5.6.1 Liquidity Analysis Ratios

A firm needs liquid assets to meet day to day payments. Therefore, liquidity ratios highlight the ability of the firms to convert its assets into cash. If the ratios are low then it means that money is tied up in stocks and debtors. Thus, money is not available to make payments. This may cause considerable problems for firms in the short run. It is often viewed that a value less than 1.5 implies that the company may run out of money as its cash is tied up in unproductive assets.

Liquidity ratio helps in assessing the firm’s ability to meet its current obligations. The following ratios come under this category:

- i) Current ratio;
- ii) Quick ratio; and
- iii) Net Working Capital Ratio.

i) Current Ratio

The current ratio shows the relationship between the current assets and the current liabilities. Current assets include cash in hand, cash at bank and all other assets which can be converted into cash in the ordinary course of business, for instance, bills receivable, sundry debtors (good debts only), short-term investments, stock etc. Current liabilities consists of all the obligations of payments that have to be met within a year. They comprise sundry creditors, bills payable, income received in advance, outstanding expenses, bank overdraft, short-term borrowings, provision for taxation, dividends payable, long term liabilities to be discharged within a year. The following formula is used to compute this ratio:

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

ii) Quick Ratio

The acid test ratio is similar to the current ratio as it highlights the liquidity of the company. A ratio of 1:1 (i.e., a value of approximately 1) is satisfactory. However, if the value is significantly less than 1 it implies that the company has a large amount of its cash tied up in unproductive assets, so the company may struggle to raise money in the short term.

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

$$\text{Quick Assets} = \text{Current Assets} - \text{Inventories}$$

iii) Net Working Capital Ratio

The working capital ratio can give an indication of the ability of your business to pay its bills.

Generally a working capital ratio of 2:1 is regarded as desirable. However, the circumstances of every business vary and you should consider how your business operates and set an appropriate benchmark ratio. A stronger ratio indicates a better ability to meet ongoing and unexpected bills therefore taking the pressure off your cash flow. Being in a liquid position can also have advantages such as being able to negotiate cash discounts with your suppliers. A weaker ratio may indicate that your business is having greater difficulties meeting its short-term commitments and that additional working capital support is required. Having to pay bills before payments are received may be the issue in which case an overdraft could assist. Alternatively building up a reserve of cash investments may create a sound working capital buffer. Ratios should be considered over a period of time (say three years), in order to identify trends in the performance of the business.

The calculation used to obtain the ratio is:

$$\text{Net Working Capital Ratio} = \frac{\text{Net Working Capital}}{\text{Total Assets}}$$

$$\text{Net Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Illustration 1

The Balance Sheet of X Company Ltd. as on March 31, 2005 is given below. You are required to calculate the following ratios:

- i) Current ratio,
- ii) Quick ratio,
- iii) Net Working capital ratio.

Balance Sheet of X Company Ltd., as on 31.3.2005

Liabilities	Amount Rs.	Assets	Amount Rs.
Share Capital	20,000	Buildings	20,000
Reserves and Surplus	16,000	Plant and Machinery	10,000
Debentures	10,000	Stock	8,000
Sundry Creditors	11,000	Sundry Debtors	7,000
Bank Overdraft	1,000	Prepaid expenses	2,000
Bills Payable	2,000	Securities	12,000
Provision for Taxation	1,000	Bank	2,000
Outstanding Expenses	1,000	Cash	1,000
	62,000		62,000

Solution

$$\text{i) Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\begin{aligned} \text{Current Assets} &= \text{Cash Rs. 1000} + \text{Bank Rs. 2000} + \text{Securities Rs. 12000} \\ &\quad + \text{Prepaid expenses Rs. 2000} + \text{Sundry Debtors Rs. 7000} \\ &\quad + \text{Stock Rs. 8000} \\ &= \text{Rs. 32,000.} \end{aligned}$$

Analysis of Financial Statements

$$\begin{aligned}\text{Current Liabilities} &= \text{Outstanding expenses Rs. 1000} + \text{Provision for taxation} \\ &\quad \text{Rs. 1000} + \text{Bills payable Rs. 2000} + \text{Bank overdraft} \\ &\quad \text{Rs. 1000} + \text{Sundry creditors Rs. 11,000} \\ &= \text{Rs. 16,000.}\end{aligned}$$

$$\therefore \text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{32,000}{16,000} = 2:1$$

$$\text{ii) Quick ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

$$\begin{aligned}\text{Quick Assets} &= \text{Cash Rs. 1000} + \text{Bank Rs. 2000} + \text{Securities Rs. 12,000} \\ &\quad + \text{Sundry Debtors Rs. 7,000} \\ &= \text{Rs. 22,000.}\end{aligned}$$

$$\begin{aligned}\text{Current Liabilities} &= \text{Sundry creditors Rs. 11,000} + \text{Bills payable Rs. 2000} + \\ &\quad \text{Outstanding expenses Rs. 1000} + \text{Provision for Taxation} \\ &\quad \text{Rs. 1000} + \text{Bank overdraft Rs. 1000} \\ &= \text{Rs. 16,000}\end{aligned}$$

$$\begin{aligned}\text{Quick ratio} &= \frac{\text{Quick Assets}}{\text{Current Liabilities}} \\ &= \frac{22,000}{16,000} \\ &= 1.37 : 1\end{aligned}$$

$$\text{iii) Net Working capital ratio} = \frac{\text{Net Working Capital}}{\text{Total Assets}}$$

$$\begin{aligned}\text{Net Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\ &= \text{Rs. 32,000} - \text{Rs. 16,000} \\ &= \text{Rs. 16,000}\end{aligned}$$

$$\begin{aligned}\text{Net Working capital ratio} &= \frac{16,000}{32,000} \\ &= 1 : 2.\end{aligned}$$

5.6.2 Profitability Analysis Ratios

Profitability ratios are the most significant - and telling - of financial ratios. Similar to income ratios, profitability ratios provide a definitive evaluation of the overall effectiveness of management based on the returns generated on sales and investment.

Profitability in relation to Sales

Profits earned in relation to sales give the indication that the firm is able to meet all operating expenses and also produce a surplus. In order to judge the efficiency of management with respect to production and sales, profitability ratios are calculated in relation to sales.

There are :

- i) Gross Profit Margin
- ii) Net Profit Margin
- iii) Operating Profit Margin
- iv) Operating Ratio.

i) Gross Profit Margin

This is also known as gross profit ratio or gross profit to sales ratio. This ratio may indicate to what extent the selling prices of goods per unit may be reduced without incurring losses on operations. This ratio is useful particularly in the case of wholesale and retail trading firms. It establishes the relationship between gross profit and net sales. Its purpose is to show the amount of gross profit generated for each rupees of sales. Gross profit margin is computed as follows:

$$\text{Gross profit} = \frac{\text{Gross profit}}{\text{Net Sales}} \times 100$$

The amount of gross profit is the difference between net sales income and the cost of goods sold which includes direct expenses. A high margin enables all operating expenses to be covered and provides a reasonable return to the shareholders. If gross profit rate is continuously lower than the average margin, something is wrong. To keep the ratio high, management has to minimise cost of goods sold and improve sales performance. Higher the ratio, the greater would be the margin to cover operating expenses and *vice versa*.

Note : This percentage rate can – and will – vary greatly from business to business, even those within the same industry. Sales location, size of operations and intensity of competition etc., are the factors that can affect the gross profit rate.

Illustration 2

From the following particulars, calculate gross profit margin.

Trading Account of ABC Company for the year ended March 31, 2005

	Rs.		Rs.
To Opening stock	6,000	By Net sales	96,000
To Net purchases	63,000	By Closing stock	6,000
To Direct expenses	9,000		
To Gross profit	24,000		
	<u>1,02,000</u>		<u>1,02,000</u>

Solution

$$\begin{aligned} \text{Gross Profit Margin} &= \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 \\ &= \frac{24,000}{96,000} \times 100 \\ &= 25\% \end{aligned}$$

ii) Net Profit Margin

This ratio is called net profit to sales ratio and explains the relationship between net profit after taxes and net sales. The purpose of this ratio is to reveal the amount of sales income left for shareholders after meeting all costs and expenses of the business. It measures the overall profitability of the firm. The higher the ratio, the greater would be the return to the shareholders and vice versa. A net profit margin of 10% is considered normal. This ratio is very useful to control costs and to increase the sales. It is calculated as follows:

$$\text{Net Profit Margin} = \frac{\text{Net Profit after taxes}}{\text{Net Sales}} \times 100$$

Illustration 3

The Gross Profit Margin of a company is Rs. 12,00,000 and the operating expenses are Rs. 4,50,000. The taxes to be paid are Rs. 4,80,000. The sales for the year are Rs. 27,00,000. Calculate Net Profit Margin.

Solution

$$\text{Net Profit Margin} = \frac{\text{Net Profit after taxes}}{\text{Net Sales}} \times 100$$

$$\begin{aligned} \text{Net Profit after taxes} &= \text{Gross Profit} - \text{Expenses} - \text{Taxes} \\ &= \text{Rs. } 12,00,000 - \text{Rs. } 4,50,000 - \text{Rs. } 4,80,000 \\ &= \text{Rs. } 2,70,000 \end{aligned}$$

$$\begin{aligned} \text{Net Profit Margin} &= \frac{2,70,000}{27,00,000} \times 100 \\ &= 0.10 \text{ or } 10\% \end{aligned}$$

iii) Operating Profit Margin

This ratio is a modified version of Net Profit Margin. **It studies the relationship between operating profit** (also known as PBIT — Before Interest and Taxes) **and sales**. The purpose of computing this ratio is to find out the amount of operating profit for each rupee of sale. While calculating operating profit, non-operating expenses such as interest, (loss on sale of assets etc.) and non-operating income (such as profit on sale of assets, income on investment etc.) have to be ignored. The formula for this ratio is as follows:

$$\text{Operating Profit Margin} = \frac{\text{Operating Profit}}{\text{Sales}} \times 100$$

Illustration 4

From the following particulars of Nanda and Co., calculate Operating Profit Margin.

**Profit and Loss Account of Nanda and Co. Ltd.
as on March 31, 2005**

	Rs.		Rs.
To Opening Stock	3,000	By Sales	36,000
To Purchases	22,000	By Closing Stock	10,000
To Manufacturing Expenses	9,000		
To Gross Profit c/d	12,000		
	46,000		46,000
To Operating Expenses	4,000	By Gross Profit b/d	12,000
To Administrative Expenses	2,000		
To Interest on Debentures	1,000		
To Net Profit	5,000		
	12,000		12,000

Solution

$$\text{Operating Profit Margin} = \frac{\text{Operating Profits}}{\text{Sales}} \times 100$$

$$\begin{aligned} \text{Operating Profits} &= \text{Net Profit} + \text{Interest on Debenture (non-operating expenses)} \\ &= \text{Rs. } 5000 + \text{Rs. } 1000 = \text{Rs. } 6,000 \end{aligned}$$

$$\text{Operating Profit Margin} = \frac{\text{Rs. } 6,000}{\text{Rs. } 36,000} \times 100 = 0.167 \text{ or } 16.7 \%$$

A high ratio is an indicator of the operational efficiency and a low ratio stands for operational inefficiency of the firm.

iv) Operating Ratio

This ratio established the relationship between total costs incurred and sales. It may be calculated as follows :

$$\text{Operating Ratio} = \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Sales}} \times 100$$

Illustration 5

From the following particulars, calculate the Operating Ratio :

	Rs.
Sales	5,00,000
Opening Stock	1,00,000
Purchases	2,00,000
Manufacturing Expenses	25,000
Closing Stock	30,000
Selling Expenses	5,000
Office Expenses	20,000

Solution

$$\text{Operating Ratio} = \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Sales}} \times 100$$

$$\begin{aligned} \text{Cost of Goods sold} &= \text{Opening Stock} + \text{Purchases} + \\ &\quad \text{Manufacturing expenses} - \text{Closing Stock.} \\ &= \text{Rs. } 1,00,000 + \text{Rs. } 2,00,000 + \text{Rs. } 25,000 - \text{Rs. } 30,000 \\ &= \text{Rs. } 2,95,000. \end{aligned}$$

$$\begin{aligned} \text{Operating Expenses} &= \text{Selling Expenses} + \text{Offices Expenses} \\ &= \text{Rs. } 5000 + \text{Rs. } 20,000 = \text{Rs. } 25,000 \end{aligned}$$

$$\text{Operating Ratio} = \frac{\text{Rs. } 2,95,000 + \text{Rs. } 25,000}{\text{Rs. } 5,00,000} = 0.64 \text{ or } 64 \%$$

High operating ratio is undesirable as it leaves a small portion of income to meet other non-operating expenses like interest on loans. A low ratio is better and reflects the efficiency of management. Lower the ratio, higher would be the

profitability. If operating ratio is 64%, it indicates that 64% of sales income has gone to meet cost of goods sold and operating expenses and 36% is left for other expenses and dividend.

The operating ratio shows the overall operating efficiency of the business. In order to know how individual items of operating expenses are related to sales, individual expenses ratios can also be calculated. These are calculated by taking operational expenses like cost of goods sold, administrative expenses, selling and distribution, individually in relation to sales (net).

5.6.3 Profitability in Relation to Capital Employed (Investment)

Profitability ratio, as stated earlier, can also be computed by relating profits to capital or investment. This ratio is popularly known as Rate of Return on Investment (ROI). The term investment may be used in the sense of capital employed or owners' equity. Two ratios are generally calculated:

- i) Return on Capital Employed (ROCE), and
- ii) Return on Shareholders' Equity.

i) Return on Capital Employed (ROCE)

The ratio establishes the relationship between total capital and net operating profit of the business. The purpose of this ratio is to find out whether capital employed is effectively utilised or not. The formula for calculating Return on Capital Employed is:

$$\text{Return on Capital Employed} = \frac{\text{Net Operating Profit}}{\text{Capital Employed}} \times 100$$

The term 'Net Operating Profit' means 'Profit before Interest and Tax'. The term 'Interest' means 'Interest on Long-term borrowings'. Interest on short-term borrowings will be deducted for computing operating profit. Similarly, non-trading incomes such as income from investments made outside the business etc. or non-trading losses or expenses will also be excluded while calculating profit. The term 'capital employed' has been given different meanings by different accountants. Three widely accepted terms are as follows:

- 1) Gross Capital Employed = Fixed Assets + Investments + Current Assets
- 2) Net Capital Employed = Fixed Assets + Investments + Net Working Capital (Current Assets – Current Liabilities).
- 3) Sum total of long term funds = Share capital + Reserves and Surpluses + Long Term Loans – Fictitious Assets – Non business Assets.

In managerial decisions the term capital employed is generally used in the meaning given in the third point above.

Return on capital employed ratio is very significant as it reflects the overall efficiency of the firm. The higher the ratio, the greater is the return on long-term funds invested in the firm. It is also an indication of the effective utilisation of capital employed. However, it is very difficult to set a standard ratio of return on capital employed as a number of factors such as business risk, the nature of the industry, economic conditions etc., may influence such rate. This ratio could be supplemented with a number of ratios depending upon the purpose for which it is computed.

Illustration 5

From the following financial statements, calculate return on capital employed.

Profit and Loss Account for the year ended 31.3.2005

	Rs.		Rs.
To Cost of goods sold	3,00,000	By Sales	5,00,000
To Interest on Debentures	10,000	By Income from Investment	10,000
To Provision for Taxation	1,00,000		
To Net Profit	1,00,000		
	5,10,000		5,10,000

Balance Sheet as on 31.3.2005

Liabilities	Rs.	Assets	Rs.
Share Capital	3,00,000	Fixed Assets	4,50,000
Reserves	1,00,000	Investments in Govt. Bonds	1,00,000
10% Debentures	1,00,000	Current Assets	1,50,000
Profit and Loss a/c	1,00,000		
Provision for Taxation	1,00,000		
	7,00,000		7,00,000

Solution

$$\text{Return on Capital Employed} = \frac{\text{Net Operating Profit}}{\text{Capital Employed}} \times 100$$

$$\begin{aligned} \text{Net Operating Profit} &= \text{Net Profit before Tax and Interest} - \text{Income from Investment} \\ &= \text{Rs. } 1,00,000 + 100,000 + 10,000 - 10,000 \\ &= \text{Rs. } 2,00,000 \end{aligned}$$

$$\begin{aligned} \text{Capital Employed} &= \text{Fixed Assets} + \text{Current Assets} - \text{Current Liability} \\ &= \text{Rs. } 4,50,000 + \text{Rs. } 1,50,000 - \text{Rs. } 1,00,000 \\ &= \text{Rs. } 5,00,000 \end{aligned}$$

OR

$$\begin{aligned} &= \text{Share Capital} + \text{Reserves} + \text{Debentures} + \text{Profit and Loss account} - \text{Investments in Govt. Bonds} \\ &= \text{Rs. } 3,00,000 + \text{Rs. } 1,00,000 + \text{Rs. } 1,00,000 + \text{Rs. } 1,00,000 - \text{Rs. } 1,00,000 \\ &= \text{Rs. } 5,00,000 \end{aligned}$$

$$\begin{aligned} \text{Return on Capital Employed} &= \frac{2,00,000}{5,00,000} \times 100 \\ &= 40\% \end{aligned}$$

Return on Investment (ROI)

When you are asked to find out the profitability of the Company from the share holders' point of view, Return on Investment should be Computed as follows:

$$\text{Return on Investment} = \frac{\text{Net Profit after Interest and Tax}}{\text{Shareholders' Funds}} \times 100$$

The term 'Net Profit' means 'Net Income after Interest and Tax'. This is because the shareholders are interested in Total Income after Tax including Net non-operating income.

From illustration 5, Net profit after interest and tax will be Rs. 1,00,000 and Return on Investment will be 20% i.e. $(\frac{1,00,000}{5,00,000} \times 100)$

ii) Return on Shareholders' Equity

This ratio shows the relationship between net profit after taxes and Shareholders' equity. It reveals the rate of return on owners'/shareholders' funds. The term shareholders' equity is also known as 'net worth' and includes Equity Capital, Share Premium and Reserves and Surplus. The formula of this ratio is as follows:

$$\text{Return on Shareholder's Equity} = \frac{\text{Net Profit after Tax and Preference Dividend}}{\text{Shareholders' Equity}}$$

Illustration 6

From the following Balance Sheet find Return on Shareholders' Equity.

Balance Sheet of ABC Company Ltd. as on 31.3.2005

Liabilities	Rs.	Assets	Rs.
Equity Share Capital	1,00,000	Fixed Assets	2,25,000
10% Preference Capital	50,000	Current Assets	1,25,000
Reserves	50,000		
10% Debentures	50,000		
Profit and Loss a/c	50,000		
Provision for Taxation	50,000		
	<u>3,50,000</u>		<u>3,50,000</u>

Solution

$$\text{Return on Shareholders' equity} = \frac{\text{Net Profit After Tax and Prefence Dividend}}{\text{Shareholders' Equity}} \times 100$$

Net profit after, tax and prefence Dividend

$$= \text{Rs. } 50,000 - \text{Preference dividend } 5000 \left(\text{Pref. capital } 50,000 \times \frac{10}{100} \right)$$

$$= \text{Rs. } 45,000$$

$$\begin{aligned} \text{Shareholders' equity} &= \text{Equity capital} + \text{Reserves} + \text{Profit and Loss account} \\ &= \text{Rs. } 1,00,000 + 50,000 + 45,000 \\ &= \text{Rs. } 1,95,000 \end{aligned}$$

$$\begin{aligned} \text{Return on Shareholders' Equity} &= \frac{45,000}{1,95,000} \times 100 \\ &= 23\% \end{aligned}$$

The higher the ratio, the greater is the efficiency of the firm in generating profits on shareholders' equity and vice versa. The ratio is very important for the investors to judge whether their investment in the firm generates a reasonable return or not. This ratio is important to the management as it proves their efficiency in employing the funds profitably.

Earnings Per Share

Earnings per Share (EPS) is an important ratio from equity shareholders' point of view as this ratio affects the market price of share and the amount of dividend to be given to the equity shareholders. The earnings per share is calculated as follows:

$$\text{Earnings Per Share (EPS)} = \frac{\text{Net profit after Tax} - \text{Preference Dividend}}{\text{Number of Equity Shares}}$$

Illustration 7

From the following information calculate Earnings per Share of X Company Ltd. :

Balance Sheet of X Company Ltd. as on March 31, 2005

Liabilities	Rs.	Assets	Rs.
Equity Share Capital (25,000 Share)	2,50,000	Plant and Machinery	8,00,000
9% Preference Share Capital	1,00,000	Current Assets	2,50,000
Reserves and Surpluses	3,00,000		
8% Long term Loans	3,00,000		
Current Liabilities	1,00,000		
	10,50,000		10,50,000

The net profit before interest and after Tax was Rs. 78,000.

Solution

$$\begin{aligned} \text{Earnings per share} &= \frac{\text{Net Profit after Tax} - \text{Preference Dividend}}{\text{Number of Equity Shares}} \\ &= \frac{\text{Rs. } 78000 - 9000 \text{ (9\% of Rs. } 1,00,000)}{25,000} \\ &= \frac{\text{Rs. } 69,000}{25,000} = \text{Rs. } 2.76 \end{aligned}$$

The Earnings Per Share is useful in determining the market price of equity share and capacity of the company to pay dividend. A comparison of earning per share with another company helps to know whether the equity capital is effectively used in the business or not.

5.6.4 Activity Analysis Ratios

Activity Analysis Ratio may be studied under the following three heads:

- i) Assets Turnover Ratio,
- ii) Accounts Receivable Turnover Ratio, and
- iii) Inventory Turnover Ratio.

Assets Turnover Ratio

The asset turnover ratio simply compares the turnover with the assets that the business has used to generate that turnover. In its simplest terms, we are just saying that for every Re. 1 of assets, the turnover is Rs. x. The formula for total asset turnover is:

$$\text{Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Average Total Assets}}$$

$$\text{Average Total Assets} = \frac{\text{Beginning Total Assets} + \text{Ending Total Assets}}{2}$$

Asset turnover is meant to measure a company's efficiency in using its assets. The higher a company's asset turnover, the lower its profit margin tends to be and visa versa.

Accounts Receivable Turnover Ratio

The debtor turnover ratio indicates the average time it takes your business to collect its debts. It's worth looking at this ratio over a number of financial years to monitor performance trends.

Use information from your annual Profit and Loss Statement along with the trade debtors figure from your Balance Sheet for that financial year to calculate this ratio.

A ratio that is lengthening can be the result of some debtors slowing down in their payments. Economic factors, such as a recession, can also influence the ratio. Tightening your business' credit control procedures may be required in these circumstances.

The debtor ageing ratio has a strong impact on business operations particularly working capital. Maintaining a running total of your debtors by ageing (e.g. current, 30 days, 60 days, 90 days) is a good idea, not just in terms of making sure you are getting paid for the work or goods you are supplying but also in managing your working capital.

The calculation used to obtain the ratio is:

$$\text{Debtor Ageing Ratio (in days)} = \frac{\text{No. of days (365) or months (12) in a year}}{\text{Accounts receivables turnover ratio}}$$

$$\text{Accounts Receivable Turnover Ratio} = \frac{\text{Sales}}{\text{Average Accounts Receivable}}$$

$$\text{Average Accounts Receivable} = \frac{(\text{Beginning Accounts Receivable} + \text{Ending Accounts Receivable})}{2}$$

Inventory Turnover Ratio

The inventory turnover ratio indicates how quickly your business is turning over stock.

A high ratio may indicate positive factors such as good stock demand and management. A low ratio may indicate that either stock is naturally slow moving or problems such as the presence of obsolete stock or poor presentation. A low ratio can also be indicative of potential stock valuation issues. It is a good idea to monitor the ratio over consecutive financial years to determine if a trend is developing.

It can be useful to compare this financial ratio with the working capital ratio. For example, business operations with low stock turnover tend to require higher working capital.

The calculation used to obtain the ratio is:

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

$$\text{Average Inventories} = \frac{(\text{Beginning Inventories} + \text{Ending Inventories})}{2}$$

5.6.5 Long-term Solvency Ratios

The long-term solvency ratios are calculated to assess the long-term financial position of the business. These ratios are also called **leverage, or capital structure ratios, or capital gearing ratios**. The following ratios generally come under this category :

- i) Debt-Equity Ratio/Total Debt Equity Ratio,
- ii) Proprietary ratio, and
- iii) Capital Gearing ratio.

i) Debt-Equity Ratio/Total Debt Equity Ratio

It shows the relationship between borrowed funds and owner's funds, or external funds (debt) and internal funds (equity). **The purpose of this ratio is to show the extent of the firm's dependence on external liabilities or external sources of funds.**

In order to calculate this ratio, the required components are external liabilities and owner's equity or networth. 'External liabilities, include both long-term as well as short-term borrowings. The term 'owners equity' includes past accumulated losses and deferred expenditure. Since **there are two approaches to work out this ratio**, there are two formulas as shown below :

$$i) \text{ Debt-Equity Ratio} = \frac{\text{Long-Term Debt}}{\text{Owner's Equity}}$$

$$ii) \text{ Total Debt-Equity Ratio} = \frac{\text{Total Debt}}{\text{Owner's Equity}}$$

In the first formula, the numerator consists of only long-term debts, it does not include short-term obligations or current liabilities for the following reasons :

- 1) Current liabilities are of a short-term nature and the liquidity ratios are calculated to judge the ability of the firm to honour current obligations.
- 2) Current liabilities vary from time to time within a year and interest thereon has no relationship with the book value of current liabilities.

In the second formula, both short-term and long-term debts are counted in the numerator. The reasons are as follows :

- 1) When a firm has an obligation, no matter whether it is of short-term or long-term nature, it should be taken into account to evaluate the risk of the firm.
- 2) Just as long-term loans have a cost, short-term loans do also have a cost.
- 3) As a matter of fact, the pressure from the short-term creditors is often greater than that of long-term loans.

Illustration 8

From the following Balance Sheet of Kavitha Ltd., Calculate Debt Equity Ratio :

**Balance Sheet of Kavitha Ltd.
as on March 31, 2004**

Liabilities	Amount Rs.	Assets	Amount Rs.
Equity Capital	1,50,000	Land and Buildings	2,00,000
9% Preference Capital	60,000	Plant and Machinery	2,00,000
Reserves and Surpluses	40,000	Sundry Debtors	1,10,000
8% Debentures	80,000	Cash at Bank	35,000
Long-term loans	1,20,000		
Creditors	30,000		
Bills payable	65,000		
	<u>5,45,000</u>		<u>5,45,000</u>

Solution

$$i) \text{ Debt-Equity Ratio} = \frac{\text{Long-term Liabilities/Debt}}{\text{Owner's Equity}}$$

$$\begin{aligned} \text{Long-term liabilities} &= \text{Long-term Loan} + 8\% \text{ Debentures} \\ &= \text{Rs. } 1,20,000 + \text{Rs. } 80,000 \\ &= \text{Rs. } 2,00,000 \end{aligned}$$

$$\begin{aligned} \text{Owner's equity (Networth)} &= \text{Equity Capital} + \text{Preference Capital} + \\ &\quad \text{Reserves and Surplus} \\ &= \text{Rs. } 1,50,000 + \text{Rs. } 60,000 + \text{Rs. } 40,000 \\ &= \text{Rs. } 2,50,000 \end{aligned}$$

$$\text{Debt -equity ratio} = \frac{\text{Rs. } 2,00,000}{\text{Rs. } 2,50,000} = 0.8:1$$

$$ii) \text{ Total Debt-Equity Ratio} = \frac{\text{Total Debt}}{\text{Owners' Equity}}$$

$$\begin{aligned} \text{Total Debt} &= \text{Long-term Loan} + 8\% \text{ Debentures} + \text{Bills Payable} + \text{Creditors} \\ &= \text{Rs. } 1,20,000 + \text{Rs. } 80,000 + \text{Rs. } 30,000 + \text{Rs. } 45,000 \\ &= \text{Rs. } 2,75,000 \end{aligned}$$

$$\text{Total Debt to Equity Ratio} = \frac{\text{Rs. } 2,75,000}{\text{Rs. } 2,50,000} = 1.1:1$$

For analysing the capital structure, debt-equity ratio gives an idea about the relative share of funds of outsiders and owners invested in the business. **The ratio of long-term debt to equity is generally regarded as safe if it is 2:1.** A higher ratio may put the firm in difficulty in meeting the obligation to outsiders. The higher the ratio, the greater would be the risk as the firm has to pay interest irrespective of profits. On the other hand, a smaller, ratio is less risky and creditors will have greater margin or safety.

What ratio is ideal will depend on the nature of the enterprise and the economic conditions prevailing at that time. During business prosperity a high ratio may be favourable and in a reverse situation a low ratio is preferred. The Controller of Capital Issues in India suggests 2:1 as the norm for this ratio.

ii) Proprietary Ratio

This ratio is also known as **Equity Ratio** or **Networth to Total Assets Ratio**. It is a variant of Debt-Equity Ratio, and shows the relationship between owners' equity and total assets of the firm. **The purpose of this ratio is to indicate the extent of owners' contribution towards the total value of assets.** In other words, it gives an idea about the extent to which the owners own the firm.

The components required to compute this ratio are proprietors' funds and total assets. Proprietors' funds include equity capital, preference capital, reserves and undistributed profits. If there are accumulated losses they are deducted from the owners' funds. 'Total assets' include both fixed and current assets but exclude fictitious assets, such as preliminary expenses; debit balance of profit and loss account etc. Intangible assets, if any, like goodwill, patents and copy rights are taken at the amount at which they can be realised. The formula of this ratio is as follows :

$$\text{Proprietary Ratio} = \frac{\text{Proprietors' Funds}}{\text{Total Assets}}$$

Taking the information from Illustration 3, the Proprietary Ratio can be calculated as follows :

Proprietary Funds	Rs.	Total Assets	Rs.
Equity Capital	1,50,000	Land and Building	1,20,000
8% Preference Capital	60,000	Plant and Machinery	2,00,000
Reserves and Surpluses	40,000	Debtors	1,10,000
		Cash and Bank	35,000
	<u>2,50,000</u>		<u>4,65,000</u>

$$\begin{aligned} \text{Proprietary Ratio} &= \frac{\text{Proprietors' Funds}}{\text{Total Assets}} \\ &= \frac{2,50,000}{4,65,000} = 53.76\% \end{aligned}$$

There is no definite norm for this ratio. Some financial experts hold the view that proprietors' funds should be from 67% to 75% and outsiders' funds should be from 25% to 33% of the total assets. **The higher the ratio, the lesser would be the reliance on outsiders' funds.** A high ratio implies that the firm is not using outsiders' funds as much as would maximise the rate of return on the proprietors' funds. For instance, if a firm earns 20% return on borrowed funds and the rate of interest on such fund is 10% the proprietors would be able to gain to the extent of 10% on the outsiders' funds. This increases the earning of the shareholders.

iii) Capital Gearing Ratio

This ratio establishes the relationship between equity share capital on one hand and fixed interest and fixed dividend bearing funds on the other. It does not take current liabilities into account. **The purpose of this ratio is to arrive at a proper mix of equity capital and the source of funds bearing fixed interest and fixed dividend.**

For the calculation of this ratio, we require the value of (i) equity share capital including reserve and surpluses, and (ii) preference share capital and the sources bearing fixed rate of interest like debentures, public deposits, long-term loans, etc. The following formula is used to compute this ratio :

$$\text{Capital Gearing Ratio} = \frac{\text{Equity Capital including Reserves and Surplus}}{\text{Fixed Dividend and Interest bearing securities}}$$

Illustration 9

The following are the particulars extracted from the Balance Sheet of XYZ Ltd. as on 31.03.2005. Calculate Capital Gearing Ratio.

	Rs.
Equity Share Capital	1,00,000
9% Preference Share Capital	60,000
Reserves and Surpluses	20,000
Long-term Loans	1,20,000

Solutio

$$\begin{aligned}
 \text{Capital Gearing Ratio} &= \frac{\text{Equity Capital}}{\text{Fixed dividend and interest bearing securities}} \\
 &= \frac{\text{Equity Share Capital} + \text{Reserves and Surpluses}}{\text{9\% Preference Share Capital} + \text{Long-term loans.}} \\
 &= \frac{\text{Rs. 1,00,000} + \text{Rs. 20,000}}{\text{Rs. 60,000} + \text{Rs. 1,20,000}} = \frac{\text{Rs. 1,20,000}}{\text{Rs. 1,80,000}} \\
 &= 0.67 : 1
 \end{aligned}$$

A firm is said to be highly geared when the sum of preference capital and all other fixed interest bearing securities is proportionately more than the equity capital. On the other hand, a firm is said to be **lowly geared** when the equity capital is relatively more than the sum of preference capital and all other fixed interest bearing securities.

The norm suggested for this ratio is 2:1. However, the significance of this ratio largely depends on the nature of business, return on investment and interest payable to outsiders.

Illustration 10

From the following particulars compute leverage ratios :

**Balance Sheet of Raja Ltd.
as on March 31, 2005**

Liabilities		Assets	
	Rs.		Rs.
Equity Share Capital	40,000	Land	22,000
8% Preference Share Capital	20,000	Building	24,000
Reserves	10,000	Plant and Machinery	38,000
Profit and Loss Account	5,000	Furniture	5,000
10% Debentures	45,000	Sundry Debtors	22,000
Trade Creditors	9,000	Stock	13,000
Outstanding Expenses	2,000	Cash	14,000
Provision for Taxation	3,000	Prepaid expenses	2,000
Proposed Dividend	6,000		
	1,40,000		1,40,000

Solution

Leverage Ratios

$$\begin{aligned}
 1) \text{ Debt Equity Ratio} &= \frac{\text{Long-term Debt}}{\text{Owners' Equity}} \\
 \text{Long-term Debt} &= 10\% \text{ Debentures} \\
 &= \text{Rs. 45,000}
 \end{aligned}$$

$$\begin{aligned} \text{Owners' Equity} &= \text{Equity Share Capital} + 8\% \text{ Preference Share Capital} + \text{Reserves} + \text{Profit and Loss Account} \\ &= 40,000 + 20,000 + 10,000 + 5,000 \\ &= \text{Rs. } 75,000 \end{aligned}$$

$$\text{Debt Equity Ratio} = \frac{45,000}{75,000} = 0.6 : 1$$

2) Total Debt Equity Ratio

$$\begin{aligned} \text{Total Debt} &= 10\% \text{ Debentures} + \text{Trade Creditors} + \text{Proposed Dividend} \\ &= 45,000 + 9,000 + 2,000 + 3,000 + 6,000 \\ &= \text{Rs. } 65,000 \end{aligned}$$

Equity is Rs. 75,000 as calculated in Debt Equity Ratio. Total Debt to Equity

$$\text{Ratio} = \frac{65,000}{75,000} = 0.87 : 1$$

$$3) \text{ Proprietary Ratio} = \frac{\text{Proprietor's Funds}}{\text{Total assets}}$$

Proprietor's Funds is same as Owner's equity i.e., Rs. 75,000 as calculated in Debt Equity Ratio.

$$\begin{aligned} \text{Total Assets} &= \text{Land} + \text{Building} + \text{Plant and Machinery} + \text{Furniture} + \text{Current Assets} \\ &= 22,000 + 24,000 + 38,000 + 5,000 + 51,000 \\ &= \text{Rs. } 1,40,000 \end{aligned}$$

$$\text{Proprietary Ratio} = \frac{75,000}{1,40,000} = 1:1.87$$

$$4) \text{ Capital Gearing Ratio} = \frac{\text{Equity Capital}}{\text{Fixed Interest Bearing Securities}}$$

$$\begin{aligned} \text{Equity Capital} &= \text{Equity Share Capital} + \text{Reserves} + \text{Profit and Loss Account} \\ &= 40,000 + 10,000 + 5,000 \\ &= \text{Rs. } 55,000 \end{aligned}$$

$$\begin{aligned} \text{Fixed Interest bearing securities} &= 10\% \text{ Debentures} + 8\% \text{ Preference Share Capital} \\ &= 45,000 + 20,000 \\ &= \text{Rs. } 65,000 \end{aligned}$$

$$\text{Capital Gearing Ratio} = \frac{55,000}{65,000} = 0.85 : 1$$

5.6.6 Coverage Ratios

As mentioned earlier, leverage ratios are computed both from Balance Sheet and Income Statement (Profit and Loss Account). Under Section 5.6.5 of this Unit Long term Solvency Ratio you have studied the ratios computed from Balance Sheet. Let us now discuss the second category of leverage ratios to be calculated from Income Statement. These ratios are called 'Coverage Ratios'.

In order to judge the solvency of the firm, creditors assess the firm's ability to service their claims. In the same manner, preference shareholders evaluate the firm's ability to pay the dividend. These aspects are revealed by the coverage ratios. **Hence, these ratios may be defined as the ratios which measure the ability of the firm to service fixed interest bearing loans and other fixed charge securities.** These ratios are:

- i) Interest Coverage Ratio,
- ii) Dividend Coverage Ratio, and
- iii) Total Coverage Ratio.

i) Interest Coverage Ratio

This ratio is also known as 'times interest earned' ratios. It is used to assess the firm's debt servicing capacity. It establishes the relationship between Net Profit or Earnings before interest and Taxes (EBIT). The purpose of this ratio is to reveal the number of times that the Interest charges are covered by the Net Profit before Interest and Taxes. The formula for this ratio is as follows:

$$\text{Interest Coverage Ratio} = \frac{\text{Net Profit before Interest and Taxes}}{\text{Interest Charges}}$$

Illustration 11

The Net Profit after Interest and Taxes of a firm is Rs. 98,000. The interest and taxes paid during the year were Rs. 16,000 and Rs. 30,000 respectively. Calculate Interest Coverage Ratio.

Solution

$$\text{Interest Coverage Ratio} = \frac{\text{Net Profit before Interest and Taxes (EBIT)}}{\text{Interest Charges}}$$

$$\begin{aligned} \text{EBIT} &= \text{Net Profit after Interest and Taxes} + \text{Taxes} + \text{Interest} \\ &= \text{Rs. } 98,000 + \text{Rs. } 30,000 + \text{Rs. } 16,000 = \text{Rs. } 1,44,000 \end{aligned}$$

$$\text{Interest Coverage Ratio} = \frac{\text{Rs. } 1,44,000}{\text{Rs. } 16,000} = 9 \text{ times or } 9$$

In the above illustration, the interest coverage ratio is 9. It implies that even if the firm's profit falls to 1/9th, the firm will be able to meet its interest charges. Hence, a high ratio is an index of assurance to creditors by the firm. But too high a ratio reflects the conservation attitude of the firm in using debt. On the other hand, a low ratio reflects excessive use of debt. Therefore, a firm should have comfortable coverage ratio to have credit worthiness in the market.

ii) Dividend Coverage Ratio

This ratio indicates the relationship between Net Profit and Preference dividend. Net profit means Net Profit, after Interest and Taxes but before dividend on preference capital is paid. The purpose of this ratio is to show the number of times preference dividend is covered by Net Profit after Interest and Taxes. To compute this ratio. The following formula is used:

$$\text{Dividend Coverage Ratio} = \frac{\text{Net Profit after Interest and Taxes}}{\text{Preference Dividend}}$$

Illustration 12

The Net Profit before Interest and Taxes of a Company was Rs. 2,30,000. The Interest and taxes to be paid are Rs. 15,000 and Rs. 35,000 respectively. The preference dividend declared was 20 per cent on the preference capital of Rs. 2,25,000. Calculate Dividend Coverage Ratio.

Solution

$$\text{Dividend Coverage Ratio} = \frac{\text{Net Profit after Interest and Taxes}}{\text{Preference Dividend}}$$

$$\begin{aligned} \text{Net Profit after Interest and Taxes} &= \text{EBIT} - \text{Interest} - \text{Taxes} \\ &= \text{Rs. } 2,30,000 - \text{Rs. } 15,000 - \text{Rs. } 35,000 = \text{Rs. } 1,80,000 \end{aligned}$$

$$\begin{aligned} \text{Preference Dividend} &= 20\% \text{ on Rs. } 2,25,000 \\ &= \text{Rs. } 2,25,000 \times \frac{20}{100} = \text{Rs. } 45,000 \end{aligned}$$

$$\text{Dividend Coverage Ratio} = \frac{\text{Rs. } 1,80,000}{\text{Rs. } 45,000} = 4.5 \text{ times}$$

This ratio reveals the safety margin available to the preference shareholders. The higher the ratio, the greater would be the financial strength of the firm and vice versa.

iii) Total Coverage Ratio

Also known as ‘**Fixed Charge Coverage Ratio**’. This ratio examines the relationship between Net Profit Before Interest and Taxes (EBIT) and Total Fixed Charges. The purpose of this ratio is to show the number of times the total fixed charges are covered by Net Profit before Interest and Taxes.

The components of this ratio are Net Profit Before Interest and Taxes (EBIT) and Total Fixed Charges. The Fixed Charges include interest on loans and debentures, repayment of principle, and preference dividend. It is calculated as follows:

$$\text{Total Coverage Ratio} = \frac{\text{Net Profit before Interest and Taxes}}{\text{Total Fixed Charges}}$$

Illustration 13

The Net Profit Before Interest and Taxes of a firm is Rs. 84,000. The interest to be paid on loans is Rs. 14,000 and preference dividend to be paid is Rs. 7,000. Calculate Total Coverage Ratio.

Solution

$$\text{Total Coverage Ratio} = \frac{\text{Net Profit before Interest and Taxes}}{\text{Total Fixed Charges}}$$

$$\begin{aligned} \text{Total Fixed Charges} &= \text{Interest} + \text{Preference dividend} \\ &= \text{Rs. } 14,000 + \text{Rs. } 7,000 = \text{Rs. } 21,000 \end{aligned}$$

$$\text{Total Coverage Ratio} = \frac{\text{Rs. } 84,000}{\text{Rs. } 21,000} = 4 \text{ times or } 4 \text{ to } 1.$$

Check Your Progress C

- 1) What is leverage ratio? Are leverage ratios and gearing ratios different?

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5.7 DUPONT MODEL OF FINANCIAL ANALYSIS

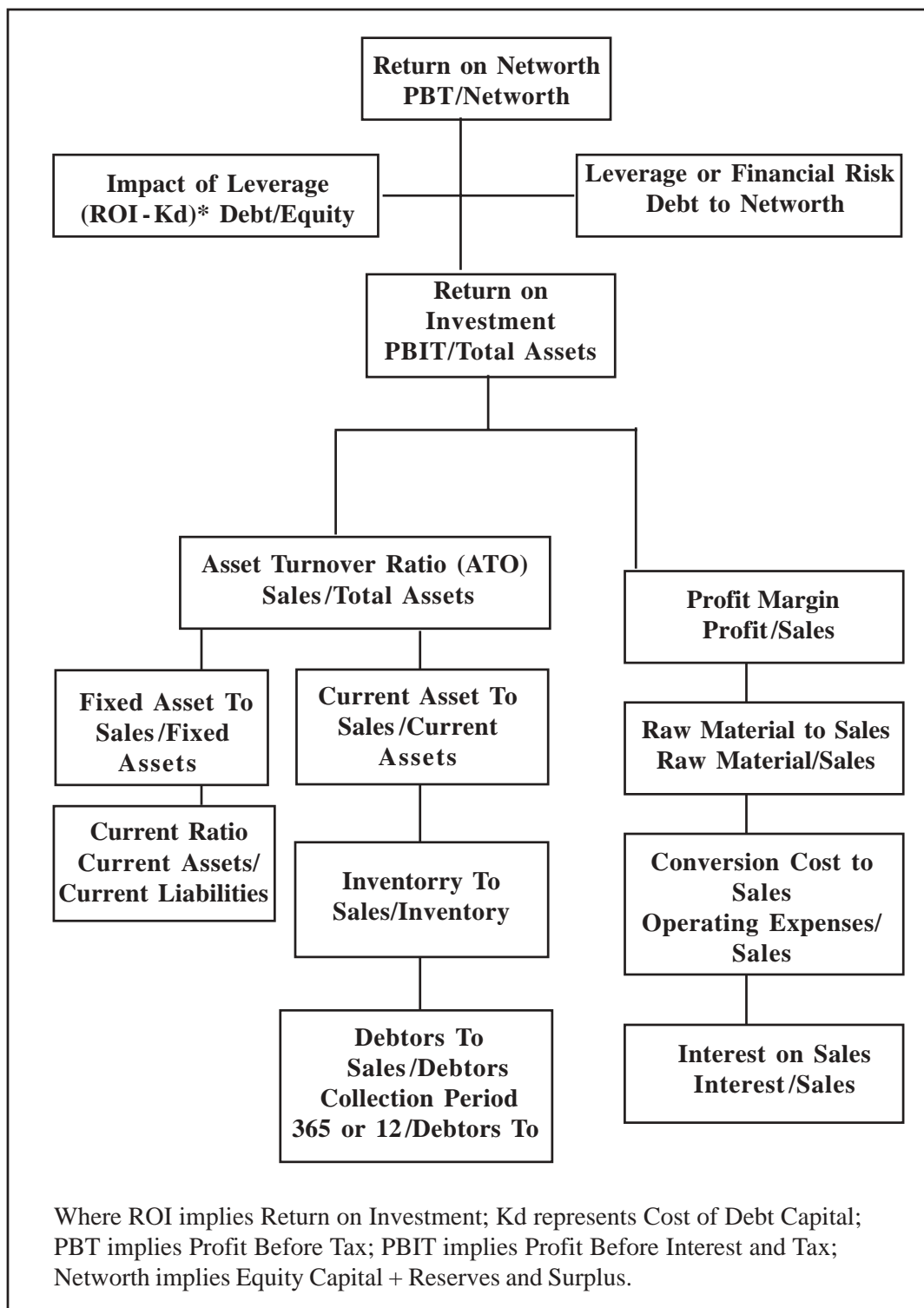
While ratio analysis helps to a great extent in performing the financial statement analysis, most of the time, one would be left in confusion with umpteen ratio calculation in hand. Hence one has to have a guided and structured form of ratio analysis to get a complete picture of the overall performance and risk of the company in a nut shell. This was made possible by the company DuPont. This company had given a structured form of doing financial statement analysis for the first time and from here on most analysts started using the technique.

The DuPont System of Analysis merges the income statement and balance sheet into two summary measures of profitability: Return on Assets (ROA) and Return on Equity (ROE). The system uses three financial ratios to express the ROA and ROE: Operating Profit Margin Ratio (OPM), Asset Turnover Ratio (ATR), and Equity Multiplier (EM).

The DuPont chart analysis has been explained with an example below.

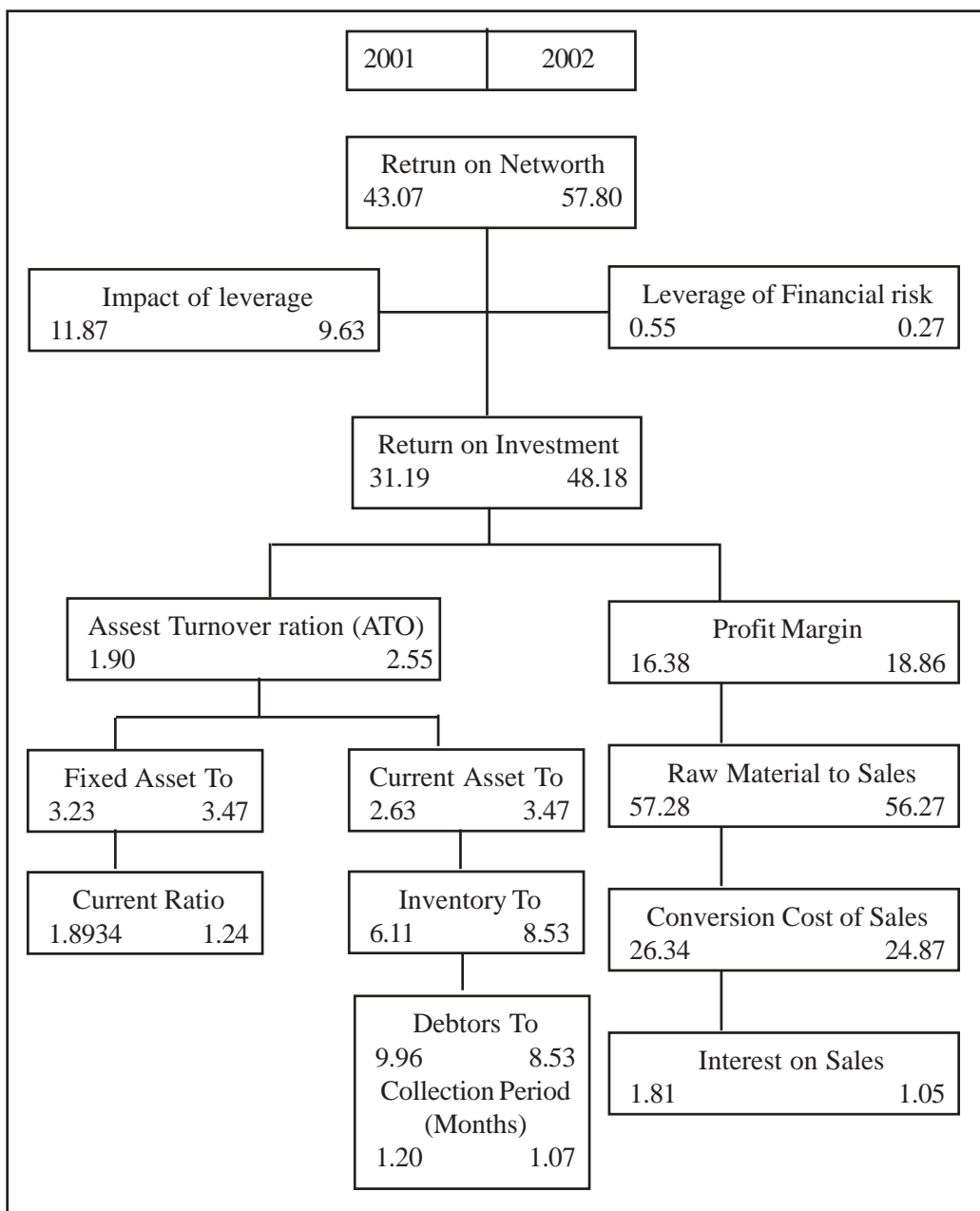
To understand the Dupont analysis better, it's better to condense the income statement and balance sheet data in a required format as given below. The following table gives the balance sheet and income statement of Asian Paints for the year ending March 2001 and March 2002.

Asian Paints		
Income Statement	2001	2002
Sales	1215	1331
Raw Material	696	749
Operating Expenses	320	331
Profit Before Interest and Tax (PBIT)	199	251
Interest	22	14
Profit Before Tax (PBT)	177	237
Tax	50	66
Profit After Tax (PAT)	127	171
Balance sheet	2001	2002
Net Worth	411	410
Debt	227	111
Total Liabilities	638	521
Net Fixed Assets	376	384
Inventory	199	156
Receivables	122	119
Investments	44	63
Other current assets	129	87
Cash	12	22
Less: Current Liabilities and Provision	244	310
Miscellaneous expenditure	4	6
Total Assets	638	521
Current assets	462	384
Cost of debt	9.69	12.61



The above analysis is a good example of time series analysis. It implies comparing the financial statements of the same company over the years. The results indicate that Asian paints had done well during the year 2002. We need to find out the reasons that had contributed to the good performance of the company. The ROA or ROI has increased from 31% to 48%. This has been made possible due to the combined positive effect of profit margin and the asset turnover ratios. The company was able to increase its profit margin from 16% to 18% in 2002. This was made possible by cutting down on raw material costs, conversion costs and interest expenses. Further to this, the company was also able to maintain better efficiency in terms of productivity of assets. This included improvement in overall asset turnover ratio, increase in current and fixed asset turnover ratio and also inventory turnover ratio.

DuPont Chart Financial Statement Analysis of Asian Paints



The debtors turnover ratio has also improved indicating that the company is turning on its receivables more frequently. This is also indicated in the low credit period that is given to its customers. The credit period has reduced from 1.2 to 1.07 during 2002. Besides this, the company also had a positive impact of the leverage impact. The debt equity mix has come down for the period 2002, but still gave a positive impact and hence boosted the returns to the shareholders by 9%. Hence the ROE moved to 57% as against 43% in the year 2001. When one would compare the performance of Asian paints with the industry average, the results would seem more interesting. It's very difficult to see such alarming increasing returns and highly good performance. This company should be performing well above the industry average.

Inter-Firm Comparison (Cross Section Analysis)

While the above analysis enabled you to compare the performance of the firm over the years, most often this may not be alone helpful. You would be also interested in seeing how the firm has performed over its counterparts. In the sense that, you might want to see if Asian paints has performed well over the industry average or whether Asian paints has performed well in comparison with the firms in the same industry.

This sort of analysis becomes most useful when you are doing the industry analysis and when the company you are analysing is not the monopoly in the industry. This would make sense to see why the company has either underperformed or overperformed in comparison to the other firms. This sort of analysis helps the analysts forecasts the future market share, profitability and the sustainable growth rate of the company in the presence of competition.

Check Your Progress D

- 1) What is the basic benefit of using the DuPont form of financial statement analysis?

- 2) Take any other manufacturing company’s annual report and perform similar analysis to get a practice of DuPont analysis.

- 3) What are the different ways in which this chart analysis can be used?

5.8 USES OF RATIO ANALYSIS

Ratio analysis is used as a device to analyse and interpret the financial strength of the enterprise. With the help of these ratios Financial statements can be analysed and interpreted more clearly and conclusions can be drawn about the performance of the business. The importance of a ratio analysis is widely recognised on account of its usefulness as outlined below:

- 1) **It conveys inter-relationship between different items of the financial statements:** Since the ratios convey the inter-relationship between different items of the Balance Sheet and Profit and Loss account, they reflect the financial state of affairs and efficiency of operations more clearly than the absolute accounting figures. For example, the net profit earned by a firm may appear to be quite satisfactory if the amount of profit is large, say Rs. 5 Lakh. But, the profit earned can not be regarded good unless it is related to the total investment. If the capital invested is say Rs. 2 crore, the amount of profit expressed as a percentage of investment comes to be only 2.5%. This cannot be said to be satisfactory performance. However, if the capital invested was Rs. 50 Lakh, profit earned would be 10% of the capital investment which may be considered reasonably good.
- 2) **Helps to judge the performance of the business:** Efficiency of performance of management and the overall financial position are revealed by means of financial ratios which may not be otherwise apparent from a set of accounting figures. The index of efficiency reflected in the ratios can be used as the basis of management control. The trend of ratios over a period of time can also be used for planning and forecasting purposes.

- 3) **Facilitates inter-firm and intra-firm comparison:** Ratio analysis provides data for inter and intra firm comparison. With the help of these data comparison of the performance of different firms within the industry as well as the performance of different divisions within the firm can be made and meaningful conclusion can be drawn out of it as to whether the performance of the firm is improving or deteriorating so as to make appropriate investment decisions.
- 4) **To determine credit worthiness of the business:** The credit worthiness of the firm, its earning power, ability to pay interest and debt, prospects of growth, and similar information are revealed by ratio analysis. These are required by creditors, financiers, investors as well as shareholders. They make use of ratio analysis to measure the financial condition and performance of the firm.
- 5) **Helpful to Government:** The financial statement published by the industrial units are used by the government to calculate ratios for determining short-term long-term and overall financial position of the firms. These financial ratios of industrial units may be used by the Government as indicators of overall financial strength of industrial sector.

5.9 LIMITATIONS OF RATIO ANALYSIS

By now you should have mastered the techniques of ratio analysis and its application at the various situations. However, before you start applying the ratios you should be careful enough to be aware of some of its limitations while being used.

- 1) You should be aware that many companies operate in more than one industry take for instance companies like LandT, HLL, PandG etc. which does not operate in only one business segment but in diversified businesses. So care should be taken to ensure that segment level ratios are compared.
- 2) Inflation has distorted balance sheets, in the sense that, the financial statements do not account for inflation which implies that they do not represent the real picture of the scenario. However, given not so high inflation it would not affect the analysis much.
- 3) Seasonal factors can greatly influence ratios. Hence, you should make sure that you control for the seasonal differences. Better would be to perform the ratio analysis on a quarterly basis to get the complete picture for the whole year.
- 4) With the kind of accounting scams breaking every other day, its not unusual to find that Window-dressing could have been done. Though small investors have no control on this and very little chance to get to know about the creative accounting that is taking place one should not however loose sight into any sort of discrepancies in the accounting.
- 5) Its quite possible that different companies within an industry may use different accounting practices which would make it difficult to compare the two companies. In that situation it should be made sure that the changes are accounted for and made sure that it would not affect the analysis.
- 6) It could also be possible that different companies may use different fiscal years. Say for instance one company may use the calendar year as its account closing year while some others may use the fiscal year. In that process care should be taken to compare the respective months or years adjusting for the differences in the accounting year.
- 7) The age of the company may distort ratios. So it should be take into account that the companies you are comparing have some basic similarities. The longer

the company had stayed in business the ratios would be quite different from the new entrants in the same industry. Such factors have to be accounted for.

- 8) However, there is also possibility that innovation and aggressiveness may lead to “bad” ratios. So one should not blindly depend on the numeric ratio figures but try and understand why the company has bad ratios in any particular year before jumping into wrong conclusions.
- 9) There could also be possibility that the benchmark used for analyzing the ratios may not be appropriate. The industry average may not be an appropriate or desirable target ratio. One has to carefully pick the industry averages or the benchmark ratios. As industry averages can be very rough approximations.
- 10) The other downside of the ratio analysis is that ratios should not be interpreted “one-way,” e.g. a higher ratio may only be better up to a point. So one should not assume that this will hold good in future. A company having a Profit margin of 10% in 2003 does not necessarily indicate that it would have atleast 10% profit margin in the year 2004.

5.10 LET US SUM UP

Financial statements represent a summary of the financial information prepared in the required manner for the purpose of use by managers and external stakeholders. Financial reports are prepared basically to communicate to the external shareholders about the financial position of the company that they own.

Different groups of users of financial statements are interested in different aspects of a company’s financial activities. Short-term creditors are interested primarily in the company’s ability to make cash payments in the short term; they focus their attention on operating cash flows and current assets and liabilities. Long-term creditors, on the other hand, are more interested in the company’s long-term ability to pay interest and principal and would not limit their analysis to the company’s ability to make cash payments in the immediate future. The focus of common stockholders can vary from one investor to another, but generally stockholders are interested in the company’s ability to pay dividends and increase the market value of the stock of the company. Each group may focus on different information in the financial statements to meet its unique objectives

An important aspect of financial statement analysis is determining relevant relationships among specific items of information. Companies typically present financial information for more than one time period, which permits users of the information to make comparisons that help them understand changes over time. Financial statements based on absolute value and percentage changes and trend percentages are tools for comparing information from successive time periods. Component percentages and ratios, on the other hand, are tools for establishing relationships and making comparisons within an accounting period. Both types of comparisons are important in understanding an enterprise’s financial position, results of operations, and cash flows.

Assessing the quality of information is an important aspect of financial statement analysis. Enterprises have significant latitude in the selection of financial reporting methods within generally accepted accounting principles. Assessing the quality of a company’s earnings, assets, and working capital is done by evaluating the accounting methods selected for use in preparing financial statements. Management’s choice of accounting principles and methods that are in the best long-term interests of the company, even though they may currently result in lower net income or lower total assets or working capital, leads to a conclusion of high quality in reported accounting information.

Financial accounting information is most useful if viewed in comparison with other relevant information. Net income is an important measure of the financial success of an enterprise. To make the amount of net income even more useful than if it were viewed simply in isolation, it is often compared with the sales from which net income results, the assets used to generate the income, and the amount of stockholders' equity invested by owners to earn the net income. Hence Ratio analysis is used as a major tool.

Ratios are mathematical calculations that compare one financial statement item with another financial statement item. The two items may come from the same financial statement, such as the current ratio, which compares the amount of current assets with the amount of current liabilities, both of which appear in the statement of financial position (balance sheet). On the other hand, the items may come from two different financial statements, such as the return on stockholders' equity, which compares net income from the income statement with the amount of stockholders' equity from the statement of financial position (balance sheet). Accountants and financial analysts have developed many ratios that place information from a company's financial statements in a context to permit better understanding to support decision making.

Often ratio analysis is performed in a more structured form called the Dupont model of analysis. This helps the investors a better picture of the analysis and also more meaningful and holistic picture of the financial position of the companies.

5.11 KEY WORDS

Accounting Ratio : Ratio of accounting figures presented in financial statements.

Common Size Balance Sheet : Statement of assets and liabilities showing each item as a ratio (percentage) of the aggregate value of assets/liabilities.

Common Size Income Statement : Statement of income and expenditure showing each item as a ratio (percentage) of net sales.

Comparative Balance Sheet : Statement presenting changes in the value of assets, liabilities and capital investment between two Balance Sheet dates.

Comparative Income Statement : Statement presenting changes in income and expenditure over successive years.

Capital Employed : Long-term funds including owners' capital and borrowed capital.

Capital Structure : Financial mix plan of debt and equity.

Financial Analysis : Process of examining the financial position and operating performance with the help of information provided by the financial statement.

Financial Reporting : Communicating information based on financial data in the form of reports.

Financial Ratios : Ratios indicating financial soundness of the firm. It is also called leverage ratio.

Financial Statements : Annual statements of assets and liabilities (Balance sheet) of income and expenditure (Profit and Loss account).

Intra-firm Comparison : Comparing financial data of one firm with the corresponding data of comparable firm(s).

Intra-firm Comparison : Comparison of the financial data relating to one period with those of previous periods in respect of the same firm.

Owners' Equity : Shareholders funds including share capital (both preference and equity) P & L A/c balance, reserves **minus** fictitious assets. It is also called **net worth**.

Ratio : Measure of one value or number in relation to another.

Ratio Analysis : Computing, determining and explaining the relationship between the component items of financial statements in terms of ratios.

Leverage Ratios : Ratios that evaluate the long-term solvency of a firm. These are also called solvency ratios.

Liquidity Ratios : Ratios that assess the capacity of a firm to meet its short-term liabilities.

5.12 TERMINAL QUESTIONS

- 1) From the following balance sheet of XYZ Co. Ltd. calculate Return on Capital employed.

Balance sheet as on 31.03.2005

Liabilities	Rs.	Assets	Rs.
Share Capital	6,00,000	Fixed assets	9,00,000
Reserves	2,00,000	Current assets	3,00,000
10% Debentures	2,00,000	Investment in	
Provision for Taxation	2,00,000	Govt. securities	2,00,000
Profit and Loss A/c	2,00,000		
	<u>14,00,000</u>		<u>14,00,000</u>

Profit and loss for the period ended 31.03.2005

	Rs.		Rs.
To Cost of goods sold	6,00,000	By Sales	10,00,000
To Interest on Debentures	20,000	By Income from investment	20,000
To Provision for Taxation	2,00,000		
To Net profit after Tax	2,00,000		
	<u>10,20,000</u>		<u>10,20,000</u>

(Ans.: Operating profit : Rs. 4,00,000 Capital employed : Rs. 10,00,000 ROC = 40%).

- 2) Following is the Profit and Loss Account of Shriram Company Ltd., for the year ending March 31, 2005 and the Balance Sheet as on that date. You are required to compute liquidity, long-term solvency, turnover ratios, and profitability ratios both in relation to capital and sales.

Profit and Loss Account of Shriram Company Ltd. for the year ending March 31, 2005

	Rs.		Rs.
To Opening Stock	90,000	By Sales	12,60,000
To Purchases	9,00,000	By Closing Stock	1,50,000
To Direct Expenses	20,000		
To Gross Profit c/d	4,00,000		
	<u>14,10,000</u>		<u>14,10,000</u>

Analysis of Financial Statements

To Operating Expenses:		By Gross Profit b/d	4,00,000
Administrative Expenses	40,000		
Selling & Distribution Expenses	<u>60,000</u>	1,00,000	
To Non-operating Expenses:			
Loss on the sale of shares	10,000		
Interest	<u>30,000</u>	40,000	
To Provision for Taxation		40,000	
To Net Profit		<u>2,20,000</u>	
		<u>4,00,000</u>	<u>4,00,000</u>

Balance Sheet of Shriram Company Ltd. as on March 31, 2005

Liabilities	Rs.	Assets	Rs.
Equity Share Capital (60,000 shares of Rs. 10 each)	6,00,000	Land & Buildings	4,00,000
Reserves & Surplus	50,000	Plant & Machinery	3,20,000
Profit & Loss Account	1,60,000	Stock	1,50,000
10% Debentures	3,00,000	Cash at bank	1,20,000
Creditors	<u>1,80,000</u>	Debtors	3,00,000
	<u>12,90,000</u>		<u>12,90,000</u>

(Ans.: Current ratio = 3.17 : 1, Quick ratio = 2.33:1)

Gross profit ratio = 31.75%, Net profit ratio = 17.46%

Operating profit ratio = 23.89%

Operating ratio = 76.19%

Return on capital employed = 27%

Return on Investment = 19.82%

Return on shareholder's equity = 27.16%

Earning per share = 3.67)

- 3) The following is the Balance Sheet of X Co. Ltd. as on March 31, 2005. Calculate the liquidity ratios.

Liabilities	Rs.	Assets	Rs.
Share Capital	50,000	Plant and Machinery	60,000
Profit and Loss A/c	10,000	Stock	20,000
10% Debentures	30,000	Debtors	14,000
Sundry Creditors	14,000	Bills Receivables	5,000
Outstanding Expenses	6,000	Short-term Securities	8,000
Provision for Taxation	<u>3,000</u>	Cash	<u>6,000</u>
	<u>1,13,000</u>		<u>1,13,000</u>

(Answer: Current Ratio = 2.304, Quick Ratio = 1.43)

4) From the following details, calculate leverage ratios.

Balance Sheet of ABC Ltd. as on March 31, 2005

Liabilities	Rs.	Assets	Rs.
Equity Share Capital	1,00,000	Land	60,000
8% Preference Share Capital	40,000	Plant and Machinery	1,50,000
Reserves & Surpluses	30,000	Less:	
9% Long-term Loan	50,000	Accumulated depreciation	<u>30,000</u>
10% Debentures	60,000		1,20,000
Creditors	20,000	Stock	40,000
Bills Payable	15,000	Debtors	70,000
Accrued Expenses	5,000	Prepaid Expenses	5,000
		Marketable Securities	20,000
		Cash	5,000
	<u>3,20,000</u>		<u>3,20,000</u>

Answer: Debt Equity Ratio = 0.647 : 1
 Proprietary Ratio = 0.531 : 1
 Total Debt Ratio = 0.469 : 1

5) From the following details you are required to compute:

- i) Current Ratio
- ii) Operating Ratio
- iii) Stock Turnover Ratio
- iv) Total Assets Turnover Ratio
- v) Return on Shareholders Equity, and
- vi) Net Profit Ratio

Profit and Loss Account for the year ended March 31, 2005

	Rs.		Rs.
To Opening Stock	50,000	By Sales	5,00,000
To Purchases	3,40,000	By Closing Stock	30,000
To Incidental Expenses	20,000		
To Gross Profit c/d	1,20,000		
	<u>5,30,000</u>		<u>5,30,000</u>
To Operating Expenses :		By Gross Profit b/d	1,20,000
Selling and Distribution	20,000	By Non-operating Income:	
Administrative	<u>30,000</u>	Interest	2,000
	50,000	Profit on sale of shares	<u>3,000</u>
To Non-operating Expenses:			5,000
Loss on Sale of assets	2,500		
To Net Profit	72,500		
	<u>1,25,000</u>		<u>1,25,000</u>

Balance Sheet as on March 31, 2005

Liabilities	Rs.	Assets	Rs.
Share Capital :		Land and Building	50,000
10,000 ordinary shares of Rs. 10 each	1,00,000	Plant and Machinery	1,00,000
Reserves	22,500	Debtors	35,000
Current Liabilities	45,000	Stock	30,000
Profit and Loss A/c	50,000	Bank	2,500
	<u>2,17,500</u>		<u>2,17,500</u>

Answer : i) Current Ratio = 1.5:1, ii) Operating Ratio = 0.86:1,
 iii) Stock Turnover Ratio = 9.5 times, iv) Net Assets Turnover Ratio = 2.9 times,
 v) Return on Shareholders Equity = 42%, vi) Net Profit Ratio = 14.5%)

6) The following is the Balance Sheet of Dev Ltd. for the year ended March 31, 2005.

Liabilities	Rs.	Assets	Rs.
Equity Capital (2,500 share of Rs. 100 each)	2,50,000	Fixed Assets	9,00,000
7% Preference Capital	50,000	Less: Depreciation	<u>2,50,000</u>
Reserve & Surpluses	2,00,000		6,50,000
6% Debentures	3,50,000	Current Assets	
Current Liabilities		Cash	25,000
Creditors	30,000	10% Investments	75,000
Bills Payable	50,000	Debtors	1,00,000
Accured Expenses	5,000	Stock	<u>1,50,000</u>
Provision for Taxation	65,000		3,50,000
	<u>10,00,000</u>		<u>10,00,000</u>

Additional Information :	Rs.
Net Sales	15,00,000
Purchases	13,00,000
Cost of Goods Sold	12,90,000
Profit before Tax	1,46,500
Profit after Tax	50,000
Operating Expenses	50,000
Market Value per Share	150

Calculate activity ratios and profitability ratios.

[**Answer : Activity Ratios:** Total Assets Turnover = 1.5 times,
Stock Turnover = 8.89 times.

Debtors Turnover = 15 times

Creditors Turnover = 10 times. Net Assets Turnover = 1.765 : 1

Profitability Ratio : Gross Operating Margin = 14%, Net Profit

Margin = 3.33% Gross Operating Margin = 10.67%,
Operating Ratio = 89.33%

ROCE = 18.82%, Return on Shareholders' Equity = 10%

EPS = Rs. 18-60]

- 7) During the year 2005, Satyam Co. made sales of Rs. 4,00,000. Its gross profit ratio is 25% and net profit ratio is 10% . The stock turnover ratio was 10 times. Calculate (i) Gross Profit, (ii) Net Profit , (iii) Cost of Goods Sold, (iv) Operating Expenses.

Answer : i) Gross Profit : Rs. 1,00,000

ii) Net Profit : Rs. 40,000

iii) Cost of goods sold : Rs. 3,00,000

iv) Operating Expenses : Rs. 60,000)

- 8) Following is the Profit and Loss Account and Balance Sheet of a company :

Profit & Loss Account for the year ended 31st March, 2005

Particulars	Rs.	Particulars	Rs.
To Opening Stock	3,00,000	By Sales	20,00,000
To Purchases	6,00,000	By Closing Stock	5,00,000
To Direct Wages	4,00,000	By Profit on Sale of Shares	1,00,000
To Manufacturing Expenses	2,00,000		
To Administrative Expenses	1,00,000		
To Selling and Distribution Expenses	1,00,000		
To Loss on Sale of Plant	1,10,000		
To Interest on Debentures	20,000		
To Net Profit	7,70,000		
	<u>26,00,000</u>		<u>26,00,000</u>

Balance Sheet as on 31st March, 2005

Liabilities	Rs.	Assets	Rs.
Equity share Capital	2,00,000	Fixed Assets	5,00,000
Preference Share Capital	2,00,000	Stock	5,00,000
Reserves	2,00,000	Sundry Debtors	2,00,000
Debentures	4,00,000	Bank	1,00,000
Sundry Creditors	2,00,000		
Bills Payable	1,00,000		
	<u>13,00,000</u>		<u>13,00,000</u>

Analysis of Financial Statements

Examine the Profit & Loss A/c and Balance Sheet given above and calculate the following ratios:

- i) Gross Profit Ratio
- ii) Current Ratio
- iii) Debt Equity Ratio
- iv) Liquidity Ratio
- v) Operating Ratio
- vi) Propreitory Ratio
- vii) Total Assets to Debt Ratio 50%

- (Answer :** i) Gross profit Ratio 50%
- ii) Current Ratio : 2.67:1
 - iii) Debt Equity Ratio : 0.67:1
 - iv) Liquidity Ratio : 1:1
 - v) Operating Ratio : 60%
 - vi) Proprietary Ratio : 0.46:1
 - vii) Total assets to Debt Ratio : 3.25:1)

- 9) With the help of the given information calculate following ratios:
 (i) Operating Ratio, (ii) Current Ratio, (iii) Stock Turnover Ratio,
 (iv) Debt Equity Ratio

	Rs.
Equity Share Capital	2,50,000
9% Preference Share Capital	2,00,000
12% Debentures	1,20,000
General Reserve	20,000
Sales	4,00,000
Opening Stock	24,000
Purchases	2,50,000
Wages	15,000
Closing Stock	26,000
Selling and Distribution Expenses	3,000
Other Current Assets	1,00,000
Current Liabilities	75,000

- (Answer :** i) Operating Ratio : 66.5
- ii) Current Ratio : 1.68:1
 - iii) Stock turnover ratio : 10.52 times
 - iv) Debt equity ratio : 33.05%)

- 10) Prepare a horizontal analysis of the balance sheet for Grant, Inc., by computing the percentage change from 2004 to 2005 for each of the amounts listed below. Comment on the results. (Figures in Rs.)

Balance Sheet of CC Ltd.	2005	2004
Cash	50,000	40,000
Accounts receivable	100,000	60,000
Inventory	150,000	100,000
Equipment, net	1,200,000	800,000
Total assets	1,500,000	1,000,000
Accounts payable	150,000	100,000
Bonds payable (long-term debt)	400,000	400,000
Common stock	600,000	300,000
Retained earnings	350,000	200,000
Total Liabilities & Shareholder Equity	1,500,000	1,000,000

- 11) Given below are the financial statements of Aventis Pharma for the year ending March 2004 and 2005. Analyse and answer the questions following the data.

Company Name	Aventis Pharma	
	2005	2004
Sales	609.92	675.81
Raw material consumed	185.93	207.84
Operating expenses	327.49	376.88
PBIT	96.5	91.09
Interest	1.48	0.41
PBT	95.02	90.68
TAX	47.09	32.7
PAT (NNRT)	47.93	57.98
	2003	2002
Net worth	212.24	239
Borrowings	33.88	20.01
TL	246.12	259.01
Net fixed assets	158.44	149.95
Inventories	66.92	78.36
Sundry debtors	48.24	34.28
Cash and marketable securities	57.32	120.64
Less Current liabilities & provision	118.08	129.81
Other CA	33.28	5.59
TA	246.12	259.01
Current assets	205.76	238.87
Cost of debt	4.37	2.05

Analysis of Financial Statements

- i) Discuss the quality of a company's earnings, assets, and working capital.
- ii) Put the company's net income into perspective by relating it to sales, assets, and stockholders' equity.
- iii) Compute the ratios widely used in financial statement analysis and explain the significance of each.
- iv) Analyze financial statements from the viewpoints of common stockholders, creditors, and other stakeholders if any.
- v) Perform a Dupont analysis for the two years and list down your observations and conclusions.

12) Given below is the Balance sheet of CC Company Ltd.

- a) Compute the following ratios for December 2004 and December 2003: Current Ratio, Acid-test Ratio, and the Debt Ratio. Comment the results.
- b) The income statement for 2002 reported: Net sales Rs. 1,600,000; Cost of goods sold Rs. 600,000; and Net income Rs. 150,000. Compute the following ratios for 2002: Inventory Turnover, Return on Sales, and Return on Equity. Comment the results.
- c) Identify the ratios of most concern to Creditors. Explain why Creditors are most interested in these ratios.
- d) Identify the ratios of most concern to Shareholders. Explain why Shareholders are most interested in these ratios.

Balance Sheets	31.12.2004	31.12.2003
	Rs.	Rs.
Cash	50,000	40,000
Accounts receivable	100,000	60,000
Inventory	150,000	100,000
Equipment, net	1,200,000	800,000
Total assets	<u>15,00,000</u>	<u>10,00,000</u>
Accounts payable	150,000	100,000
Bonds payable (long-term debt)	400,000	400,000
Common stock	600,000	300,000
Retained earnings	350,000	200,000
Total Liabilities	<u>15,00,000</u>	<u>10,00,000</u>

Note : These questions will help you to understand the unit better. Try to write answers for them. But do not submit your answers to the University. These are for your practice only.

5.13 FURTHER READINGS

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