

INTRODUCTION TO FINANCIAL MANAGEMENT

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1.0 OBJECTIVE

After going through this chapter, the learner will be able to;

1. Understand the meaning of business finance.
2. Explain the meaning of Financial Management
3. Understand the functions of Financial Management
4. Understand in detail the different decisions taken under Financial management
5. Analyze the Indian financial system and evaluate it's functions.
6. Evaluate different financial assets, intermediaries and the regulatory system.

1.1 MEANING OF BUSINESS FINANCE

Let us say that you come across a news where a company is looking forward to acquire another company overseas. The company is trying hard to arrange finances in the form of debt. There are several key decisions to be made will put the very future of the company at stake. These choices necessitate careful budgeting, knowledge of the resulting capital structure, and awareness of the enterprise's profitability and risk. All of these affect both employees and shareholders. They require knowledge of the business's financial operations, key areas for financial decision-making, financial risk, and working capital requirements. We are all aware of how important finance is to operating a business. The efficiency with which funds are allocated to assets and operations, as well as how quickly and affordably they are provided from outside or within the company, determines how successful a corporation will be.

According to B.O. Wheeler Meaning of Business Finance includes those business activities that are concerned with the acquisition and conservation of capital funds in meeting the financial needs and overall objectives of a business enterprise.”

Business is defined as the creation and distribution of goods and services to meet societal demands. Businesses need money, or what is known as business finance, in order to conduct any operation properly. Be a result, money is sometimes referred to as a business's lifeblood. Without sufficient money readily available for use, a firm could not operate. The amount of money the businessman invested to start the company is insufficient to cover its expenses. As a result, the businessman must look for a way to raise money. In order to achieve successful financial management and keep the firm operating, it is necessary to conduct research on the financial demands and available solutions to meet those needs.

The basic requirements of a business would be to purchase a facility or equipment, or it may be to purchase raw materials, build a business that results in additional enrollments, pay workers, and so forth.

The following categories apply to the financial requirements of a business:

Fixed Capital Requirement: Money is needed to purchase fixed assets, such as land, buildings, plants, and machinery, in order to launch a firm. The Fixed Capital Requirement is what we refer to as.

Working capital needs: A firm needs money for daily operations. The term "working capital requirements" refers to this. For the acquisition of raw materials, paid salaries, wages, rent, and taxes, working capital is necessary.

Diversification: A business requires additional money to expand its range of operations which are vital for its growth. A company would like to add several verticals to its business and eventually dream of conducting operations across several countries.

Technology upgrade: It costs money to adopt the newest technology, such as using certain software and the newest computers in the workplace.

1.2 FINANCIAL MANAGEMENT – MEANING, SCOPE, OBJECTIVES AND FUNCTIONS.

1.2.1 Meaning of Financial Management

Planning, arranging, managing, and controlling financial activities, such as the acquisition and use of an organization's funds, is known as financial management. It entails applying general management ideas to the company's financial resources.

1.2.2 Scope of Financial Management / Different decisions under Financial Management

1. **Investment decisions:** These decisions involve buying fixed assets (called as capital budgeting). Investment choices referred to as working capital choices can include investments in current assets.
2. **Financial decisions:** These decisions are related to raising money from a variety of sources, and they will rely on the choice of source, length of time for financing, cost of financing, and returns obtained from financing.
3. **Dividend decisions:** A decision about the distribution of net profits must be made by the finance manager. Net profits are typically split into two categories:
 - a. Dividend for shareholders—A dividend must be declared, along with its rate.
 - b. Retained earnings: The amount of retained profits must be decided, and it will be based on the company's plans for growth and diversification.

1.2.3 Objectives of Financial Management

Financial Management plays an important role in the overall business management. Money is the life blood of any organization and financial management helps the management with key decision making skills for optimum utilization of monetary resources. The purchase, allocation, and control of a concern's financial resources are within the purview of financial management. The goals can include;

1. To guarantee a consistent and sufficient flow of funding to the organization so that the organization never runs out of money. This is also known as liquidity management. Most businesses fail when they run out of money.
2. To make sure that shareholders receive acceptable returns, which will rely on their earning potential, the share's market price, and their expectations. Hence financial management ensures that adequate returns are generated through sound decisions.
3. To guarantee optimal use of the budget. Once funds have been secured, they should be used as efficiently and effectively as feasible. As such, funds are always available in limited quantities and always come with a cost. Managing it wisely and reducing money leakages is an important task.
4. To assure safety on investment, money should be put into safe endeavors in order to get a sufficient rate of return. This involves several elements of project management including business and project evaluation to check its financial viability.
5. To design a reliable capital structure: To maintain a balance between debt and equity capital, there should be a healthy and fair composition of capital. This is very much important as financial stability to a great extent relies on the soundness of the capital structure.

1.3 FUNCTIONS OF FINANCIAL MANAGEMENT

1. Calculating the company's capital needs: A finance manager must calculate the capital needs of the business. This is dependent on a concern's future programmes, policies, and projected expenses, profits, and gains. Estimates must be created in a way that increases the enterprise's earning potential.

2. Determining the capital composition: Following estimation, the capital structure must be chosen. Debt equity analysis, both short- and long-term, is involved in this. This will depend on how much equity capital a company currently has and how much money has to be raised from other sources.

3. Choice of sources of financing: A corporation can choose from a variety of options to raise additional funds, including;

- a. the issuance of shares and debentures.
- b. Loans to be obtained from financial institutions and banks
- c. Public deposits that will be drawn, through the issue of corporate bonds and debentures.

The choice of factor will depend on the relative strengths and drawbacks of each finance source and time period.

4. Investment of funds: To ensure investment safety and regular returns, the finance manager must choose to deploy funds to successful initiatives.

5. Surplus disposition: The financial manager must decide how to use the net gains. There are two ways to do this:

- a. Dividend declaration - It lists the rate of dividends as well as other advantages, such as bonuses to be given.
- b. Retained profits - The amount must be chosen, and it will rely on the company's expansion, innovation, and diversification objectives.

6. Cash management: It is a choice that falls under the purview of the finance manager. Cash is needed for a variety of things, including paying workers and salaries, utilities like electricity and water, paying creditors, covering current obligations, keeping enough stock on hand, buying raw materials, etc.

7. Financial controls: The finance manager must conduct financial control in addition to planning, obtaining, and using the funds. Numerous methods, including ratio analysis, financial forecasting, cost and profit control, etc., can be used to achieve this.

1.4 INTRODUCTION TO THE INDIAN FINANCIAL SYSTEM

1.4.1 Meaning and features of our financial system

The financial system is made up of the services that are offered to a person by the various financial institutions, such as banks, insurance firms, pension plans, funds, etc.

The characteristics of the Indian financial system are listed below:

1. It promotes both saving and investment, it is essential to the nation's economic growth.
2. It facilitates mobilising and distributing of savings.
3. It makes it easier for financial institutions and marketplaces to grow.
4. It has a crucial impact on capital formation.
5. It facilitates communication between the saver and the investor.

1.4.2 Components of a financial system – Institutions, Markets and Assets

The Indian Financial System is made up of four basic parts. This comprises:

1. Financial Institutions
2. Financial Assets
3. Financial Services
4. Financial Markets

1.4.3 Financial Institutions

Financial institutions typically act as an intermediary between the borrower and the investor in the market. Savings from the investor are either directly or indirectly accessed through the financial markets.

The following are the primary responsibilities of the financial institutions:

1. It is possible to turn a short-term obligation into a long-term investment.
2. It facilitates the transformation of a risky investment into a risk-free investment.
3. It also serves as a convenient medium of exchange, matching small deposits with big loans and large deposits with smaller loans.

A bank is the ideal illustration of a financial institution. People who have extra cash save it in their accounts, while others who are in a financial emergency take out loans. The bank serves as a go-between for the two.

These institutions can be further classified into two categories:

1. **Banking Institutions or Depository Institutions** - These are institutions like banks and other credit unions that collect funds from the public in exchange for interest on deposits made and then lend those funds to those in need.
2. **Non-Banking Institutions or Non-Depository Institutions** - This group includes brokerage firms, mutual funds, and insurance companies. They can only sell customers financial items; they are not permitted to request cash deposits.

Additionally, financial institutions can be divided into one of three groups:

Regulatory - Organizations like the RBI, IRDA, SEBI, etc. that oversee the financial markets.

Intermediates - Commercial banks like SBI, BOB, and PNB that offer loans and other forms of financial support.

Non-Intermediaries- Institutions that offer financial assistance to corporate clients are known as non-intermediaries. It consists of SIBDI, NABARD, etc.

1.4.4 Financial Assets

Financial Assets are those assets and instruments that are exchanged on financial markets. The securities on the market vary from one another based on the various demands and needs of the loan applicant.

The following is a brief discussion of some significant financial assets:

Call money market - It is the term for a loan that is given for one day and paid back the following day. There is no need for collateral security in this form of transaction.

Notice money market - Loans that are extended for more than a day but less than 14 days are referred to as notice money. There is no need for collateral security in this form of transaction.

Term money market - is used to describe deposits with maturities longer than 14 days.

T-Bills - It also referred to as Treasury Bills, are government bonds or debt securities that have a maturity of less than a year. A T-Bill represents a financial loan to the government.

Certificate of deposits - A certificate of deposit is a dematerialized form for money deposited in a bank for a set amount of time that is electronically generated.

Commercial Papers - Commercial Paper is a form of short-term, unsecured debt issued by businesses.

1.4.5 Financial Services

Services offered by companies that manage assets and liabilities are called financial services./. They assist in obtaining the necessary cash and ensure that they are invested effectively.

India's financial services include:

Banking Services - Any small or large service offered by banks, such as opening an account, approving a loan, depositing money, issuing debit or credit cards, etc.

Insurance services - Services related to insurance include issuing insurance, marketing policies, undertaking insurance, and brokerages, among other things.

Investment services - Asset management is primarily included in investment services.

FOREX services - Currency exchange, foreign exchange, and other related services are included in the category of foreign exchange services.

The primary goal of financial services is to let a person buy, sell, or borrow securities, as well as facilitate lending, investing, and facilitating payments and settlements.

1.4.6 Financial Markets

A financial market is a venue where buyers and sellers can interact and engage in the trading of money, bonds, shares, and other assets.

Four categories further categorize the financial market as follows:

1. **Capital Market:** The Capital Market deals with transactions that have been going on for more than a year and is intended to finance long-term investments. Three categories further split the capital market:
 - a. Corporate securities market
 - b. Government securities market
 - c. Long term loan market
2. **Money Market:** The money market The sort of market, which is mostly dominated by the government, banks, and other large institutions, is only authorised for short-term investments. It is a wholesale debt market that uses very liquid, low-risk instruments. You can further categorise the money market into two categories:
 - a. Organizational Money Market
 - b. Unstructured Money Market
3. **FOREX markets:** The Foreign Exchange Market, one of the most sophisticated marketplaces in the world, deals with the demands of multi-currency. On the basis of the exchange rate, money is transferred in this market.
4. **Credit Market:** A market where numerous banks and financial and non-financial institutions provide short-term and long-term loans to people or organisations is known as the Credit Market.

1.5 REGULATORY ASPECTS OF INDIAN FINANCIAL SYSTEM

1.5.1 Introduction to regulations

Regulations are an important part of and an integral aspect of any financial system. Regulations are required for the orderly growth of the financial sector and the entire economy. Regulations are required to maintain the integrity of the financial system and its components. Failure of banks and other financial services create larger systematic problems for the economy. It is the job of different regulators to oversee regulations of their respective domains. Sound regulations aim to enforce existing laws, prevent scams and financial frauds, prosecute current cases of financial misconduct, investigate complaints and protect the interests of investors and clients. In simple terms, regulations ensure that all stakeholders have confidence in the financial system.

There are two aspects of regulations;

1. **Prudential Regulations:** These norms are in place to ensure that firms have the requisite amount of money to remain solvent. These regulations are in place to make sure that the institutions and intermediaries are governed properly and there are appropriate risk controls measures in place. These rules prevent a systemic failure of the financial services ecosystem.
2. **Investor Protection:** A vital aspect of regulations is protecting the rights of investors. The Indian financial system is characterized by a large number of small investors who bring in small savings and deposits into the system. It is absolutely essential that their interests are protected. Investors' rights need to be managed properly and their complaints need to be addressed at the earliest.

1.5.2 Regulators in India

The regulatory system in India is such that the regulators are placed at the top of the hierarchy and they are responsible for managing all aspects of that particular financial market / service. Following are some of the key regulators in the Indian context.

1.5.3 Securities and Exchange Board of India (SEBI)

Securities and Exchange Board of India (SEBI) is the nodal regulator of securities and commodities markets in India. It is directly placed under the jurisdiction of the Ministry of Finance, Government of India. Although SEBI was established in 1988, it gained statutory status and power only in 1992 under SEBI Act, 1992. Before SEBI was established, Controller of Capital Issues was the regulator of Capital Markets in India. It is headquartered in Mumbai and has regional offices in New Delhi, Chennai, Ahmedabad and Kolkata. The membership structure of SBI is such that it has;

- a. One chairman nominated by the Union Government of India.
- b. Two members / officers nominated by the UNION Finance Ministry
- c. One member nominated by the reserve Bank of India
- d. The remaining five members are appointed by the Union Government of India out of whom three shall be full time members.

The scope of SEBI covers the three broad groups of market participants;

- a. Market Intermediaries
- b. Issuers of securities
- c. Investors

To ensure that SEBI does not falter in its functioning, it acts as a quasi legislative, quasi judicial and quasi executive functions. These three

makes SEBI a very potent market regulator. Over the years, SEBI has brought in plenty of market reforms which has made Indian markets at par with the best in the world.

The functions of SEBI can be categorized into two areas a. Regulatory Functions and b. Developmental Functions.

Regulatory Functions of SEBI

- a. Regulation of Stock Exchanges and other related self regulated organizations.
- b. Regulation of Brokers, Sub brokers, Registrars to the issue, Underwriters etc.
- c. Regulation of Portfolio Managers and collective investment schemes like Mutual Funds.
- d. Prevention of unfair market practices like insider trading and other fraudulent practices.
- e. Regulating any other areas concerning capital markets.

Developmental Functions of SEBI

- a. Promoting Investor education and creating awareness about stock markets.
- b. Conducting market related research and publishing information useful to all market participants.
- c. Promotion of self regulatory organizations and drafting guidelines for compliance and disclosure.
- d. Undertaking training and development of different intermediaries.

1.5.4 Reserve Bank of India (RBI)

The Reserve Bank of India is the central bank of the country. It is the apex bank and the principal regulator of the Banking sector in the country. The main objectives of RBI is to issue currency notes and to create a stable monetary policy. In other words, the actions of the RBI have a direct bearing on the economic growth and stability of the country.

The Reserve Bank of India is driven by a 21 member central board of directors. It has 1 Governor, 4 Deputy Governors, 10 Government Nominated Directors, 2 Finance Ministry representatives (who usually are Economic Affairs Secretary and Finance Affairs Secretary) and 4 Directors who represent the 4 local boards at New Delhi, Mumbai, Kolkata and Chennai. Each of these Boards consist of 5 members who adequately represent the regional banking landscape.

Following are some of the key functions of the Reserve Bank of India

1. Issuing Bank Notes - One of the most important functions of the RBI is issuing currency notes and coins of all denominations except Re1 which is issued by the Ministry of Finance. Along with issuing notes and coins, it is also responsible for the effective distribution of these notes and coins across the length and breadth of the country.
2. Custodian of reserves of commercial banks - The RBI acts as the custodian of cash reserves collected from other commercial banks. Commercial Banks are required to maintain CRR (Cash reserve ratio) at a rate decided in the monetary policy.
3. Banker to the Government - A major function of the central bank is to act as the banker to the government. The RBI is responsible for maintaining and operating all the deposit accounts of the central government. In international financial institutions like IMF and World Bank, RBI represents the government of India.
4. Custodian of foreign exchange reserves - RBI is responsible for maintaining the nation's FOREX reserve. It is absolutely essential especially for dealing with any Balance of Payment crisis. FOREX imbalance may cause an economic crisis of huge proportions.
5. Lender of Last Resort - The central bank acts as the banker to all banks. In fact it is the responsibility of the RBI to monitor the financial health of all banks in the country. RBI provides commercial banks with loans in case the commercial bank is facing any financial crisis.
6. Controller of credit in the economy - To achieve the monetary policy goals, the central bank is responsible for controlling the credit creation function of commercial banks. RBI uses qualitative and quantitative methods to regulate and control the flow of money in the economy. Interest rates and money supply regulations are required to achieve objectives related to inflation, consumption and liquidity.

1.5.5 Insurance Regulatory and Development Authority of India (IRDAI)

Insurance Regulatory and Development Authority (IRDA) is the regulator of the overall insurance business in India. It works under the directives of the Ministry of Finance and is tasked with the important task of regulating and licencing insurance and reinsurance business in the country. It was set up under the IRDA Act, 1999 and is headquartered in Hyderabad, Telangana.

Section 4 of the IRDA Act, 1999 gives guidelines about the composition of governing members. IRDA is governed by a 10 member body which comprises 1 chairman, 5 fulltime members and 4 part time members. All the members are appointed by the Government of India.

Insurance business is classified into life and general insurance. Life Insurance as the name suggests covers life insurance policies. General

Insurance on the other hand includes all the non life insurance business like health insurance, motor vehicle insurance, commercial insurance, travel insurance to name a few. We can see that the scope of IRDA is very vast.

Following are some of the key functions of IRDA

- a. IRDA has the sole authority over issuing, modifying, renewing, suspending or cancelling the licenses of insurance companies.
- b. Specifying the code of conduct and monitoring the activities of surveyors and assessors.
- c. IRDA settles disputes between insurers and other insurance intermediaries.
- d. It is tasked with maintaining the overall financial soundness of insurance companies.
- e. A key primary function is to safeguard the rights and interest of the policyholders.
- f. IRDA is tasked with ensuring orderly growth of insurance business in the country. This is to ensure that economic development through insurance business is maintained at an optimum level.
- g. IRDA also acts as a quasi judicial agency and is responsible for settling disputes and redressing grievances of policy holders.
- h. Another key function is monitoring the premium rates charged and regulating any other business which benefits insurance business.

1.6 QUESTIONS FOR DISCUSSION

1. Explain the nature of business finance and its relative importance for a business.
2. Explain the meaning and scope of Financial management
3. Discuss the relative importance of financial management in managing the monetary resources of a firm.
4. What are the different decisions that a finance manager is required to make?
5. Discuss the importance of a robust financial system from an economic perspective.
6. Discuss the different components of Indian financial system.

Activity

One of the largest purchases occurred in the Indian steel sector during the years 2006–2007. Tata Steel made an offer to purchase Corus, the largest steel company in the UK. After multiple rounds of bidding, Tata Steel finally paid \$12.9 billion for Corus. Tata Steel is now the sixth-largest producer of steel in the world thanks to the Corus acquisition. Tata Steel's action was applauded by the Indian steel industry, but there was a

nationwide discussion about whether the company paid too much for the Corus acquisition. The acquisition's proponents noted that there were obvious synergies between the two businesses. This acquisition appeared to have long-term advantages for Tata Steel as well.

Relate the above caselet with your learnings and discuss the financial management decision aspects. You may take the help of online resources to understand the case better.



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FINANCIAL PERFORMANCE ANALYSIS USING RATIOS ANALYSIS

Unit Structure

2.0 Objective

2.1 What does Ratio Analysis tell you?

2.2 Liquidity Ratios

2.3 Working Capital Ratios

2.4 Capital Structure Ratios

2.5 Overall Profitability Ratios

2.6 Solved Problems

2.7 Problems for Practice

2.0 OBJECTIVE

After going through this chapter, the learner will be able to;

1. Understand the role played by financial statement analysis in decision making.
2. Understand the different Liquidity ratios
3. Understand the different Profitability ratios
4. Understand the different Debt ratios.
5. Understand other key financial ratios

Financial statements provide a thorough and an in-depth understanding of the different monetary aspects of any company. Different techniques are used in financial statement analysis to compare financial data and assess a company's situation.

These methods include of ratio analysis, common-size analysis, company comparisons, trend analysis, and year-over-year analysis. Ratio analysis is a mathematical technique for analysing a company's financial documents, such as the balance sheet and income statement, to gather knowledge about its liquidity, operational effectiveness, and profitability. The fact that ratios differ between industries must be mentioned. A company in the furniture industry, for instance, should only compare to benchmarks within its own sector. The topics are illustrated in this self learning material using hypothetical financial information from ABC Industries (assumed to be a publicly traded company).

2.1 WHAT DOES RATIO ANALYSIS TELL YOU?

By carefully examining both historical and current financial statements, investors and analysts use ratio analysis to assess a company's financial health. Comparative data may show how a business is doing through time and be used to predict how it will likely do in the future. This information can be used to assess how a company compares to others in its industry and to benchmark its financial performance against industry averages.

The financial statements of a company contain all the information needed to calculate the ratios, making it simple for investors to apply this method. Ratios serve as benchmarks for businesses. They assess the stocks of a particular sector. They also compare a company's present performance to its past results. Understanding the factors that affect ratios is typically significant as management has the freedom to occasionally change its approach to improve the stock and company ratios.

In most cases, ratios are employed in conjunction with other ratios rather than alone. You'll get a thorough understanding of the organisation from several perspectives and be better able to identify potential red flags if you have a solid understanding of the ratios in each of the four previously mentioned categories.

2.2 LIQUIDITY RATIOS

A crucial group of financial indicators known as liquidity ratios is used to assess a debtor's capacity to settle current debt commitments without the need for outside funding. The measurement of indicators such as the current ratio, quick ratio, and operating cash flow ratio allows us to calculate liquidity ratios, which assess a company's capacity to satisfy debt obligations as well as its margin of safety.

S. No.	RATIOS	FORMULAS
1	Current Ratio	Current Assets/Current Liabilities
2	Quick Ratio	Liquid Assets/Current Liabilities
3	Absolute Liquid Ratio	Absolute Liquid Assets/Current Liabilities

Profitability Ratios

These ratios examine a company's utilisation of its assets and the efficiency with which it makes money off of its equity and assets, which is another important component. Additionally, this provides the analyst with data on how well the company's operations are used.

S. No.	RATIOS	FORMULAS
1	Gross Profit Ratio	$\text{Gross Profit/Net Sales} \times 100$
2	Operating Cost Ratio	$\text{Operating Cost/Net Sales} \times 100$
3	Operating Profit Ratio	$\text{Operating Profit/Net Sales} \times 100$
4	Net Profit Ratio	$\text{Net Profit/Net Sales} \times 100$
5	Return on Investment Ratio	$\frac{\text{Net Profit After Interest And Taxes/ Shareholders Funds or Investments}}{\text{Net Profit After Interest And Taxes/ Shareholders Funds or Investments}} \times 100$
6	Return on Capital Employed Ratio	$\frac{\text{Net Profit after Taxes/ Gross Capital Employed}}{\text{Net Profit after Taxes/ Gross Capital Employed}} \times 100$
7	Earnings Per Share Ratio	$\frac{\text{Net Profit After Tax \& Preference Dividend}}{\text{No of Equity Shares}}$
8	Dividend Pay Out Ratio	$\frac{\text{Dividend Per Equity Share/Earning Per Equity Share}}{\text{Dividend Per Equity Share/Earning Per Equity Share}} \times 100$
9	Earning Per Equity Share	$\frac{\text{Net Profit after Tax \& Preference Dividend}}{\text{No. of Equity Share}}$
10	Dividend Yield Ratio	$\frac{\text{Dividend Per Share/ Market Value Per Share}}{\text{Dividend Per Share/ Market Value Per Share}} \times 100$
11	Price Earnings Ratio	$\frac{\text{Market Price Per Share Equity Share/ Earning Per Share}}{\text{Market Price Per Share Equity Share/ Earning Per Share}} \times 100$
12	Net Profit to Net Worth Ratio	$\frac{\text{Net Profit after Taxes / Shareholders Net Worth}}{\text{Net Profit after Taxes / Shareholders Net Worth}} \times 100$

2.3 WORKING CAPITAL RATIOS

Similar to the liquidity ratios, it examines whether the corporation can settle its current liabilities or debts with its current assets. This ratio is essential for creditors to determine a company's liquidity and how quickly it can turn assets into cash to pay off debts.

S. No.	RATIOS	FORMULAS
1	Inventory Ratio	Net Sales / Inventory
2	Debtors Turnover Ratio	Total Sales / Account Receivables
3	Debt Collection Ratio	Receivables x Months or days in a year / Net Credit Sales for the year
4	Creditors Turnover Ratio	Net Credit Purchases / Average Accounts Payable
5	Average Payment Period	Average Trade Creditors / Net Credit Purchases X 100
6	Working Capital Turnover Ratio	Net Sales / Working Capital
7	Fixed Assets Turnover Ratio	Cost of goods Sold / Total Fixed Assets
8	Capital Turnover Ratio	Cost of Sales / Capital Employed

2.4 CAPITAL STRUCTURE RATIOS

Each business has the capital or resources necessary to finance its operations. These ratios, known as the capital structure ratios, examine how a company uses money or funds structurally.

S. No.	RATIOS	FORMULAS
1	Debt Equity Ratio	Total Long Term Debts / Shareholders Fund
2	Proprietary Ratio	Shareholders Fund/ Total Assets
3	Capital Gearing ratio	Equity Share Capital / Fixed Interest Bearing Funds
4	Debt Service Ratio	Net profit Before Interest & Taxes / Fixed Interest Charges

2.5 OVERALL PROFITABILITY RATIOS

As implied by the name, these ratios assess a company's ability to generate profits from its assets and capital for use in the future.

S. No.	RATIOS	FORMULAS
1	Overall Profitability Ratio	Net Profit / Total Assets

There are several more ratios. We shall look at them along with their formulas in the following solved examples.

2.6 SOLVED PROBLEMS

Problem-1

The following Trading and Profit and Loss Account of Fantasy Ltd. for the year 31-3-2000 is given below:

Particular	Rs.	Particular	Rs.
To Opening Stock	76,250	By Sales	5,00,000
“Purchases	3,15,250	“Closing stock	98,500
“Carriage and Freight	2,000		
“Wages	5,000		
“Gross Profit b/d	<u>2,00,000</u>		
	<u>5,98,500</u>		
			<u>5,98,500</u>
To Administration expenses	1,01,000	By Gross Profit b/d	
“Selling and Dist. Expenses	12,000	“Non-operating incomes:	2,00,000
“Non-operating expenses	2,000	“Interest on Securities	1,500
“Financial Expenses	7,000	“Dividend on shares	3,750
Net Profit c/d	<u>84,000</u>	“Profit on sale of shares	<u>750</u>
	<u>2,06,000</u>		<u>2,06,000</u>

Calculate:

1. Gross Profit Ratio
2. Expenses Ratio
3. Operating Ratio
4. Net Profit Ratio
5. Operating (Net) Profit Ratio
6. Stock Turnover Ratio.

Solution–1(Problem related to Revenue Ratio)

$$\begin{aligned}
 1. \quad \text{Gross Profit Margin} &= \frac{\text{Gross profit}}{\text{Sales}} \times 100 \\
 &= \frac{2,00,000}{5,00,000} \times 100 \\
 &= 40\%
 \end{aligned}$$

2. Expenses Ratio= $\frac{\text{Op. Expenses}}{\text{Net Sales}} \times 100$ Financial Performance Analysis Using Ratios Analysis

$$\frac{1,13,000}{5,00,000} \times 100$$

$$=22.60\%$$

3. Operating Ratio= $\frac{\text{Cost of goods sold} + \text{Op. Expenses}}{\text{Net Sales}} \times 100$

$$\frac{3,00,000 + 1,13,000}{5,00,000} \times 100$$

$$=82.60\%$$

Cost of Goods sold = Op. stock+ purchases+ carriage and Freight +wages–Closing Stock

$$=76250 + 315250 + 2000 + 5000 - 98500$$

$$=\text{Rs.}3,00,000$$

4. Net Profit Ratio= $\frac{\text{Net Profit}}{\text{Net Sales}} \times 100$

$$\frac{84,000}{5,00,000} \times 100$$

$$=16.8\%$$

5. Operating Profit Ratio= $\frac{\text{Op. Profit}}{\text{Net Sales}} \times 100$

Operating Profit=Sales–(Op. Exp.+ Admin Exp.)

$$\frac{87,000}{5,00,000} \times 100$$

$$=17.40\%$$

6. Stock Turnover Ratio= $\frac{\text{Cost of goods sold}}{\text{Avg. Stock}}$

$$\frac{3,00,000}{87,375}$$

$$=3.43\text{times}$$

Problem- 2

The Balance Sheet of Punjab Auto Limited as on 31-12-2002 was as follows:

Particular	Rs.	Particular	Rs.
Equity Share Capital	40,000	Plant and Machinery	24,000
Reserve	8,000	Land and Buildings	40,000
8% Loan on	32,000	Furniture & Fixtures	16,000
Mortgage Creditors	16,000	Stock	12,000
Bank over draft	4,000	Debtors	12,000
Taxation:		Investments	4,000
Current Future	4,000	(Short-term) Cash in	12,000
Profit and Loss A/c	4,000	hand	
	<u>12,000</u>		
	1,20,000		
			<u>1,20,000</u>

From the above, compute (a) the Current Ratio, (b) Quick Ratio, (c) Debt-Equity Ratio, and (d) Proprietary Ratio.

Solution– 2 (Problem related to Balance Sheet Ratio)

1. Current Ratio =	<u>Current Assets</u> / <u>Current liabilities</u>	
	Current Assets = Stock + debtors + Investments (short term) + Cash In hand	
	Current Liabilities = Creditors + bank overdraft + Provision for Taxation (current & Future)	
	CA = 12,000 + 12,000 + 4,000 + 12,000 = 40,000	
	CL = 16,000 + 4,000 + 4,000 + 4,000	
	= 28,000	
	<u>= 40,000</u>	
	28,000	
	= 1.43: 1	

2. Quick Ratio =	<u>Quick Assets</u> <u>Quick Liabilities</u>	
	Quick Assets =Current Assets -Stock	
	Quick Liabilities=Current Liabilities – (BOD+PFT future)	
	QA=40,000–12,000 =28,000	
	QL=28,000– (4,000+4,000) =20,000	
	<u>=28,000</u> 20,000	
	=1.40: 1	

3. Debt–Equity Ratio=	<u>Long Term Debt (Liabilities)</u> <u>Share holders Fund</u>	
	LTL=Debentures + long term loans	
	SHF=Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap.–Fictitious Assets	
	LTL=32,000	
	SHF=40,000+8,000+12,000 =60,000	
	<u>=32,000</u> 60,000	
	=0.53: 1	

4. Proprietary Ratio =	Shareholders' Funds
	Total Assets
	SHF=Eq.Sh. Cap. + Reserves & Surplus+ Preference Sh.
	Cap.–Fictitious Assets
	Total Assets =Total Assets–Fictitious Assets
	SHF=40,000+8,000+12,000 =60,000
	TA=1,20,000
	= $\frac{60,000}{1,20,000}$
	=0.5 :1

Problem =3

From the following particulars extracted from the books of Ashok & Co. Ltd., compute the following ratios and comment:

(a) Current ratio, (b) Acid Test Ratio,(c) Stock-Turnover Ratio, (d) Debtors Turnover Ratio, (e) Creditors' Turnover Ratio, and Average Debt Collection period.

1-1-2002		31-12-2002
Rs.		Rs.
Bills Receivable	30,000	60,000
Bills Payable	60,000	30,000
Sundry Debtors	1,20,000	1,50,000
Sundry Creditors	75,000	1,05,000
Stock-in-trade	96,000	1,44,000

Additional in formation:

(a) On 31-12-2002, there were assets: Building Rs.2,00,000, Cash Rs.1,20,000 and Cash at Bank Rs.96,000.

(b) Cash purchases Rs.1,38,000 and Purchases Returns were Rs.18,000.

(c) Cash sales Rs.1,50,000 and Sales returns were Rs.6,000.

Rate of gross profit 25% on sales and actual gross profit was Rs.1,50,000.

Solution– 3 (Problem related to find out missing item)

Notes : In this problem available information is not enough to solve ratios asked so that need to prepare Trading Account to identify values which are not given in the question.

Trading Account

Particular	Amount Rs.	Particular	Amount Rs.
To Opening Stock	96,000	By Sales: 1,50,000	
To Purchase: 38,000		Cash:	
Cash:		Credit : <u>4,56,000</u>	
Credit: <u>3,78,000</u>		6,06,000	
5,16,000		Less:S/R <u>6,000</u>	6,00,000
Less:P/R — 4,98,000		By Closing Stock	1,44,000
To Gross Profit	1,50,000		
	7,44,000		7,44,000

1. Gross Profit Margin=	Gross profit Sales	X100
	25%= <u>1,50,000</u>	X100
	Sales= <u>1,50,000</u>	X100
	25	
	Sales= 6,00,000	

2.CurrentRatio =	<u>Current Assets</u> Current liabilities	
	Current Assets = Stock + debtors + Bills receivable + Cash + Bank Balance	
	Current Liabilities = Creditors + Bills payable	
	CA=1,44,000+1,50,000+60,000+1,20,000+96,000 =5,70,000	
	CL=1,05,000+30,000 =1,35,000	
	<u>=5,70,000</u> 1,35,000	
	=4.22 :1	

3.AcidTest Ratio =	<u>Cash & Cash Equivalent Assets</u> Liquid Liabilities	
	Cash & Cash equivalent Assets = Cash + Bank + Short term Investments	
	(Liquid) Quick Liabilities = Current Liabilities–BOD	
	=1,20,000+ 96,000 =2,16,000	
	QL=1,05,000+30,000 =1,35,000	
	<u>=2,16,000</u> 1,35,000	
	=1.6 :1	

4. Stock Turnover Ratio=	<u>Cost of goods sold</u> Avg. Stock
	Avg.stock= <u>Opening Stock + Closing Stock</u> 2
	COGS=Sales –GP
	<u>96,000+1,44,000</u> 2
	AS=1,20,000
	COGS=6,00,000–1,50,000 4,50,000
	<u>=4,50,000</u> 1,20,000
	=3.75times

5.DebtorsRatio (Avg. debt collection period)	=	<u>Debtors + Bills receivable</u> Credit sales	X365/360days
		<u>=1,50,000+ 60,000</u> 4,56,000	X365days
		=0.461	X365days
		=168days	

6.CreditorsRatio =	<u>Creditors + Bills payable</u> Credit Purchase	X365/360days
	<u>=1,05,000+ 30,000</u> 3,78,000	X365days
	=0.357	X365days
	=130days	

Problem- 4

Following is the summarised Balance Sheet of Mona Ltd. as on 31-3-04.

Particular	Rs.	Particular	Rs.
Equity Shares of Rs. 10 each 10% Pref. Sh. of Rs. 100 each	10,00,000	Fixed Assets	20,00,000
Reserves and Surplus	4,00,000	Investments Closing	2,00,000
15% Debentures	7,00,000	Stock Sundry Debtors	2,00,000
Sundry Creditors Bank	5,00,000	Bills Receivable Cash at Bank	4,60,000
Overdraft	2,40,000	Preliminary Expenses	60,000
	1,60,000		60,000
			<u>20,000</u>
	<u>30,00,000</u>		30,00,000

Summarised Profit and Loss Account is as under for the year ending on 31-3-'04:

Rs.

Sales (25% Cash sales)	80,00,000
Less: Cost of goods sold	<u>56,00,000</u>
Gross Profit	<u>24,00,000</u>
Net profit (Before interest and tax 50%)	9,00,000

Calculate the following ratios:

- (1) Rate of Return on Capital Employed (2) Proprietary Ratio
 (3) Debt-Equity (4) Capital gearing Ratio (5) Debtors Ratio (365 days of the year.) (6) Rate of Return on Share holders' Funds (7) Rate of Return on Equity share holders fund

Solution-4 Statement of Profitability

Sales	80,00,000
Less: Cost of goods sold	56,00,000
Gross profit	24,00,000
Less: Operating expenses (including Depreciation)	15,00,000
Earnings before Interest & Tax (EBIT)	9,00,000
Less: Interest Cost	75,000
Earnings before Tax (EBT)	8,25,000
Less: Tax liability (50%)	4,12,500
Earnings after Tax (EAT/PAT)	4,12,500
Less: Preferences are dividend	40,000
Distributional Profit	3,72,500

1.		6.		7.	
Rate of Return On Employed Capital		Rate of Return on holders Fund		Ratio freturn on Equity Share holders Fund	
= <u>EBIT</u> Capital employed	X100	= <u>PAT</u> SHF	X100	= <u>PAT–Pref.Div.</u> ESHF	X100
CE = Eq Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus +Debenture + Long Term Loan –Fictitious Assets		SHF = Eq. Sh. Cap. + Pref. Sh. Cap.+ Reserves & Surplus–Fictitious Assets		ESHF= Eq.Sh.Cap.+ Reserves & Surplus–Fictitious Assets	
CE=10,00,000+4,00,000 7,00,000+5,00,000–20,000 = 25,80,000		SHF=10,00,000 +4,00,000 7,00,000-20,000 =20,80,000		ESHF=10,00,000+7,00,000 –20,000 =16,80,000	
= <u>9,00,000</u> 25,80,000	X100	= <u>4,12,500</u> 20,80,000	X100	= <u>3,72,500</u> 16,80,000	X100
=34.88%		=19.83%		= 22.17%	
2. Proprietary Ratio		Shareholders’ Funds Total Assets			
		SHF=Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap.–Fictitious Assets			
		Total Assets =Total Assets–Fictitious Assets			
		SHF=10,00,000+7,00,000+4,00,000-20,000 =20,80,000			
		TA=30,00,000–20,000 =29,80,000			
		= <u>20,80,000</u> 29,80,000			
		=0.70: 1			

3. Debt–Equity Ratio=	Long Term Debt (Liabilities)	Shareholders Fund
	LTL=Debentures + long term loans	
	SHF=Eq. Sh. Cap. + Reserves & Surplus + Preference Sh.	
	Cap.–Fictitious Assets	
	LTL=5,00,000	
	SHF=10,00,000+7,00,000+4,00,000-20,000 =20,80,000	
	<u>=5,00,000</u> 20,80,000 =0.24: 1	

4.Capital Gearing Ratio =	Fixed Interest or Dividend Securities	Equity Share holders Fund
	FIS=Debentures +Preference share capital	
	ESHF = Eq. Sh. Cap. + Reserves & Surplus–Fictitious Assets	
	LTL=9,00,000	
	ESHF=10,00,000+7,00,000-20,000 =16,80,000	
	<u>=9,00,000</u> 16,80,000 =0.54: 1	

5. Debtors Ratio (Avg. debt collection period)	=	Debtors + Bills receivable	X365/360days
		Credit sales	
		= $\frac{4,60,000 + 60,000}{60,00,000}$	X365days
		=0.461	X365days
		= 31.63days	
		= 32days(Aprox.)	

Problem- 1

Two years 'Balance sheets of Jamuna Company Ltd. Areas follows:[S.U.T.Y.-April,1999]

Liabilities	31-3-03	31-3-04	Assets	31-3-03	31-3-04
Equity share capital10%Pref.	1,00,000	1,50,000	Land and	1,00,000	90,000
Sh. Capital General Reserve	50,000	50,000	Buildings	90,000	90,000
Profit & Loss A/c	30,000	30,000	Machinery	53,000	30,000
12%Debentures Creditors	20,000	-----	Debtors	20,000	12,000
Bills payable	1,00,000	50,000	Bills	75,000	90,000
Bank Overdraft O/s. Expenses	30,000	35,000	Receivable	15,000	35,000
	10,000	25,000	Stock	2,000	13,000
	10,000	20,000	Bank	-----	10,000
	5,000	10,000	Balance		
			Cash		
	3,55,000	3,70,000	Balance	3,55,000	3,70,000
			Profit &		
			Loss A/c		

Additional Information:

	2002-'03	2003-04
	Rs.	Rs.
(1)Sales	3,65,000	2,19,000
(2)Cost of Goods sold	2,19,000	1,46,000
(3)Net profit(Before Pref. Dividend)	35,000	47,500
(4)Stockon1-4-'02	71,000	---

Calculate following ratios and give your opinion about company position in 2003-'04 in comparison with 2002-'03. Whether it is positive or negative?

(1)Current ratio (2) Liquid ratio (3) Debtors ratio (Take 365 days for calculations) (4) Gross profit ratio (5) Stock Turnover ratio(6) Rate of return on equity share - holders' funds.

Problem- 2

The Balance Sheet as on 2002 and 2003 are as under :

Liabilities	2002	2003	Assets	2002	2003
Equity share capital	1,00,000	1,25,000	Land and Buildings	50,000	75,000
General Reserve Profit	12,500	15,000	Plant Machinery Stock	57,500	55,000
& Loss A/c Creditors	10,000	7,500	Debtors Cash & Bank	10,000	12,500
Bills payable O/s.	5,000	6,250	Bills Receivable	7,500	10,000
Expenses Provident Fund	3,750	7,500	Preliminary Exp.	5,000	7,500
	1,250	3,750		2,500	5,000
	7,500	5,000		7,500	5,000
	1,40,000	1,70,000		1,40,000	1,70,000

Profit & Loss A/c.

Particulars	2002	2003	Particulars	2002	2003
To Op. Stock To	5,000	10,000	By Sales	62,500	1,12,500
Purchase To Office Exp.	37,500	47,500	By Closing Stock By	10,000	12,500
To Selling exp. To Fin.	7,500	10,000	Profit on Sale of		
Exp.	5,000	12,500	Furniture	2,500	----
To Net Profit	2,500	15,000			
	17,500	30,000			
	75,000	1,25,000		75,000	1,25,000

Find out (1) Current Ratio (2) Stock Turnover Ratio (3) Gross Profit Ratio (4) Liquid Ratio (5) Debtor Ratio (workingdays300) (6) Return on Equity Capital employed (7) Ownership Ratio.

Problem- 3

Following are incomplete Trading & Profit and Loss A/c. and Balance Sheet.

Trading A/c.

Particular	Rs.	Particular	Rs.
To Op. stock To Purchase	3,50,000	By Sales	(?)
To Purchase Return To Gross Profit	(?)87,000	By Closing Stock	(?)
	7,18,421		
	14,96,710		14,96,710

Profit & Loss A/c.

Particular	Rs.	Particular	Rs.
To Office Exp. To Int.on Deb.	3,70,000	By Gross Profit By	7,18,421
To Tax. Provision To Net Profit	30,000	Commission	(?)
	18,421		
	3,50,000		
	(?)		(?)

Balance Sheet

Particular	Rs.	Particular	Rs.
Paid Up Capital	5,00,000	Plant & machinery Stock	7,00,000
General Reserve	(?)	Debtors Bank	(?)
P&L a/c.	(?)	Other Fixed Assets	(?)
10% Debenture	(?)		62,500
Current Liabilities	(?)		(?)
	6,00,000		(?)
	(?)		(?)

Find out missing items with the help of other details are as under:

1. Current Ratio was 2:1.
2. Closing Stock is 25% of Sales.
3. Proposed Dividend was 40% of paid up capital.
4. Gross profit Ratio was 60%.
5. Amount transfer to General Reserve is same as proposed Dividend.
6. Balance of P & L Account is calculated 10% of proposed dividend.
7. Commission income is 1/7 of Net profit.
8. Balance of General reserve is twice the current year transfer amount.



WORKING CAPITAL MANAGEMENT

Unit Structure

3.0 Objective

3.1 What is working capital management?

3.2 Objectives of Working Capital Management

3.3 Understanding working capital management

3.4 Classification of Working Capital

3.5 Why manage working capital management?

3.6 Working capital management ratios

3.6.1 Current Ratio (Working Capital Ratio)

3.6.2 Collection Ratio (Days sales outstanding, DSO)

3.6.3 Inventory turnover ratio

3.7 Working capital investment policies / Approaches to current assets financing

3.8 Operating Cycle / Working Capital cycle

3.9 Measurement of Operating Cycle:

3.10 Solved Problems

3.11 Problems for Practice

3.0 OBJECTIVE

After undergoing this chapter, the learner will be able to;

1. Understand the importance of working capital management.
2. Understand and evaluate the different working capital requirements
3. Understand cash cycle and operating cycle
4. Analyze working capital policies

3.1 WHAT IS WORKING CAPITAL MANAGEMENT?

A business technique called working capital management aims to make sure a firm runs smoothly by keeping track of and making the most use of its current assets and liabilities. Ratio analysis is a tool that can be used to measure the effectiveness of working capital management. Working capital management, which is calculated as current assets minus current liabilities, is a method used in business to assist organisations in making efficient use of current assets and preserving enough cash flow to achieve short-term objectives and responsibilities. Businesses can release cash that might otherwise be stuck on their balance sheets by managing working capital correctly. As a result, they could be able to cut down on the need

for outside borrowing, grow their companies, finance mergers and acquisitions, or make R&D investments. Working Capital Management

Every firm needs working capital to function, but managing it well involves striking a balance. Companies must have enough cash on hand to pay for both anticipated and unforeseen expenses while also making the greatest use of the current finances. This is accomplished by efficient management of cash, inventories, accounts payable, and accounts receivable.

3.2 OBJECTIVES OF WORKING CAPITAL MANAGEMENT

Working capital is a crucial measure for companies to monitor because it shows how much money they have available to pay bills, cover unforeseen expenses, and maintain corporate operations. However, working capital management is not so straightforward, and a working capital management programme may have a number of aims, such as:

1. **Meeting business obligations** - Working capital management should constantly make sure that the company has adequate cash on hand to satisfy its immediate obligations, frequently by extending supplier payment terms or collecting payments from clients earlier. Unexpected expenses can also be categorised as responsibilities, thus they must be taken into account when developing a working capital management strategy.
2. **Growth in business** - Having said that, it's crucial to successfully utilise your short-term resources, whether that entails funding international expansion or contributing to R&D. Your firm may not be as successful as it may be if its assets are locked up in inventory or accounts payable. In other words, it is not ideal to handle working capital too cautiously.
3. **Optimum utilization of capital** - Optimizing the effectiveness of capital usage, whether by lowering capital expenses or maximising capital returns, is another goal of working capital management. For the latter, it is necessary to make sure that the ROI of extra capital above the typical cost of financing it. The former can be accomplished by recovering capital that is now locked up to lessen the need for borrowing.

3.3 UNDERSTANDING WORKING CAPITAL MANAGEMENT

Working capital management's major objective is to help the business maintain enough cash flow to cover its short-term operational expenses and short-term debt commitments. Working capital is the difference between a company's current assets and current liabilities.

Anything that can be quickly converted into cash within a year is considered a current asset. These are the very liquid assets of the business. Cash, accounts receivable, inventories, and short-term investments are a

few examples of current assets. Any debts that are due within the next 12 months are considered current liabilities. These consist of the present portion of long-term debt payments as well as accruals for operating expenses.

Monitoring cash flow, current assets, and current liabilities through ratio analysis of the important components of working capital, such as the working capital, is a common aspect of working capital management.

3.4 CLASSIFICATION OF WORKING CAPITAL

Working capital can take the following forms:

(a) **Gross Working Capital:** Gross working capital is the sum of money invested in different current asset components. It consists of unfinished commodities, work in progress, debtors, raw resources, and more.

(a) **Net Working Capital:** Net working capital is the difference between current assets and current liabilities. The main goal of this exercise is to determine the kind and quantity of current assets needed to cover current liabilities.

(c) **Positive Working Capital:** This is the positive difference between current assets and liabilities.

(d) **Negative Working Capital:** The surplus of current liabilities over current assets is referred to as negative working capital.

(e) **Permanent Working Capital:** This is the bare minimum of working capital needed throughout the year, even at the slowest time of year.

(f) **Temporary or Variable Working Capital:** This category includes any additional current assets needed at various points during the fiscal year to cover things like extra inventory, extra cash, etc.

3.5 WHY MANAGE WORKING CAPITAL MANAGEMENT?

The net operating cycle (NOC), often referred to as the cash conversion cycle (CCC), is the lowest length of time necessary to convert net current assets and liabilities into cash. Working capital management supports maintaining the NOC's smooth operation.

Through the effective use of its resources, working capital management can enhance a company's cash flow management and earnings quality. Inventory management, accounts receivable and payable management, and accounts payable management are all included in working capital management.

The timing of accounts payable is another aspect of working capital management (i.e., paying suppliers). A business can manage its working capital by deciding to extend supplier payments and to make the most of available credit, or it can spend money by making cash purchases.

3.6.1 Current Ratio (Working Capital Ratio)

Current liabilities divided by Current Assets yields the working capital ratio, often known as the current ratio. A company's capacity to satisfy its immediate financial obligations is an important sign of its financial health. A working capital ratio below 1.0, though figures differ by industry, typically signifies that a business is having problems paying its short-term obligations. In other words, the company's liquid assets would not be sufficient to pay its bills due in the next year. In this situation, the business may be forced to turn to asset sales, long-term debt borrowing, or other forms of financing to pay off its short-term debt commitments. Working capital ratios between 1.2 and 2.0 are preferred, although a ratio greater than 2.0 suggests that the company is not using its assets efficiently. A very high ratio is not desirable and indicates that the company is not managing its working capital well.

Why is current ratio / working capital ratio important?

The current ratio, commonly referred to as the working capital ratio, is a measure of liquidity that shows how well a company can satisfy its short-term obligations. A company's finances may be in danger in the short term if its current ratio is less than 1.00, which indicates that short-term debts and liabilities outweigh current assets.

Ratio	Formula	Description
Current ratio	Current Assets/ Current Liabilities	Also known as the Working Capital Ratio and measures the short-term financial health of a company.
Acid Test Ratio/ Quick Ratio	Liquid Assets/Current Liabilities	Measures if an asset can be liquidated to cash in a short period of time without the loss of value.
Cash Position Ratio/ Absolute Liquid Ratio	[(cash & Bank) + short-term securities]/Current Liabilities	Includes cash in hand and that in the bank and the temporary investments including marketable securities. This ratio must ideally be 50 percent.

3.6.2 Collection Ratio (Days sales outstanding, DSO)

The efficiency with which a business manages its accounts receivable is shown by the collection ratio, commonly referred to as days sales outstanding (DSO). The average amount of outstanding accounts receivable divided by the total amount of net credit sales throughout the accounting period, multiplied by the number of days in an accounting period, yields the collection ratio. The average number of days it takes for a business to get paid following a sales transaction on credit is given by

the collection ratio calculation. The collection ratio will be lower if a company's billing department is successful in trying to collect debts and clients pay their bills on time. A corporation converts receivables into cash more quickly, the lower its collection ratio.

Why collection ratio is important?

The efficiency with which a business can collect on its accounts receivable is shown by the collection ratio, also known as days sales outstanding (DSO). It may be a hint that there won't be enough money on hand to cover immediate responsibilities if it takes a while to collect. The goal of working capital management is to increase the speed of receivables collection.

$$\text{DSO} = \frac{\text{Accounts Receivable}}{\text{Total Credit Sales}} \times \text{Number of Days}$$

3.6.3 Inventory turnover ratio

Inventory management is a crucial component of working capital management. A business must retain enough inventory on hand to meet consumer demand while avoiding excessive inventory that ties up working capital in order to run as efficiently as possible and maintain a comfortable high level of working capital. Companies often track the inventory turnover ratio to determine how effectively that balance is kept. The cost of goods sold divided by average balance sheet inventory yields the inventory turnover ratio, which measures how quickly a company's inventory is used up and replaced through sales. A significantly low ratio when compared to other companies in the same industry raises the possibility that inventory levels are too high, while a comparatively high ratio could mean that inventory levels are insufficient.

Why is inventory ratio important?

The inventory turnover ratio demonstrates how effectively a business sells its inventory. A significantly low ratio when compared to other companies in the same industry raises the possibility that inventory levels are too high, while a comparatively high ratio could mean that inventory levels are insufficient.

$$\text{Inventory Turnover} = \frac{\text{COGS}}{\text{Average Value of Inventory}}$$

where:

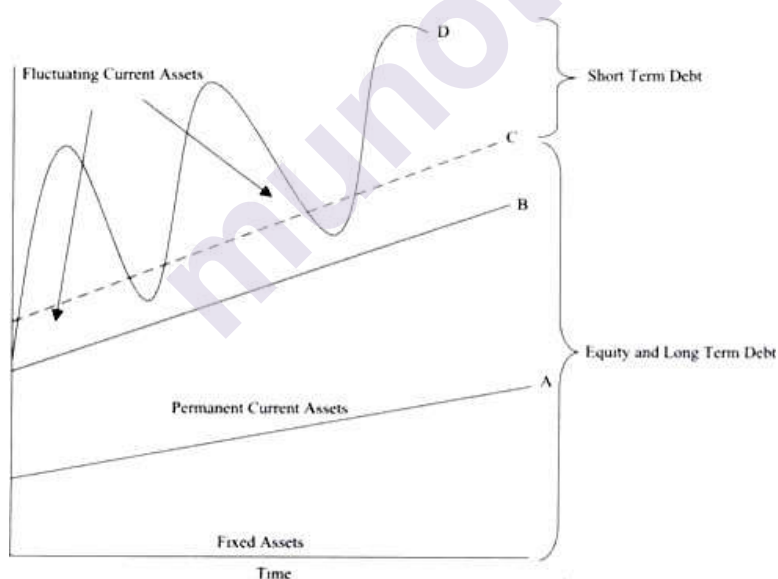
COGS = Cost of goods sold

3.7 WORKING CAPITAL INVESTMENT POLICIES/ APPROACHES TO CURRENT ASSETS FINANCING

The sources and quantity of working cash that a corporation should maintain are essentially covered by working capital finance policy. The proportions of short-term and long-term sources used to finance existing assets are also important factors for a company to consider. After considering the variability of its cash inflows and outflows as well as the level of risk, a corporation may choose from a number of working capital investment programmes.

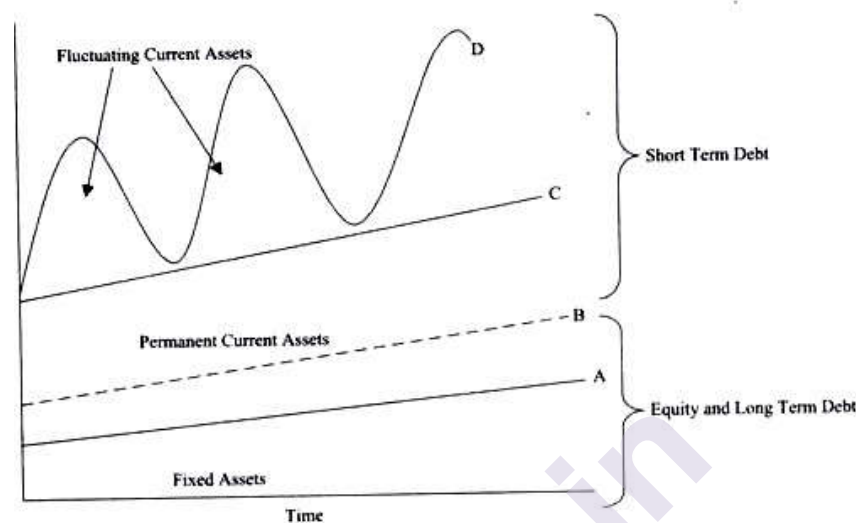
1. Conservative Policy: As its name implies, this strategy aims to reduce the risk associated with financing current assets. In this case, a sizable amount of long-term sources will be used to fund present assets. The firm not only matches the current assets with current liabilities but also keeps some excess amount to meet any uncertainty.

Although this is the working capital policy with the lowest risk, it does not guarantee the best possible use of assets. Consequently, it lowers the expected returns for stockholders. Below is an illustration of this policy. Fixed assets are shown on Line A, and permanent working capital, which is financed by long-term sources, is shown on Line B. Line C, which is dashed, indicates that a portion of the variable current assets are also financed by long-term sources. In accordance with this policy, a portion of volatile current assets is financed with short-term resources.

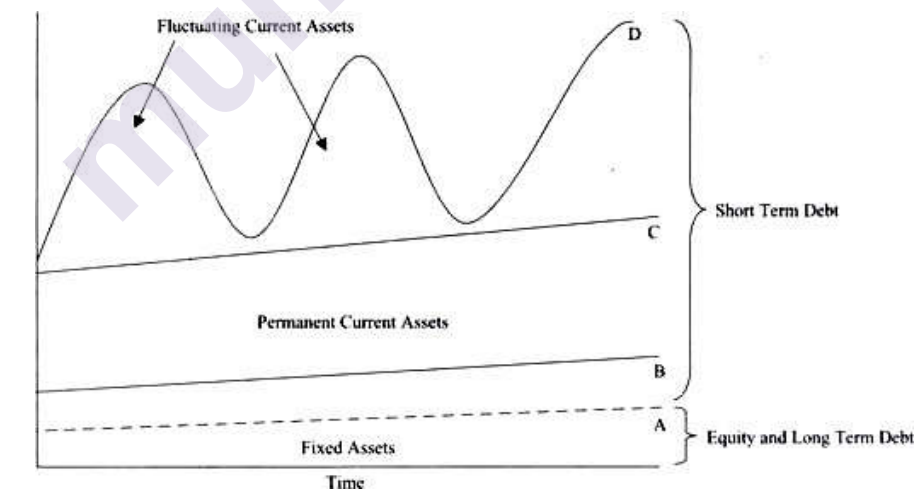


2. Aggressive policy: Aggressive working capital financing policy is a risky policy that calls for the most investment possible in present assets. This policy will use short-term debt to finance both fluctuating and long-term current assets. According to this policy, payments to creditors are made as late as feasible but debt is promptly recovered. The following is an illustration of this policy. This strategy finances fixed assets, represented by Line A, with long-term sources; nevertheless, a percentage of permanent current assets, represented by dotted Line B, is also financed

with long-term sources. Both the entire amount of fluctuating current assets, illustrated by the curved Line D, and the remaining portion of permanent current assets, represented by Line C, are financed by short-term debt.

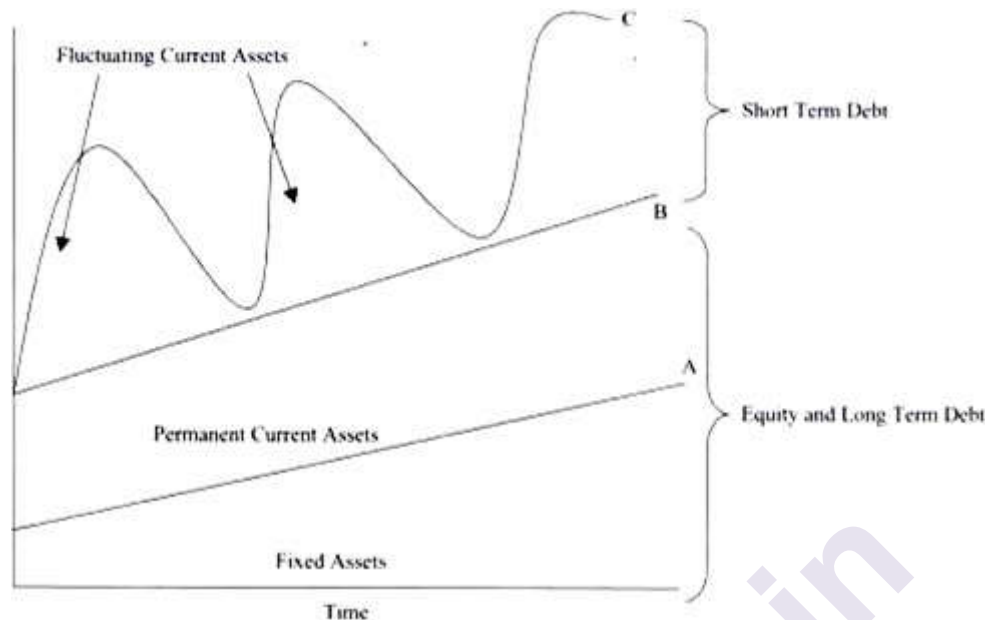


3. Extremely Aggressive Policy: This strategy for financing working capital is extremely risky. This approach allows for the financing of even a small portion of fixed assets with short-term funds. This strategy is extremely dangerous since it relies too heavily on short-term funding. The following is an illustration of this policy. As indicated by dotted Line A, a significant share of fixed assets are financed.



4 Hedging Policies - The hedging strategy, also known as the matching policy, is the method by which a company finances its working capital requirements. This policy is effective in a scenario where the business's existing assets are utilised exactly to offset its current liabilities. According to this strategy, changing current assets are financed through short-term sources, whereas fixed and permanent current assets are financed through long-term sources. It's important to pay close attention to this insurance because it carries a moderate level of risk. For instance, even if it may or may not have enough cash right now, the company will

make sure that there will be enough cash available to repay the loan when it is due, say, six months from now. Working Capital Management



3.8 OPERATING CYCLE / WORKING CAPITAL CYCLE

Due to the slow conversion of cash into finished items, debtors, and back into cash, any business organisation needs an adequate working capital. It takes a while. For instance, cash is utilised in a manufacturing company to buy raw materials. They are not eaten right away. In order to ensure efficient production and safeguard the company against the possibility of future raw material shortages, they are kept in storage for a period of time. Following conversion, they are distributed from retailers to the production facility. Additionally, this conversion typically takes some time. It transforms into semi-finished items or work-in-progress and then finished goods when specific costs like wages and overheads are incurred on it.

Before being sold, these final goods will need to be stored for a while. The sale of finished items to clients follows, and payment may be made in cash or in the form of receivables or debtors. Once realised, receivables and debtors again take the form of cash, and the cycle repeats. The same is explained in the following diagram.



The working capital cycle, often known as the operational cycle, refers to the continuous flow of cash from customers to suppliers, to inventory, to accounts receivable, and back to customers. Or to put it another way, the term "operational cycle" refers to the period of time that starts with a company's purchase of raw materials and concludes with the final collection of cash from creditors.

The length of the working capital cycle affects the amount of working capital. The demand for maintaining working capital increases as the business cycle lengthens. Consequently, the fund will be tied up in diverse current assets for a longer length of time. The length of the operational cycle varies from business to business and from industry to industry.

For example, if raw materials are stored for 30 days, conversion or processing takes 45 days, completed items are stored for 30 days, and debt collection takes 40 days. The sum of this time period (i.e., 30 + 45 + 30 + 40 or 145 days) is referred to as the gross operating cycle. Credit is given to businesses when they buy raw materials from suppliers. The length of working capital is shortened by this term of payment postponement. The payment deferral time or length of credit granted by raw material suppliers is subtracted from the gross operation cycle to determine the net-working cycle period. If the supplier grants a 45-day credit period, the net operating cycle is 100 days (i.e., 145 days minus 45 days).

3.9 MEASUREMENT OF OPERATING CYCLE:

Strictly speaking, the volume of working capital depends upon the length of working capital cycle. So ,it is important to measure working capital cycle for management of working capital. The financial statements i.e., Profit and Loss Account and Balance Sheet, can guide us to measure working capital cycle.

The steps involved in the determination of the operating cycle are shown be low :

Particulars	Days
1.Rawmaterialsholdingperiod	***
2.Work-in-progressperiod	***
3.Finishedgoodsholdingperiod	***
4.Debtorscollectionperiod	***
Gross Operating Cycle	***
5.Less : Creditors payment period	(***)
Net Operating Cycle	***

The procedure can be summarized as below:

Working Capital Management

1. Raw Material Storage Period:

It represents the average period during which raw materials are kept in stores.

It is calculated as :

Raw material storage period

$$= \frac{\text{Average Stock of Raw Material}}{\text{Average daily Consumption of Raw Material}}$$

Here, Average stock of raw materials

$$= \frac{\text{Opening Raw Material Closing Raw Material}}{2}$$
$$= \frac{\text{Opening Raw Material Closing Raw Material}}{2}$$

Average daily consumption of raw material = No. of

Average daily consumption of raw material

$$= \frac{\text{No. of Total Material Consumption}}{\text{Working days in a year (360 days)}}$$

*Note : 365 days also can be used in place of 360 days to calculate the average.

If consumption of raw material is not available, average daily purchase can also be taken.

Processing Period:

Once materials are issued to production, it again involves time gap between issue of materials and production of finished product. This time gap is called processing period.

It is calculated as :

Processing Period

$$= \frac{\text{Average Stock of Work in Progress}}{\text{Average daily factory cost of Production}}$$

Average stock of work-in-progress

$$= \frac{\text{Opening Work in Progress, Closing work in progress}}{2}$$

Average daily factory cost of production

$$= \frac{\text{Total factory cost of production}}{360 \text{ days}}$$

*Note : 365 days also can be used in place of 360 days to calculate the average. Factory cost of production during the year = Raw materials consumed + Direct wages + Other direct expenses + Manufacturing overhead + Opening WIP – Closing WIP.

Finished Goods Storage Period :

Manufacturing enterprises produce the output in the expectation of future demand. Till the demand for finished product materializes, the product would remain in the store. This period is termed as finished goods storage period.

This is calculated as : Finished goods storage Period

$$= \frac{\text{Average stock of finished goods}}{\text{Average daily cost of goods sold}}$$

Average stock of finished goods

$$= \frac{\text{Opening stock of finished goods} + \text{Closing stock of finished goods}}{2}$$

Average daily cost of goods sold

$$= \frac{\text{Total cost of goods sold}}{360 \text{ days}}$$

$$\text{Credit period to Debtors} = \frac{\text{Average Debtors} \times \text{Average daily credit sales}}{2}$$

$$\text{Average Debtors} = \frac{\text{Opening debtors} + \text{Closing debtors}}{2}$$

$$\text{Average daily credit sales} = \frac{\text{Total credit sales for the year}}{360 \text{ days}}$$

*Note : 365 days also can be used in place of 360 days to calculate the average.

Cost of goods sold = Opening stock of finished goods + Factory cost of production – Closing stock of finished goods.

Credit period Allowed to Debtors:

The business enterprises due to competitive and other reasons —extend credit facilities to customers. The time gap between sale and realisation of cash is known as credit or collective period from debtors.

It is computed as :

$$\text{Credit from Suppliers} = \text{Average Creditors} \times \text{Average daily credit purchase}$$

$$\text{Average Creditors} = \frac{\text{Opening creditors} + \text{Closing creditors}}{2}$$

$$\text{Average daily credit purchase} = \frac{\text{Total credit purchase for the year}}{360 \text{ days}}$$

*Note : 365 days also can be used in place of 360 days to calculate the average.

Illustration 1 :

The following information is available for Swagat Ltd. : (₹ '000)

Averages to ckofraw materials and stores	200
Average WIP in ventory	300
Average finished goods in ventory	180
Average accounts receivable	300
Average accounts payable	180
Average raw materials and stores purchase on credit and consumed per day	10
Average WIP value of raw materials committed per day	12.5
Average cost of goods sold per day	18
Average sales per day	20

You are require to calculate :

Duration of raw material stage

Duration of WIP stage

Duration of Finished goods stage

Duration of accounts receivable stage

Duration of accounts payable stage, and

Duration of operating cycle. Solution:

Duration of Raw Material Stage

$$= \frac{\text{Average stock of Raw materials and Stores}}{\text{Average raw materials and stores purchased per day}} = \frac{200}{10} = 20 \text{ days}$$

Duration of Work-in-progress Stage

$$= \frac{\text{Average work in progress inventory}}{\text{Average work in progress value of raw materials committed per day}} = \frac{300}{12.5} = 24 \text{ days}$$

$$= 24 \text{ days}$$

Duration of Finished Goods Stage 12.5

$$= \frac{\text{Average Finished goods inventory}}{\text{Average cost of goods sold per day}} = \frac{180}{18} = 10 \text{ days}$$

Duration of Accounts Receivable Stage

$$= \frac{\text{Average Accounts Receivable}}{\text{Average Credit Sales per day}} = \frac{300}{20} = 15 \text{ days}$$

Duration of Accounts Payable Stage

$$= \frac{\text{Average Accounts Payable}}{\text{Average Credit Purchase per day}} = \frac{180}{10} = 18 \text{ days}$$

Duration of Operating Cycle

$$= (i) + (ii) + (iii) + (iv) - (v)$$

$$= 20 \text{ days} + 24 \text{ days} + 10 \text{ days} + 15 \text{ days} - 18 \text{ days} = 51 \text{ days}$$

Illustration 2 :

From the following information extracted from the books of a manufacturing company, compute the operating cycle in days and the amount of working capital required :

Period Covered	365days
Average period of credit allowed by suppliers	16days
Average Total of Debtors Outstanding	480
Raw Material Consumption	4,400
Total Production Cost	10,000
Total Cost of Sales	10,500
Sales for the year	16,000
Value of Average Stock maintained:	
Raw Material	320
Work-in-progress	350
Finished Goods	260

Solution : Calculation of Operating Cycle

(i) Raw material held in stock :

Average stocks of raw materials held - 320	Average consumption	275days
per day 4,400x365		
Less : Average credit period granted by Suppliers		16days
		11days

Work-in-progress:

$$\text{Average WIP maintained} = 350 = 365 \times 320 = 13 \text{ days}$$

Finished goods held in Stock:

$$= \frac{\text{Average Finished Goods Maintained}}{\text{Average Cost of Good Sold Per Days}} = \frac{260}{10,500 / 365} = \frac{260 \times 365}{10,500} = 9 \text{ days}$$

Credit period allowed to Debtors :

$$= \frac{\text{Average Total of Outstanding debtors}}{\text{Average Credit Sales Per Day}} = \frac{480}{16,000 / 365} = \frac{365 \times 480}{16,000} = 11 \text{ days}$$

∴ Total operating cycle period : (i) + (ii) + (iii) + (iv) = 44days

∴ Numbers of operating cycles in a year = 365/44=8.30times

∴ Amount of working capital required

$$= \frac{\text{Total operating cost}}{\text{Number of operating cycles in a year}} = \frac{10,500}{8.3} = \text{Rs. } 1,265$$

Problem for Practice 1

Calculate the operating cycle from the following figures:

	₹ (in Lakhs)
Annual sales	1,000
Manufacturing expenses	240
Distribution and other expenses	40
Purchase of materials	400
Opening stock:	
Raw materials	80
Work-in-progress	20
Finished goods	60
Closing stock:	
Raw materials	120
Work-in-progress	60
Finished goods	20
Opening balance of sundry debtors	40
Closing balance of sundry debtors	40

The company obtains accredit for 60 days from the suppliers. All goods are sold for credit. Assume 360 days in the year.

(Ans : Operating Cycle=109 days)

Problem for Practice 2

From the following information, extracted from the books of a manufacturing company, compute the operating cycle in days :

Period covered : 365 days Average period of credit allowed by suppliers, 16 days Other data areas follows :

	(Rs. In '000)
Average debtors (outstanding)	480
Raw material consumption	4,400
Total production cost	10,000
Total cost of sales	10,500
Sales for the year	16,000
Value of average stock maintained :	
Raw material	320
Work-in-process	350
Finished goods	260

(Ans : 44 days)



FINANCIAL PLANNING AND FORECASTING

Units Structure:

- 4.0 Objective
- 4.1 Financial planning and forecasting, meaning and importance.
- 4.2 Approaches to financial planning
- 4.3 Financial statements
 - 4.3.a Pro-forma of income statement
 - 4.3.b Pro-forma of Balance Sheet
- 4.4 Computation of external financing requirements.
- 4.5 Summary
- 4.6 Questions
- 4.7 References

4.0 OBJECTIVES

After learning this topic you will be able to understand

- The concept of finance
- Importance of finance in terms of financial planning and forecasting
- Different approaches to financial planning
- Analysis of financial statement

4.1 INTRODUCTION

We have seen in the earlier topics the meaning and importance of financial management and its importance. The business to run smoothly has to manage its finance in proper way so that the firm is not over or under capitalised. Financial planning is one of the important task to be undertaken by the Chief Financial Officer (CFO) of the company. The task of the CFO is that of a head in a family who manages every financial aspect for the smooth functioning of the firm. The financial requirements of the business if to be planned to meet the requirement of the company depending upon the stage of development, the scope of operations, the future plans of the company , etc. The financial requirement of the business may be for the investment in fixed assets or current assets. The finance raised may be from Owned fund or borrowed fund which together comprises the capital structure of the business. Financial planning is the

intellectual activity which gives the clear picture of the financial status of the business in near future. In this topic we will see all the aspects regarding financial planning and forecasting and the different methods of analysis of the financial statements.

4.1.1 FINANCIAL PLANNING

As said earlier financial planning is the process of deciding the need and utilisation of the finance of the company in the upcoming future. Every business needs funds to run the activities of the firm/ company in the smooth manner. For example, a Company is in need of ten lakhs rupees then the CFO needs to plan the fund raising strategies and accordingly the options of investment to be made with the fund raised. If the said amount of ten lakh rupees is raised in time, then the CFO can efficiently manage the activities. On the other hand, if the said amount is not raised then the operations of the business will be disturbed. Hence financial management requires knowledge and it ensures required to raise finance in time when required. Finance when raised more than requirements is also dangerous for the business. Financial planning makes the blueprint of the business finance for the future operations. Financial planning differs from financial management. The latter is the wider concept while financial planning is the narrow concept.

4.1.2 OBJECTIVES OF FINANCIAL PLANNING

1. **Availability of funds:-** Financial planning aims at making availability of funds on time for the purpose of investment in fixed assets, current assets, operations etc. Depending upon the urgency of finance, sources of finance is also decided in financial planning.
2. **Adequate finance:-** Financial planning also aims at raising required amount of fund only. As discussed earlier, excess or shortage of fund will disturb the activities of the business. Hence, proper amount of fund is to be raised as per the requirement of the nature of expenses.
3. **Income generation:-** Financial planning is to be made keeping in mind that there should be income from the raised finance. For example, borrowed funds for capital investments are not utilised fully at the initial stages. In such cases, the excess of borrowed fund should be invested wisely so that it generates income and the cost of borrowed capital reduces for the firm.
4. **Growth and development:-** Keeping in mind the objectives and targets of the board of directors of the company, the financial planner should plan the finance. Financial planning should be in the direction of growth and development of the business.

4.1.3 IMPORTANCE OF FINANCIAL PLANNING

We have studied the meaning and objective of financial planning. Let us understand the importance of financial planning in brief.

- a. Facilitate rising of fund in optimum manner
- b. Helps in proper utilisation of finance
- c. To develop a best capital structure
- d. Helps to absorb shocks of the business
- e. Helps in investing in appropriate project
- f. Links between investment and financial decision
- g. Helps in proper operation of business
- h. Helps in proper financial control in future.

4.1.4 DIFFERENCE BETWEEN FINANCIAL MANAGEMENT AND FINANCIAL PLANNING.

Financial planning and financial management are not same as discussed earlier. Let us understand the detail difference between the both for clear understanding.

Sr. No	Financial Management	Financial Planning
1	It refers to efficient acquisition of fund for smooth operations of the business.	It refers to estimation of capital requirement and deciding sources of fund.
2	It has wider scope	
3	Its objective is to manage all the activities of the finance	Its objective is to raise funds on time to the required level

4.1.4 FINANCIAL FORECASTING

Financial forecasting is the process of estimating future financial requirements of a business. It is an act of deciding funds requirement and time pattern of such requirements. It is clear that financial forecasting helps to know the requirements and applications of the funds raised. Financial forecasting helps the business in different ways such as:-

Helps in planning

Dealing with uncertainties

Forecast of earning in the future course of business.

The characteristics financial forecasting are as follows

- a. It is estimation of future events that would occur in the business
- b. It is estimation future on the basis of past activities analysis.
- c. It helps in financial planning as we get a estimate of requirement of finance.
- d. It involves various techniques for perfect estimation
- e. Minimise the risk of uncertainties which will arise in future.

- f. It predicts the possible changes in order to bring accuracy in management decision.

Advantages of financial forecasting

1. It helps to set the standard of performance of the business which can be achieved in the future course of action. Such standards should be set on the basis of the business resources so that achieving the set standards become easy and possible.
2. Helps in timely arrangement of fund for the business. As discussed earlier, timely arrangement of the finance keeps the business in operation without disturbances. Finance is also stated as blood of the business for the same.
3. Optimum utilisation of the available resources of the business. Proper forecasting will help the business to operate at the maximum level and to plan the future strategies of the business accordingly.
4. Control cash flow of the business. Financial forecasting can be used as a parameter to control the cash flow of the business. Cash flow is normally from the activities like capital raising, investment and operating activities of the business.

4.2 APPROACHES TO FINANCIAL PLANNING

Financial planning is a crucial part of overall growth and development of business. There are different approaches for financial planning at individual level but the same can be applied for the business level as the ultimate goal of financial planning is stability in future.

Let us understand the approaches of financial planning in detail.

1. **Goal / Need Approach:-** Financial planning can be made on the basis of need or goal of the business. For the same the CFO should make a list of the following points for perfect financial plan which can aim at the achievement of the objectives of the business. Financial planning of the with the reference to the goals of business should be
 - a. **Specific:-** Financial planning should be specific. i.e., all the details regarding finance of the business should be made available which would make a plan proper and achievable.
 - b. **Measurable:-** Financial planning should be measurable in terms of money. The finance to be raised and to be utilised should be giving clear information about its cost, investment, returns on investment, etc.
 - c. **Attainable:-** Financial planning should be made for the task which are attainable on the basis of available resources of the business.

- d. **Realistic:** -Financial planning should be realistic in nature.
- e. **Time bound:**-Financial planning should be done for the future period stating the results and achievements of the business in the upcoming years or a year. Short term of long term financial planning can be done accordingly.

2. Net worth Approach:- The difference between the assets and the liabilities of the business is nothing but Net worth of the business. Asset includes all the fixed and current assets and also the investment made by the business except fictitious assets. On the other hand liability includes all the borrowed funds and current liabilities and provisions except capital and reserves. This approach helps a business to manage the funds to be raised and plan the finance accordingly. Financial planning can be made according to the assets that a business has so that they can be utilised in future to payback the borrowed funds in future if the business suffers losses.

3. Savings Approach:- Financial planning can be made on the basis of saving strategies of the company/ business. The business having liberal dividend policy will not aim at saving more. On the other hand, the business having growth and development plans for the future would not opt for more dividends to its shareholders.

4. Budget approach: - The best financial planning which a CFO can adopt is the budget approach. Under this approach a timely budget will be prepared for meeting the expenses based on the income to be earned by the business. This approach gives a clear picture of the financial requirement of the business.

One can understand the importance of financial planning after understanding different approaches of the same in the business. Financial planning creates a clear picture of the future of the business in terms of incomes to be earned and expenses to be made. It also helps to know the financial position of the business and to control the finance too.

4.3 FINANCIAL STATEMENTS

Financial planning is also includes estimates of the incomes and expenses of the business and for the same some analysis is required based on past figures of the business. Such analysis is done with the help of financial statements of the business. The financial statements are normally prepared at the end of the year and include profit and loss account and balance sheet of the business. The statements prepared are normally technical in nature and are with relevance to the accounting principles coming under a special branch of accounting viz., Financial accounting. Such financial statements are difficult for the analysis as everyone cannot be aware with the accounting principles and procedures. Analysis of financial statements is done on the basis of the formats stated by another branch of accounting viz., Management Accounting. Let us understand the formats in details.

4.3.1 Vertical Income Statement

The profit and loss account which is the base of final accounts for the year is also called income statement as it represents the incomes and expenses for the particular year ended on the specified date. It is presented in a vertical form taking sales as the base and finally revealing the profit or loss for the year. Let us understand the pro-forma of the income statement

PRO-FORMA OF INCOME STATEMENT

Particulars	Rs.	Rs.
Gross Sales	xxx	
Less: - Returns	xxx	
Net Sales		XXX
Less: - Cost of goods sold: -		
Opening Stock	xxx	
Purchases	xxx	
Direct expenses + manufacturing expense	xxx	
Factory expenses + depreciation on factory assets	xxx	
Less: - Closing Stock	(xxx)	
Sale of scrap	(xxx)	
Cost of Goods Sold		(XXX)
Gross Profit		XXX
Less: - Operating Expenses		
a) Administration Expenses	xxx	
b) Selling and Distribution expenses	xxx	
c) Finance Charges	xxx	
Total Operating Expenses (a+b+c)		XXX
Net Operating Profit		XXX
Less: - Interest		xxx
Net profit after interest		XXX
Add: - Non operating income		xxx
Less: - Non operating expenses		(xxx)
Net Profit Before Tax		XXX
Less:- Income Tax		(xxx)
Net Profit After Tax		XXX
Add: - Opening Profit & Loss A/c balance		xxx
Less:- Appropriation		(xxx)
Retained earnings		XXX

- Figures in the bracket indicates subtraction.

Illustration: -

1. Following is the profit and loss account summary of Well- balanced ltd for the year ended 31st march 2022. You are required to prepare Vertical income statement for the purpose of analysis.

Particulars	Rs.	Particulars	Rs.
To Opening Stock of raw material	7,00,000	By Sales	
To Purchases	9,00,000	Cash	5,20,000
To wages	1,50,000	Credit	<u>15,00,000</u>
To Factory Expenses	3,50,000		20,20,000
To office salaries	25,000	Less:- Returns	20,000
To office Rent	39,000	Net Sales	20,00,000
To postage and telegram	5,000	By Closing stock of raw material	
To directors fees	6,000		6,00,000
To Salesman salaries	12,000	By dividend on investment	10,000
To Advertising	18,000	By Profit on sale of Furniture	20,000
To delivery expenses	20,000		
To Debenture Interest	20,000		
To Depreciation on furniture	10,000		
To depreciation on Plant	30,000		
To depreciation on delivery van	20,000		
To loss on Sale of van	5,000		
To income tax	1,75,000		
To Net profit	1,45,000		
	26,30,000		26,30,000

Solution:-

Financial Planning And
Forecasting

Well balance Ltd.

Income statement for the year ended 31st march 2022

Particulars	Rs.	Rs.
Gross Sales: - Cash	520000	
Credit	1500000	
	2020000	
Less: - Returns	<u>(20000)</u>	
Net Sales		2000000
Less: - Cost of goods sold: -		
Opening Stock	700000	
Purchases	900000	
Wages	150000	
Factory Expense	350000	
Depreciation on plant	30000	
Less: - Closing Stock	<u>600000</u>	
Sale of scrap	-	
Cost of Goods Sold		<u>(1530000)</u>
Gross Profit		470000
Less: - Operating Expenses		
a) Administration Expenses		
Office Salaries	25000	
Office Rent	39000	
Postage	5000	
Directors Fees	6000	
Depreciation of office furniture	10000	
b) Selling and Distribution expenses		
Salesman salary	12000	
Advertising	18000	
Delivery Expenses	20000	
Depreciation On Delivery Van	20000	
c) Finance Charges	--	
Total Operating Expenses (a+b+c)		155000
Net Operating Profit		315000
Less: - Interest		20000
Net profit after interest		295000
Add: - Non operating income		
Dividend on Investment	10000	
Profit on sale on furniture	<u>20000</u>	30000
		325000
Less: - Non operating expenses		
Loss on sale of van		5000
Net Profit Before Tax		320000
Less:- Income Tax		175000
Net Profit After Tax		145000

4.3.2 Vertical Balance Sheet

The balance sheet is the statement of assets and liabilities showing the financial position of the business on a particular date. It is not a ledger account. The financial position or status of the company is disclosed by the balance sheet and it is one of the basic documents required to be presented for acquiring borrowed fund by the business. The position of the assets owned and the liabilities payable by the business shows its ability to pay off the loans. The vertical balance sheet is divided in two parts viz., Sources of Funds and Application of Funds. The sources of Fund are discussed further in topic number 6 in detail.

Let us understand the pro-forma of vertical balance sheet

Particulars	Rs.	Rs.	Rs.
I SOURCES OF FUNDS			
A) OWNED/OWNER'S FUND			
1. Capital		xxx	
2. Reserves	xxx		
Less:- Losses and fictitious assets	(xx)	xxx	
Owned/ Owner's Fund			XXX
B) BORROWED FUND			
1. Secured Fund / loans		xxx	
2. Unsecured Fund / loans		xxx	
Borrowed Fund (A + B)			XXX
Total Sources of Fund/ Capital Employed			XXX
II APPLICATION OF FUND			
A) FIXED ASSETS			
1. Tangible assets		xxx	
2. Intangible assets		xxx	
Total fixed assets			XXX
B) Long term Investment			XXX
C) Working Capital			
1. Current Assets	xxx		
Total current assets		xxx	
Less : 2. Current Liabilities	xxx		
Total current liabilities		(xxx)	
Working Capital			XXX
Total Application of Fund			XXX

***the above format / pro-forma changes from business to business as per the requirements and the financial plan.**

Illustration:-

2. Following is the summary balance sheet of Abhijeet Ltd. As on 31st March 2015.

Liabilities	Amount (rs)	Assets	Amount (rs)
Equity Share Capital	3,90,000	Cash in hand	15,000
10% Preference Share	2,00,000	Cash at Bank	90,000
9% Debenture	2,50,000	Preliminary Expenses	20,000
General Reserve	60,000	Goodwill	1,00,000
Capital Reserve	50,000	Building	3,00,000
11% Bank Loan	1,00,000	Investment (long term)	2,00,000
Creditors	1,25,000	Furniture	2,50,000
Bank Overdraft	1,35,000	Plant and Machinery	3,00,000
Provision for tax	1,40,000	Debtors	1,50,000
Proposed Dividend	30,000	Prepaid Expenses	50,000
Profit & Loss A/c	1,40,000	Stock	2,00,000
Depreciation provision	80,000	Calls in arrears(equity)	10,000
		Commission on issue of Shares	15,000
	17,00,000		17,00,000

Present the above balance sheet in vertical form and show Net worth, Borrowed Fund, Capital Employed, Net Block, Working Capital and Fictitious assets.

Solution: -

Particulars	Rs.	Rs.	Rs.
I SOURCES OF FUNDS			
C) OWNED/OWNER'S FUND			
Capital			
Equity share capital	390000		
Less:- calls in arrears	(10000)	380000	
Preference share capita		200000	
Reserves			
General reserves	60000		
Capital reserves	50000		
Profit & Loss account	140000		
Less:- preliminary expenses	(20000)		
Commission on issue of shares	(15000)	215000	
Total owned fund / Net worth			795000
D) BORROWED FUND			
Secured Fund / loans			
9% Debentures		250000	
Loans from bank		100000	
Unsecured Fund / loans		---	
Borrowed Fund (A + B)			350000
Total Sources of Fund/ Capital Employed			1145000
II APPLICATION OF FUND			
D) FIXED ASSETS			
Tangible assets			
Land and building	300000		
Furniture	250000		
Plant and machinery	300000		
Less:- Depreciation	(80000)	770000	
Intangible assets			

Goodwill		100000	
Total fixed assets			870000
E) Long term Investment			200000
F) Working Capital			
Current Assets			
Cash	15000		
Bank	90000		
Debtors	150000		
Inventory	200000		
Prepaid expenses	50000		
Total current assets		505000	
Less : Current Liabilities			
Creditors	125000		
Provision for Tax	140000		
Outstanding expenses	300000		
Total current liabilities		430000	
Working Capital			75000
Total Application of Fund			1145000

ANALYSIS OF FINANCIAL STATEMENTS:

Financial statements are further analysed for the business decisions in different forms. The balance sheet and the profit and loss account presented vertically are further presented in different format depending upon the goals, requirement, Operations etc. of the business. Each of its analysis has its own importance and can be studied independently. Analysis of financial statements is important to take timely decisions for the growth and development of the business. Apart from this such analysis is also helpful to avoid losses for the business.

The different types of presentations for analysis of financial statements are

1. Trend analysis
2. Comparative analysis
3. Common size analysis
4. Ratio analysis

However, the above are not dealt in detail as students have learnt the above in previous standards.

4.4 COMPUTATION OF EXTERNAL FINANCING REQUIREMENTS

External finance of the business is in the form of borrowed funds are they are to be paid back after the maturity. External Financial sources are paid high interest and so at times the cost of raising such funds is more for the company. Only the share capital and retained earnings are the internal sources for the company. Even though shareholders are outsider i.e, from general public, they are the owner of the company. Hence they are treated internal source of finance. The company needs to be very wise in selecting external financing requirements as one wrong decision may affect the operation of the company

Usually external finance is less than the internal finance of the company. The company needs to find the proportion of external finance to the internal finance. This is done with the help of ratio analysis and vertical statements too. We have already seen the different types of vertical statement and its application. The relationship between internal and external finance can be very clearly understood with the help of ratio analysis. There are different types of ratios as stated below.

- Balance sheet ratios
- Revenue ratios
- Combined / composite ratios

Composite ratios are more reliable to find the ratio of external and internal finance. This is because composite ratios includes the amount of profit from profit and loss account on one hand and the amount of owned and borrowed fund on other hand. The profit earned by the firm is paid to the borrowed fund in the form of interest and then dividend is paid to the shareholders. Let us understand the composite ratios with reference to external finance in the form of mathematical formulas.

$$\text{a. Return on investment} = \frac{\text{Profit before interest and tax}}{\text{Capital employed}}$$

$$\text{b. Return on proprietor fund} = \frac{\text{Net profit after tax}}{\text{Proprietor fund}}$$

$$\text{c. Debt Service Ratio} = \frac{\text{Net profit before interest and tax}}{\text{Interest}}$$

$$\text{d. Debt service coverage ratio} = \frac{\text{Cash Profits}}{\text{Interest + instalments}}$$

(The above formulas can be applied by the learner for the sums given later in the exercise)

4.5 SUMMARY

- Financial planning is important for every business in order to manage its cash requirements
- Financial planning and Financial management are different from each other
- Financial forecasting is one of the important aspect to know the flow of cash in the business
- Financial statements include profit and loss account, balance sheet and all relevant records of accounts.

4.6 EXERCISE

A. Answer the following questions.

1. What do you mean by financial planning? Explain the objectives of financial planning.
2. Explain the concept of financial forecasting. State the advantages of financial forecasting.
3. What are the different approaches of financial planning?
4. State different types of financial statements and state its components.

B. Solve the following :-

1. From the following Balance Sheet, Prepare a vertical balance sheet for the year ending 31st march 2015.

Particulars	Rs.
Cash and Bank	6000
Land and Building at cost less Depreciation	40000
Prepaid Expenses	10000
Stock	30000
Creditors	8000
General Reserve	14000
Debtors	18000
Preliminary Expenses	3000
Plant and machinery less depreciation	52000
Term Loan from bank	35000
Bank Overdraft	18000
Capital	80000
Profit and Loss account	16000
Marketable investments	10000
Advance payment of tax	18000
Provision for tax	16000

2. Prepare a vertical balance sheet for M/s Laxman Ltd for the year ending 31st march 2015.

Particulars	Rs.	Particulars	Rs.
Sundry Debtors	2,00,000	Creditors	1,50,000
Trade Investments	2,50,000	Capital Reserve	1,50,000
Bank Overdraft	1,00,000	Short term investments	50,000
Public Deposits	3,00,000	Plant and Machinery	12,00,000
Bills Payable	7,90,000	Outstanding expenses	1,20,000
General Reserve	1,00,000	Cash and bank	7,00,000
Bills Receivables	2,00,000	Profit and loss a/c (cr)	4,00,000
Vehicles	9,00,000	Stock	5,00,000
10% Preference Share Capital	8,00,000	Land and building	12,00,000
Commission on issue of shares	40,000	Equity share capital	16,00,000
Provision for tax	1,00,000	Preliminary expenses	10,000
Bank Loan	3,00,000	Debenture	5,00,000
Advance Tax	3,00,000	Proposed Dividend	3,00,000
Prepaid Expenses	1,00,000	Advance to suppliers	60,000

3. Re-arrange the following information in the suitable form for analysis for the year ending 31st March 2015.

Particulars	Rs.	Particulars	Rs.
Sales	20,00,000	Return inwards	50,000
Opening stock of raw material	1,10,000	Purchases of Raw materials	5,00,000
Staff salaries	1,50,000	Commission allowed	5,000
Salesman salaries	25,000	Proposed dividend	1,50,000
Bank charges	10,000	Exhibition expenses	35,000
Freight inwards	40,000	Repairs of Computers	5,000
Office Rent and Insurance	45,000	Closing stock of w-i-p	40,000
Debenture interest	50,000	Wages	70,000
Loss on sale of machinery	10,000	Purchases of finished goods	80,000
Printing and Stationery	5,000	Interest received	,40,000
Direct Expenses	50,000	Provision for income tax	2,00,000
Profit and Loss account	2,40,000	Closing stock of material	80,000
Depreciation on patterns	10,000	Sale of scrap	20,000
Depreciation on Machinery	20,000		

4. From the following information, prepare vertical income statement and balance sheet.

Particulars	Rs.	Particulars	Rs.
Equity Share Capital	225000	Sales	855000
Plant and Machinery	45000	Debentures	50000
Purchases	655000	Interim Dividend Paid	15000
Wages	85000	Depreciation	15000
Bank Overdraft	20000	Office Salaries	15000
Office Rent	5000	Dividend Received	5000
Advertisement	20000	Goodwill	25000
Finance Expenses	8000	Land and Building	48000
Income tax	15000	Creditors	25000
Preliminary Expenses	5000	Trade Investment	75000
Bills payable	15000	Returns to suppliers	5000
Net Profit (opening)	13000	Debtors	65000
Opening Stock	75000	Cash	42000

Closing Stock was valued at Rs.80,000.

- 5 From the following financial statements for the year ended 31st March 2015 submitted to you, prepare the vertical statements:-

Dr. Trading and Profit and Loss account for the year ending 31/03/15

Particulars	Rs.	Particulars	Rs.
To Opening Stock	70000	By Sales	1660000
To Purchase 1530000		By Closing Stock	160000
Less:- Returns <u>30000</u>	1500000		
To Gross Profit	250000		
	<u>1820000</u>		<u>1820000</u>
To Depreciation	36000		
To Admin Overheads	50000		
To Selling & Distribution	24000		
To Provision of Tax	40000		
To Proposed Dividend	16000		
To Profit Balance	94000		
	<u>260000</u>		<u>260000</u>

Balance sheet as on 31/03/15Financial Planning And
Forecasting

Liabilities	Rs.	Assets	Rs
Share Capital	300000	Goodwill	20000
P & L Account	180000	Cash in hand	8000
Proposed Dividend	16000	Stock in trade	160000
Bank Overdraft	38000	Sundry Debtors	178500
Sundry Creditors	26000	Land & Building	92150
Provision for Depreciation	55750	Plant & Machinery	128600
Provision for Tax	40000	Prepaid Expenses	1500
		Expenses on issue of shares	7000
		Short term investment	60000
	<u>655750</u>		<u>655750</u>

4.7 REFERENCES

- 1) Management Accountancy J.Betty.
- 2) Management Accounting Manmohan Goyal.
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- 5) Management Accounting Hingorani.
- 6) Management Accounting I.M.Pandey.
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INVESTMENT (PROJECT) IDENTIFICATION AND CAPITAL BUDGETING

Unit Structure:

- 5.0 Objective
- 5.1 Introduction
- 5.2 Investment (Project) identification, feasibility analysis with sensitivities, constraints and long term cash projection.
- 5.3 Capital Budgeting and Investment decision analysis
- 5.4 Illustrations
- 5.5 Summary
- 5.6 Exercise
- 5.7 References

5.0 OBJECTIVE

After learning this topic, students will be able to understand

- Project and its feasibility analysis
- Capital budgeting and its computation
- Application of various approaches under capital budgeting.

5.1 INTRODUCTION

A business is not a one-time activity and so it involves number of processes which are done sequentially. It is very natural that the business which operates smoothly aims at investing amount in different projects. The word 'Project' means sequence of tasks which are done to achieve the desired outcome. In the words of Turner, project means 'an endeavour in which human, material and financial resources are organized in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives.' It can be summarized that projects are involving huge investment and involvement of human resource too and is undertaken with a desired objective.

5.2.1 INVESTMENT / PROJECT IDENTIFICATION: -

Investment / Project is not a routine activity of the business. It is done with a view to achieve something or to reach a new height in the business

and industry. Accordingly, project can be classified on the basis of size viz. Mini project or Mega project. Project or investment can also be classified on the basis of time viz. short term and long-term investment or project. Every investment basically has three basic characteristic which are limited, unique and risky. Speaking in detail, every investment should be limited in terms of money and operation. As the success of project is only after completion, it is always advisable to be limited. Secondly investment should be unique in nature. Every business tries to do something different as compared to others. So that the uniqueness in investment may bring maximum returns on investment in future. Thirdly investment or project is risky. As said earlier, the success of the project or investment is known only after completion of the project.

5.2.2 FEASIBILITY ANALYSIS

Feasibility analysis in project management knows the practicality of the project to be invested in. Such analysis is helpful to know the practical working of the project in which the investment is or is to be made. It is done to know the feasibility of the operation and technical application of a project with keeping in mind the economical aspect. Such analysis helps to take decision regarding the durability of the project. The normal procedure of feasibility analysis is done as follows:-

- Conduct a preliminary analysis to describe the market conditions
- Create an income statement to estimate the income from the project
- Conduct market research to know the applicability of the project
- Plan business organisation and operation to accomplish the project successfully
- Create opening balance sheet to understand the pre project financial status of the business
- Review and analyse the project success rate
- Decide YES / NO for the project

Feasibility study can be classified as: -

- **Legal feasibility:-** to understand the legal framework regarding a project
- **Economic feasibility:-** to understand the economic aspects of a project
- **Technical feasibility:-** to know the technical knowhow of a project to be undertaken.
- **Operational feasibility:-** to check the practical application of the project
- **Scheduling feasibility:-** to know the duration of the project

5.2.3 CASH FLOW PROJECTION: -

Cash is very well known as BLOOD of any business and hence it becomes important to manage cash of the business wisely. Proper care must be taken while taking a project i.e investing in a particular project keeping the cash requirement and the cash earnings in long run. As long run

investments are huge and made for capital assets, the return on investment is slow and risky in nature. Hence, the Cash Outflow – the initial investment and the Cash Inflow – the return on investment should be appropriately estimated. The technique of estimating the cash in future is Cash Flow projection. One should remember that Cash flow projection in project management is not the same as Cash Flow Statements prepared in day-to-day accounting of the business operations. Long term cash flow projection is a practice of management that helps to understand the impact of investment in future which is made today.

5.3 CAPITAL BUDGETING AND INVESTMENT DECISION ANALYSIS

Capital budgeting involves decision making regarding the investment in capital assets which are one of the crucial decisions to be taken in the business as such decision is irreversible. The amount invested in capital assets is huge and long term in nature. Some of the examples of capital investments are purchase of machinery, purchase of land and building, replacement of plant and machinery, selecting proper alternative of plant to purchase, expenditure on research and development, etc.

Some of the important features of Capital Budgeting are: -

- Large amount is involved to be invested.
- Long period investment
- Uncertainties of outcome in futures for the decision taken at present.
- Decision taken by top level management as it is for the growth, development and existence of the business.
- Irreversible as decision once taken cannot be taken back.

Capital budgeting involves some process which is normally followed by every business which is as follows: -

- **Project Generation:-** It involves making of proposal for capital investment. Such proposal may be for increasing the revenue in future or reducing the cost and it may be done by any level of management.
- **Project Evaluation:-** Reviewing the proposal in terms of cash flow to be generated, operational benefits to be arrived after investment etc. are to be done at this stage.
- **Project selection:-** Selecting the appropriate project of investment depending upon the needs and aim of the business in near future is done at this point and it can be done by any level of management even though the execution is done by top level of management.
- **Project Execution:-** Investment of the amount actually in the selected project is project execution. Proper care should be taken in allocation of fund at this stage as the huge amount is to be blocked for long term period.

- **Follow up:-** Follow up is required to check the gap between the estimates and actual performance of the project selected. A system should be generated to check the performance of the selected project in daily operations of the business.

Cash Flow in Capital budgeting:-

Capital budgeting involves huge cash investment as discussed above which is to be compared with the incomes to be generated in future. On one hand the cash invested results in outflow of cash and the income to be generated in future shows the inflow of cash. Normally, the inflow is an estimate and it will help to take the decision of investment in capital assets. Hence, the inflow of cash should be more than the outflow of cash which will result in profitability and financial stability along with growth and development of the business. Let us understand the elements of cash inflow and cash outflow.

Cash Inflow:-

Cash Inflow includes:-

- **Operating Inflows :-**The cash generated from the operations of the business which is the net profit in real sense. The mathematical formula for operating cash inflow is NPAT + Depreciation.

Depreciation is a non-cash expense hence added back to the profit

- **Salvage:-** Salvage is the realisable value of the asset at the completion of its economic life. The amount of Salvage should be considered as inflow in the year of completion of economic life.
- **Working capital:-** Capital investment also results in increase in working capital to be set aside for the smooth working of business. It is an outflow of cash in beginning but the amount of working capital is added to the total inflows at the end of the project life.
- **Terminal inflows:-** sum total of salvage and working capital recovered in the last year are together called terminal inflows.

Cash outflow:-

Cash outflow includes:-

- **Cost of new project:-** Initial cost of investment to be made.
- **Cost of installation to be made**
- **Working capital :-** The amount of increased working capital required due to investment in new project is locked up till the end of the project life. Gradually it is adjusted against the inflows and not considered as the capital cost of the asset. In the last year, after completion of the life of asset, such working capital is treated as cash inflow.
- **Proceeds from old asset:-** If the new investment is for replacing an old asset, the proceeds from selling the old asset are usually utilised to invest in the new project.

METHODS OF EVALUATIONS:-

we have seen that investment decision are taken by evaluating the cash inflow and cash outflow. However there are different methods of evaluating the investment decision which are as follows:-

1. Payback period method
2. Payback Profitability Method
3. Average/ Accounting Rate of Returns Method
4. Net Present Value Method
5. Discounted Payback Period Method.
6. Profitability Index Method.
- 7.

Let us understand each method in detail.

1. Payback Period Method:-

In simple words Payback period is the period taken by the investment to recover the amount of initial investment of the project. For example, The initial investment of the machinery is Rs.10 lakhs and the estimated inflow the cash is Rs. 2 lakh annually, then it will take 5 years to recover the cost of investment. This period of 5 years is called Payback Period. Higher the amount of cash inflow, lesser is the period of Payback and vice versa. The mathematical formula for calculating Payback period is as follows

Payback Period = Cost of investment / cash inflow p.a

Incase where investment is to be made in exclusive projects one can compare the payback period and select the project having the lesser payback period.

2. Payback Profitability Method:-

Incase of Payback period method, the time of recovery of initial investment was the only constraint which was given importance. The overall amount of cash inflows till the end of economic life of the asset was not considered. To avoid this limitation Payback Profitability method came into existence which considered the profitability of the investment made in the project. Profitability is the total of surplus income earned over the cost of investment during the lifetime of the asset.

The mathematical formula for calculating payback profitability is as follows

Payback Profitability = Total Cash inflows – Cost of investment.

3. Average / Accounting Rate of Returns (ARR):-

Under this method, the average or accounting profit is considered as the base of evaluation. The profit is presented in the form of percentage which it bears to the amount invested.

The mathematical formula for calculating average/ accounting rate of return is

ARR = average profit after tax / average capital invested where
Average profit = total profit after tax / no. of years and
Average Capital invested = total capital invested / 2

OR

Average Capital invested = total capital invested / 2 + salvage + working capital

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4. Net Present Value Method (NPV): -

Under this method, the estimated cash inflows of each year are converted into the discounted rate. Such rate is normally the interest rate to be treated as discount rate. Net present value is the difference between the discounted cash inflows at a specified rate and the amount invested in the project. If the difference is positive, normally the project is accepted and investment is made in the desired project. The mathematical formula is as follows

NPV = PV of cash inflows – Cost of investment where

PV is the present value $1 / (1 + i)^2$

5. Discounted Payback Period Method: -

This method is combination of the payback period method and the Net Present Value Method. The initial amount of investment is divided by the discounted cash inflows instead of total cash inflows.

The mathematical formula to find the discounted payback period is

Discounted Payback Period Method = Cost of Investment / Discounted Cash Inflows per annum

6. Profitability Index Method:-

The above stated methods are useful to select the projects having similar cost of investment. But if there are projects having different level of investments then it becomes difficult to select the appropriate project on the basis of profitability index or Net Present Value. To overcome this shortcoming, the profitability index method is useful when the level of investments differs in different projects.

The mathematical formula for calculating the Profitability Index Method is as follows

Profitability Index = PV of Cash Inflows / PV of Cash Outflows.

5.4 ILLUSTRATIONS

1. The management of P Limited is considering selecting a machine out of two mutually exclusive machines. The company's cost of capital is 12%. Details of the machines are as follows:-

	Machine A	Machine B
Cost of machine	Rs.10,00,000	Rs.15,00,000
Expected life	5yrs	6yrs
Annual cash flow	Rs.3,01,500	Rs.3,93,500

You are required to calculate the discounted pay-back period and net present value.

Solution:-

For Machine A :- Cost Rs,10,00,000

Year	Cash inflow	Discount @12	Present value	Cumulative present value
1	3,01,500	0.893	2,69,240	2,69,240
2	3,01,500	0.797	2,40,296	5,09,536
3	3,01,500	0.712	2,14,668	7,24,204
4	3,01,500	0.636	1,91,754	9,15,958
5	3,01,500	0.567	1,70,951	10,86,909
			10,86,909	

$$\begin{aligned}
 \text{Discounted payback period} &= 4 \text{ years} + \frac{1000000-915958}{170951} \\
 &= 4 \text{ years} + 0.49 \\
 &= 4.49 \text{ years}
 \end{aligned}$$

$$\begin{aligned}
 \text{Net Present Value} &= 10,86,909 - 10,00,000 \\
 &= \text{Rs.86909}
 \end{aligned}$$

For Machine B:- Cost 15,00,000

Year	Cash inflow	Discount @12	Present value	Cumulative present value
1	3,93,500	0.893	3,51,396	3,51,396
2	3,93,500	0.797	3,13,620	6,65,016
3	3,93,500	0.712	2,80,172	9,45,188
4	3,93,500	0.636	2,50,266	11,95,454
5	3,93,500	0.567	2,23,115	14,18,569
6	3,93,500	0.507	1,99,505	16,18,074
			16,18,074	

$$\begin{aligned}
 \text{Discounted Payback period} &= 5 \text{ years} + \frac{1500000 - 1418569}{199505} \\
 &= 5 \text{ years} + 0.41 \\
 &= 5.41 \text{ years} \\
 \text{Net Present Value} &= 1618074 - 1500000 \\
 &= \text{Rs. } 118074
 \end{aligned}$$

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2. A company has to make a choice between two projects namely A and B. the initial capital outlay of two projects are Rs.1,35,000 and Rs.2,40,000 respectively for project A and B. There will be no scrap value at the end of the life of both the projects. The opportunity cost of capital of the company is 16%. The annual incomes are as under:-

Years	Project A	Project B	discounting factor
1	-	60,000	0.862
2	30000	84,000	0.743
3	132000	96,000	0.641
4	84000	1,02,000	0.552
5	84000	900,00	0.476

You are required to calculate the Profitability Index and Net present Value of both the projects.

Solution: -

For Project A: - Cost Rs.1,35,000

Year	Cash inflow	Discount @12	Present value	Cumulative present value
1	--	0.862	--	
2	30000	0.743	22290	22290
3	132000	0.641	84612	106902
4	84000	0.552	46368	153270
5	84000	0.476	39984	193254
			193254	

$$\text{Profitability Index} = \frac{\text{Total discounted cash inflow}}{\text{Initial Cash outflow}}$$

$$= \frac{193254}{135000}$$

$$= 1.43$$

$$\text{Net Present Value} = \text{Total discounted cash inflow} - \text{total cash outflow}$$

$$= \text{Rs. } 193254 - \text{Rs. } 135000$$

$$= \text{Rs. } 58254$$

For Project B: - Cost Rs. 2,40,000

Year	Cash inflow	Discount @12	Present value	Cumulative present value
1	60000	0.862	51720	51720
2	84000	0.743	62412	114132
3	96000	0.641	61536	175668
4	102000	0.552	56304	231972
5	90000	0.476	42840	274812
			274812	

$$\text{Profitability Index} = \frac{\text{Total discounted cash inflow}}{\text{Initial cash outflow}}$$

$$= \frac{274812}{240000}$$

$$= 1.15$$

$$\text{Net Present Value} = \text{Total Discounted cash inflow} - \text{total cash outflow}$$

$$= \text{Rs. } 274812 - \text{Rs. } 240000$$

$$= \text{Rs. } 34812$$

3. PQR Ltd is considering to select a machine out of two mutually exclusive machines. The company's cost of capital is 12%. Other information relating to both machines is as follows:-

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Particulars	Machine I	Machine II	Discounting factor for 5 years	
Cost of machine	Rs.1500000	Rs.2000000	1	0.893
Expected life	5yrs	5yrs	2	0.797
Annual cash flow	Rs.527500	Rs.732500	3	0.712
			4	0.636
			5	0.567

You are required to calculate Discounted payback period, Net Present Value and Profitability Index.

Solution: -

Statement of Cash flow

Year	Annual Cash Inflow		Discounting factor @12%	Discounted cash inflow		Cumulative discounted inflow	
	Machine I (Rs)	Machine II (Rs.)		Machine I (Rs.)	Machine II(Rs.)	Machine I (Rs.)	Machine II (Rs.)
1	5,27,500	7,32,500	0.893	471058	654123	471058	654123
2	5,27,500	7,32,500	0.797	420418	583803	891476	1237926
3	5,27,500	7,32,500	0.712	375580	521540	1267056	1759466
4	5,27,500	7,32,500	0.636	335490	465870	1602546	2225336
5	5,27,500	7,32,500	0.567	299093	415328	1901639	2640664
				1901639	2640664		
Cost of investment (Outflow of cash)				1500000	2000000		
Net Present Value				401639	640664		

i. Discounted Payback Period:

$$\begin{aligned}\text{For machine I} &= 3\text{years} + \frac{(1500000 - 1267056)}{527500} \\ &= 3\text{years} + 0.44 \\ &= 3.44 \text{ years}\end{aligned}$$

$$\begin{aligned}\text{For Machine II} &= 3 \text{ years} + \frac{(2000000 - 1759466)}{732500} \\ &= 3 \text{ years} + 0.33 \\ &= 3.33 \text{ years}\end{aligned}$$

ii. Net Present Value = Total discounted cash inflow- Cash outflow

$$\text{For Machine I} = \text{Rs.}401639$$

$$\text{For Machine II} = \text{Rs.}640664$$

iii. Profitability Index = $\frac{\text{Total discounted cash inflow}}{\text{Total cash outflow}}$

$$\begin{aligned}\text{For Machine I} &= \frac{1901639}{1500000} \\ &= 1.27\end{aligned}$$

$$\begin{aligned}\text{For Machine II} &= \frac{2640664}{2000000} \\ &= 1.32\end{aligned}$$

4. A firm has an investment opportunity costing Rs.50,000 with following expected netcash flows after taxes and before depreciation.

Year	Net Cash Flows (Rs.)
1	8000
2	9000
3	10000
4	13000
5	12000
6	10000
7	8000
8	2000

Using 10% as the cost of capital, evaluate the project taking 10% discount factor for NPV by :-Payback Period, Pay back Profitability, Net Present Value and Profitability Index.

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Solution: -

Year	Cash inflow	Discount @10	Present value	Cumulative present value
1	8000	0.909	7272	7272
2	9000	0.826	7434	14706
3	10000	0.751	7510	22216
4	13000	0.683	8879	31095
5	12000	0.621	7452	38547
6	10000	0.564	5640	44187
7	8000	0.513	4104	48291
8	2000	0.467	934	49225
	82000		49225	

$$\begin{aligned}\text{Payback Period (on the basis of cash inflow)} &= 4 \text{ years} + \frac{8000}{12000} \\ &= 4.67 \text{ years}\end{aligned}$$

$$\begin{aligned}\text{Payback Profitability} &= \text{Total cash Inflow} - \text{Total Cash outflow} \\ &= 82000 - 50000 \\ &= \text{Rs.}32000\end{aligned}$$

The discounted payback profitability is negative

$$\begin{aligned}\text{Net Present Value} &= \text{Discounted Cash inflow} - \text{total cash outflow} \\ &= \text{Rs.}49225 - \text{Rs.}50000 \\ &= (\text{Rs.}775)\end{aligned}$$

$$\begin{aligned}\text{Profitability index} &= \frac{\text{Total Discounted cash inflow}}{\text{Cash outflow}} \\ &= \frac{49225}{50000} \\ &= 0.9845\end{aligned}$$

5.5 SUMMARY

- Investment is done in different level to keep the business in operation.
- Such investment may be for growth, development, diversification of the business
- Feasibility study is the study of a particular investment project in terms of its actual application in near future.
- Capital budgeting is useful in decision making process for investment of fixed assets
- Capital budgeting is based on certain assumptions and certain methods on the basis of returns to be earned on the investment.
- NPV is the present value of the income to be generated in future at the fixed interest rate.
- Future value is the value of current investment at a future date at a fixed rate of interest.
- Discounted rate is the rate of Re.1 at an interest rate with reference to a particular period.
- Profitability is the capacity of the project to earn profit in future against the investment made at present.

5.6 EXERCISE

- A. Write short answers
1. What do you mean by capital budgeting? Explain different types of investment projects.
 2. Explain the process of feasibility analysis of project investment.
 3. Explain the concept of cash flow in capital budgeting.
 4. State different methods of decision making in capital budgeting. Or evaluating investment proposals.
- B. Select the most appropriate answer
1. Payback period = $\frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$
a. Cash Flow b. Cash Inflow c. Cash Outflow d. Total Cash Inflow
 2. If the average rate of return of a project is _____ 1, it should be accepted.
a. Less than b. More than c. equal d. none of the above
 3. _____ affects cash flow
a. Depreciation b. Interest c. Capital d. Investment

4. Capital budgeting involves _____ term investment.
a. short b. long c. medium d. all the above
5. The excess of PV of cash inflow over cash outflow is called _____
a. ARR b. Discounted Payback c. IRR d. Net Present Value
6. Financial position of the business is provided by _____
a. Balance Sheet b. Revenue Statement c. Cash Flow d. Fund flow
7. _____ decision are taking by capital budgeting evaluation.
a. Day to day activities b. Acquisition of fixed assets c. Both the above d. None of the above
8. The techniques of Capital Budgeting are _____
a. Payback Period b. ARR c. NPV d. All the above
9. Payback period is the period required to _____
a. Recover the original investment b. Depreciate asset c. Pay the creditors d. Recover from debtors
10. The amount spent on fixed assets is expected to give return over _____ years
a. one b. two c. three d. many

C. Practical Problem

Q.1. DB ltd. is producing articles mostly by manual labour and is considering to replace it by a new machine. There are two alternative models D and B of the new machine. Prepare a statement of profitability showing the pay –back period from the following information:

	Machine D	Machine B
Estimated life of machine	5 Years	6Years
Cost of machine	Rs.10,000	Rs.24,000
Estimated saving in scrap	Rs.1,000	Rs.1,000
Estimated saving in direct wages	Rs.7,000	Rs.10,000
Additional cost of maintenance	Rs.750	Rs.1,500
Additional cost of supervision	Rs.1,500	Rs.2,000

Q.2 A concern is considering two projects A and B. Following are the particulars in respect of them:

	Project A	Project B
Cost(Rs.)	2,00,000	2,00,000
Economic life (in year's)	10	10
Estimated scrap (in Rs.)	15,000	20,000
Annual saving	40,000	30,000

Ignoring income tax, recommend the best of these project using (a) pay – back period, (b) post pay-back profit, and (c) Index of post pay back profit.

Q.3 The following are the particulars relating to a project.

Investment (Project)
Identification and capital
budgeting

	Rs.
Cost of the project	1,00,000
Operating Savings:	
1 st Year	10,000
2 nd year	40,000
3 rd year	60,000
4 th year	60,000
5 th year	20,000

Calculate (a) pay- back period ignoring interest factor and (b) discount pay-back period taking into account interest factor at 10%.

Q.4 Calculate the average rate of return for project X and Y from the following:

	Project X	Project Y
Investment	Rs.30,000	Rs.50,000
Expected Life (no salvage value)	3 year	5Year

Project Net Income, after interest, depreciation and taxes:

Year	Project X (Rs.)	Project Y (Rs.)
1	4,000	6,000
2	3,000	6,000
3	3,000	4,000
4	2,000	2,000
5	----	2,000
Total	12,000	20,000

Q.5 A Company is considering the purchase of the two machine the following details.

	Machine I	Machine II
Estimated life	5 Year	5 Year
Capital Cost (Rs.)	1,00,000	1,00,000
Net earnings after tax:		

(Rs.)		
1 st year	80,000	20,000
2 nd year	60,000	70,000
3 rd year	40,000	1,00,000

You are required to suggest which machine should be preferred.

Q.6 Initial Investment of the asset is Rs.6,000 and the economic life is 4years. The Estimated net annual cash flows for next 4 years are:

Rs.1,500, Rs.2,000, Rs.3,000 and Rs.2,000. Calculate Internal Rate of Return.

Q.7 The initial cash outlay of a project is Rs.1,00,000. The estimated cash inflows:

1st year Rs.40,000

2nd year Rs.30,000

3rd year Rs. 50,000

4th year Rs. 20,000

Compute profitability Index.

Q.8 Z Ltd. is considering the purchase of a machine. Two machine are available, X and Y. The cost of each machine is Rs. 1, 00,000. Each machine has an expected life of 5 year. Net profit before tax but after depreciation during the expected life of the machine is given below:

Year	Machine X (Rs.)	Machine Y(Rs.)
1	20,000	10,000
2	25,000	20,000
3	30,000	25,000
4	20,000	35,000
5	15,000	25,000

Following the method of return on investment ascertain which of the alternatives will be more profitable. The average rate of tax may be taken at 50%.

Q.9 D Ltd. company is considering the purchase of a new machine which will carry out some operation performed by labour. A and B are alternative models. From the following information, you are required to prepare a profitability statement and work out the pay- back period for each model.

Investment (Project)
Identification and capital
budgeting

	Models A (Rs.)	Models B (Rs.)
Estimated Life	5 year	6 year
Cost of Machine	2,00,000	3,00,000
Cost of indirect material	56,000	58,000
Estimated savings in scrap	60,000	65,000
Additional cost of maintenance	69,000	67,000
Estimated saving in direct wages:		
Employee not required	250	300
Wages per employee	900	900

Taxation to be regarded 50% of profit before charging depreciation.
Which model would you recommend?

Q.10 A company proposing to expand its production can go either for an automatic machine costing Rs.3,24,000 with an estimated life of 5 ½ years or an ordinary machine costing Rs.1,00,000 having an estimated life of 8 years.

The annual sales and cost are estimated as follows :	Automatic Machine (Rs.)	Ordinary Machine (Rs.)
Sales	3,00,000	3,00,000
Cost:		
Materials	1,00,000	1,00,000
Labour	24,000	1,20,000
Variable Overhead	42,000	40,000

Compute the comparative profitability under pay back method.

Q.11 The Pari Ltd. is considering a proposal for the investment of Rs.8,00,000 on product development which is expected to generate net cash inflows for 6 year as under:

Year	Net cash Flows ('000)
1	Nil
2	160
3	240
4	300
5	600
6	700

The following are the present value factors @15% p.a

Year	1	2	3	4	5	6
Factors	0.87	0.76	0.66	0.57	0.50	0.43

Q.12 The financial manager of a company has to advise the Board of Directors on choosing between two compelling project proposal which required an equal investment of Rs. 2,00,000 and are expected to generate cash flows as under:

Year	Project I (Rs.)	Project II (Rs.)
1	96,000	40,000
2	64,000	48,000
3	40,00	72,000
4	Nil	96,000
5	48,000	32,000
6	24,000	16,000

Which project proposal should be recommended and why ? Assume the cost of capital to be 10% p.a . The following are present value factors at 10% p.a.

Year	1	2	3	4	5	6
Factors	0.909	0.826	0.751	0.683	0.621	0.564

Q.13 From the following, calculate the net present value of the two project and suggest which of the two profits should be accepted assuming a discount rate of 10%.

Investment (Project)
Identification and capital
budgeting

	Profit A (Rs.)	Profit B (Rs.)
Initial Investment	30,000	45,000
Estimated Life	5 Year	5 Year
Scrap value	1,500	3,000

Profit before depreciation and after tax are as follows:

Year	Profit A (Rs.)	Profit B (Rs.)
1	7,500	30,000
2	15,000	15,000
3	15,000	7,500
4	4,500	4,500
5	3,000	3,000

Q.14 A firm is considering the purchase of a machine. Two machine X and Y are available, each costing Rs. 1,00,000. In comparing the profitability of those machines a discount rate of 10% is to be used. Earning after taxation are expected to be as follows:

Year	Machine X Cash Inflows	Machine Y Cash Inflows
1	30,000	10,000
2	40,000	30,000
3	50,000	40,000
4	30,000	60,000
5	20,000	40,000

You are also given the following data:

Year	PV Factors @ 10% discount
1	0.909
2	0.826
3	0.751
4	0.683
5	0.621

Evaluate the project using:

- a) The pay back period
- b) The accounting rate of return
- c) The net present value
- d) The profitability index

5.7 REFERENCES

RECOMMENDED BOOKS

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8) Management Accounting	M.G. Patkar.



SOURCES OF FINANCE

Unit Structure

- 6.0 Objective
- 6.1. Introduction
- 6.2 Needs and Sources of finance
- 6.3 Sources of finance based on period
- 6.4 Long term sources of finance
- 6.5 Short term sources of finance
- 6.6 Summary
- 6.7 Questions
- 6.8 References

6.0 OBJECTIVES

After learning this topic, students will be able to understand

- Meaning of finance for the business and its importance
- Different types of sources finances of the business
- Features of different types of sources of finance

6.1 INTRODUCTION

Finance play an important role in business right before it starts till its day to day operations. It is a very crucial decision to manage finance for the business and hence effective evaluation is necessary to arrange finance for the same. Normally the factors to be considered while choosing a source of finance are cost of finance, term of finance, leverage of the company, risk factors involved, future plans of the business etc.

6.2 NEEDS AND SOURCES OF FINANCE

Finance is required by the business for different purposes. The need of finance by the business may be for: -

- Growth
- Development
- Diversification
- Investment either initial or to acquire new assets
- daily operations i.e., working capital

The business opts different types of finance which can be classified as follows:

1. On the basis of source of generations:-

- a. Internal sources like retained earnings (reserves), depreciation fund etc.
- b. External sources like debentures, bonds, loans etc.

2. On the basis of Ownership:-

- a. Owners/ Owned Capital i.e. Share capital and retained earnings
- b. Borrowed Capital i.e. loans, debentures, public deposits

3. On the basis of Period:-

- a. Long term sources
- b. Medium Term sources
- c. Short term sources

After learning the different types of sources of finances, let us study in detail the sources of finance based on period.

6.3 SOURCES OF FINANCE BASED ON PERIOD

As seen above, the different types of finance based on period may be long term, medium term or short term. Let us understand the concept of these sources of finance of the business.

➤ **Long term finance:-** As the name indicates, this finance is for the long term period and usually utilised to procure fixed assets like plant and machinery, land and building, furniture etc. The investment is huge in nature and usually for 5 to 10 years. The cost of investment on such sources of finance may be high if it is borrowed from external source. Such long term finance is also known as permanent working capital

➤ **Medium term finance:-** Such finance is arranged to meet the expenditure which are deferred revenue in nature. The finance is usually for a period less than 5 years and the benefit of such finance may be written off over a period of time. Huge advertisement expenses made by the company, share issue expenses etc are the examples of such deferred revenue expenditures.

➤ **Short term finance:-** Such finance, as the name indicates is arranged to meet the day to day expenses against the current assets like stock, debtors, cash etc. It is also known as working capital which is normally raised for a period of one year only.

After understanding the different types of finances based on period, let us discuss the above in detail to gain thorough knowledge of different types of finance.

Long term sources of finance can be arranged in the following:-

- i. Equity capital / owners capital
- ii. Preference capital
- iii. Retained earnings
- iv. Debentures
- v. Bonds
- vi. Loans from banks and financial institutions
- vii. Bridge finance (short term loans arranged till the disbursement of long term loan from banks and financial institutions)

Let us discuss the above in detail

I Equity capital / Owners capital:-

The capital raised by issue of equity shares is called equity capital and holders of such shares are called equity shareholders. Equity shares have no fixed dividend as a return on their investment and also they bear the risk of investment. Hence they are the real owners of the company. They are involved in every decision of the business and they do vote in the annual general meetings of the business. As they are the real risk bearers (as the owner of business bears) of the company their capital is also called owners capital. The equity shares do not have any types. Let us understand the features of equity shares to develop the concept more thoroughly

a. Permanent capital: - Equity share capital is permanent in nature as it is irredeemable. The amount raised by issue of equity shares remains with the company for its life time. Such capital is refundable only at the time of winding up of the company or at the time of buyback.

b. Fluctuating return on investment: - The return on equity share capital is not fixed. The rate of dividend on equity share capital depends upon the profitability and the development plans of the company. At times, even if the company earns huge profit no dividend is paid if the company opts for development projects for the growth of the business.

c. Rights: - The equity share holders have special rights as they are the owners of the business. The equity share holders have the rights like, right to vote, right to participate in profit, right to check the books of the accounts, right to transfer the shares.

d. Controlling power: - Being the owners of the company, equity share holders enjoy the power to control the business decisions. Decisions regarding the management of the company are taken on the basis of the votes of equity share holders.

e. Residual Claimant: - Equity share holders do not have preference to claim their investment in case of closure of the business. At the time of winding up of the company, the equity shareholders have the last preference of payment i.e. firstly all the outsiders secured and unsecured

liabilities are paid, then the outstanding expenses, then other liabilities if any. Hence equity share holders are also called last claimant of the earnings of the company.

f. Bonus and Right Issue:- Equity shares holders enjoy the right to get bonus shares as well as right issues of the company. Bonus shares are issued free of cost to the existing shareholders and right issue is made to the existing shareholders at the rate lower than market rate. Both the above are issued in the proportion of the shares held by the equity shareholder.

g. Values:- Equity shares have different values viz., face value or nominal value or registered value and market value. The face value remains constant but the market value changes as per the market conditions. Market fluctuations results in increase or decrease in the profit of the company which further results in increase or decrease in the price of equity shares in the market respectively.

II Preference Capital: -

The capital raised by issue of preference shares is called preference share capital. As the name indicates, preference shares holders have the preference of getting dividend as returns on their investment and also their initial investment at the end of the agreed term end or at the time of winding up of the company. The status of preference shares holders is that of the creditors of the company and hence they can't take part in the management of the company. There are different types of preference shares which are stated below with its brief explanation.

1. **Redeemable Preference shares:** - These shares are redeemed at the maturity and hence they are called redeemable preference shares.
2. **Irredeemable Preference Shares:** - As the name indicates, such preference shares are not redeemed till the winding up of the company. However, Section 55(1) of Indian Companies act 2013 does not permit any company to issue irredeemable preference shares.
3. **Cumulative preference shares:** - The amount of dividend payable to these shareholders is accumulated over a period of time if the company is unable to pay dividend in any year due to loss. Such unpaid dividend is to be paid in future when the company earns profits.
4. **Non-cumulative preference shares:** - These types of shares are just opposite to cumulative preference shares. The shareholders of such preference shares will not get dividend for a particular year in which the company makes losses.
5. **Convertible Preference shares:** - As the name indicates, these preference shares can be converted into equity shares after completion of certain time.

6. **Non-Convertible Preference shares:** - Such Preference shares cannot be converted into equity shares even if the holders of such preference shares wish to convert them. Sources of finance
7. **Participating Preference Shares:** - Sometimes when the company earns huge profit, the holders of participating preference shares, get additional share in the profits apart from the fixed dividend.
8. **Non-Participating preference share:** -Such preference shares do not have right to enjoy additional dividend even if the company earns huge profits.

Let us understand the features of preference shares

- a. **Nature of Capital:** - Preference capital is not permanent capital of the company. It is to be redeemed at the end of pre-determined term fixed at the time of issue of preference shares. Hence a company cannot issue irredeemable shares. Usually, preference shares are issued by the well-established company in the later stage of its business life.
- b. **Fixed return:-** The rate of dividend on preference shares is fixed. It does not change and hence preference shareholders cannot claim extra income in case if the company earns huge profits.
- c. **Preference of repayment:** - The amount raised by issue of preference share by the company is to be paid back compulsorily at the end of the term. Similarly, the payment of dividend is also to be made even if the company suffers losses.
- d. **No voting rights:** - Preference shareholders are mere Creditors of the company. As they are paid back the amount invested along with the dividend at the predetermined rate, they don't enjoy voting rights similar to equity shareholders. Preference shareholders cannot interfere in the management of the company.
- e. **Risk:** - Investment in preference shares is risk free. Usually the investor who is cautious about getting returns on the investment opts for purchasing preference shares of the company. There is no risk for the investors as the amount of investment and the amount of dividend is received back at the term end.

III. Retained Earnings: -

A good business always follow a habit of keeping some part of profit aside annually rather than giving out as a dividend to the owners. Such accumulated profit of the company over a period of years is called retained earnings of the company. Retained earnings are normally used for re-investment in the business for its expansion and development. Retained earnings of the business depend upon the factors like total earnings of the company, taxation policy, dividend policy, government control etc.

IV Debenture :-

Debentures are normally issued to raise long and medium term finance of the company. Debenture is a borrowed capital which also includes bonds and other instruments showing evidence of debt of the company which may or may not have charge on the assets of the business. Debentures have a fixed rate of interest and the amount of investment is payable at the end of the term agreed at the time of issue. Different types of debentures are issued by the business / company depending upon its financial position and need of finance for its operations. Debenture holders are the creditors of the company.

Features of Debentures:-

- a. **Promise:** - It is a promise by the company to pay the holder the sum specified at the time of maturity of the term.
- b. **Face Value:** - Debentures are issued normally in the face value of 100 or its multiple.
- c. **Time of Repayment:-** The date of repayment is fixed at the time of issue by the company. The company has to compulsorily repay the amount of debentures.
- d. **Priority of Repayment:-** Debentures are to be paid before paying the amount of shareholders. The amount of debentures is paid along with others secured liabilities like bank loan.
- e. **Interest:-** Debenture holders are paid fixed interest on their investment.
- f. **Issuing authority:-** The board of directors of the company have the authority to issue the Debentures with the consent of shareholders as per the sec 179(3) of Indian Companies Act 2013.
- g. **Voting Rights:-** Debenture holders have **No Voting Rights**. They are just the creditors of the company which are secured in nature.

V. Bonds

Bond is a formal and legal contract between the investor and the company taking finance. The amount borrowed by the company through bonds is repayable in cash at the end of the term with a fixed amount of interest too. Normally bonds are made for a period of 5 to 50 years.

Features of Bonds:-

- a. **Nature:-** The amount issued through bonds is a debt finance and has to be repaid on maturity of term.
- b. **Status :-** The bond holders are mere creditors of the company where they have invested their funds.
- c. **Return on investment:-** The return on investment in bonds is called interest which is similar to any other borrowed fund of the business. The rate of interest on bonds is fixed and such interest can be paid regularly or at the time of maturity along the principal amount invested.
- d. **Repayment:** - Being a borrowed fund, the amount raised through bonds is to be repaid compulsorily by the company on the maturity.

VI. Loans from banks and financial institutions: -

Sources of finance

Long term finance can also be obtained by the company from banks and financial institutions in the form of loans. These loans may be taken for investment purpose or for the operations of the business. The rate of interest is fixed on such borrowings and is to be repaid in the agreed term of period. Such loans can also be taken from financial institutions which have developed in our country since 1948 as the result of industrial development. Financial institutions may be of different types such as Development banks, Financial institutions, Investment institutions or state level institutions.

6.5 SHORT TERM SOURCE OF FINANCE:-

Short term finance plays an equally important role as of long term finance in the business management. Short term finance can be raised through

- i. Trade Credit
- ii. Accrued expenses and deferred incomes
- iii. Advances from customers
- iv. Commercial papers
- v. Bank advances
- vi. Public deposits

Let us understand the above finances in details

i. Trade Credit: - Credit plays an important role in running any business. The manufacturer, wholesaler, retailer are called the creditors of the business as they provide goods tangible or intangible to the business. Majority business runs on credit from the above said creditor which helps a business to manage its operations smoothly. The goods purchased on credit creates a burden of payment on one hand and also creates an assurance of income to the creditors. Trade credit is a non-cash loan of the business.

ii. Accrued expenses and deferred incomes:- Accrued expenses are the expenses which are payable in future. It clearly means that such expenses are payable for the goods or services taken by the business at present and the amount is payable in future normally within a year. Hence it is treated as short term finance and shown as current liability in the books of accounts. On the other hand, deferred incomes are the incomes receivable in the future for the service provided at present. Such amount is receivable in future and is treated as short term finance which is shown on asset side of the balance sheet.

iii. Advances from customers:- The amount received as advance from the customers can be treated as short term source of finance as the business is bonded to do a certain pre decided task for the amount received from the customer. It gives short term loan on one hand for the operations of business and on the other hand it has to be treated as a liability till the

date of fulfilling the required service from the business receiving such advances.

iv. Commercial papers:- Commercial papers are the sources of short term finance of the business which is unsecured in nature bearing a low rate of interest as compared to banks interest. Commercial papers are issued by huge corporates in multiple of lakhs and bank has no role to play in commercial papers. The different types of commercial papers are promissory notes, drafts, cheques, etc.

v. Bank advances: - Banks do provide short term finances in the form of overdraft, cash credit, cash loans, discounting of bills, etc. Short term finance from banks are useful for the business entities to manage their working capital for smooth operations. Bank advances like overdraft and cash credits can be secured and discounting of bill may be unsecured in nature.

vi. Public deposits: - Similar to the function of bank, some companies accept deposits from the general public. Such Public Deposit is normally accepted for the period of minimum 6 months and maximum 36 months which bears a fixed rate on interest. Deposit holders get a “Deposit Receipt” as a proof of the investment done. Public deposit may be secured or unsecured in nature.

6.6 SUMMARY

- Finance is the blood of the business
- Finance can be raised from different sources and can be classified as Owned fund or Borrowed funds
- Owned funds remain with the business for its lifetime and include share capital and reserves or retained earnings.
- Borrowed funds are the debts of the business and are to be repaid on the maturity.
- On the basis of time the business finance can also be classified as Long term, Medium term and short term depending upon the period of the issue or raising of finance.

6.7 EXERCISE

Sources of finance

A. Select the appropriate option and complete the statement given:-

1. _____ refers to capital made up of equity and preference shares.
a. Share capital b. Debt capital c. Reserves d. All the above
2. The maximum term of accepting public deposit is _____ months.
a. 12 b. 24 c. 36 d. 60
3. Public deposit is a _____ borrowed fund
a. secured b. unsecured c. both the above d. none of the above
4. _____ are the creditors of the company.
a. Equity shareholders b. Preference share holders c. Debenture holders d. Any of the above
5. _____ is the smallest unit of the share capital of the company.
a. Share b. Debenture c. bond d. public deposit
6. The share given out to the existing shareholders free of cost are
a. _____ b. Bonus issue c. Initial issue d. Subsequent issue
7. The preference shares which can be converted into equity shares are called _____ preference shares
a. Redeemable b. irredeemable c. convertible d. non-convertible
8. The return on borrowed capital is _____
a. profit b. dividend c. interest d. bonus
9. Retained earnings is the _____ source of finance
a. additional b. subsequent c. internal d. external
10. _____ has the right to check the books of the company
a. Debenture holder b. Preference shareholder c. Equity shareholder d. All the above

B Distinguish between

1. Share and Debenture
2. Equity shares and Preference Shares
3. Owned fund and Borrowed fund.

C. Answer the following: -

1. what is an equity share? State its features.
2. State different types of preference shares.
3. What do you mean by borrowed fund? Explain different types of borrowed funds.
4. State different types of sources of finance based on time/ period.

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- | | |
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THEORY OF CAPITAL STRUCTURE

Unit Structure :

- 7.0 Objectives
- 7.1 Introduction
- 7.2 Sources of Capital employed
- 7.3 Pattern of Capital Structure:
- 7.4 Earnings of Capital Structures:
- 7.5 Theories of Capital Structure:
- 7.6 Summary
- 7.7 Questions
- 7.8 References

7.0 OBJECTIVES:

- To understand the concept of Capital Structure
- To explore different Capital Structure Theories
- To Examine pattern of Capital Structure
- To study Net Income Approach
- To overview Operating Net Income Approach
- To demonstrate Traditional Theory

7.1 INTRODUCTION:

Capital structure theory attempts to explain the financial mix used to finance corporation and firms. Capital structure decisions are essential for business survival and prosperity. Wrong decision may lead to financial distress, bankruptcy, or even liquidation. The recommended textbook strategy that management should follow to lower the weighted average cost of capital (WACC), will lead to increased profitability and returns, which will eventually translate in increased shareholders wealth. Financial decisions are critical in maximizing the firm's value. Therefore, to achieve the "best", capital structure is critically important task of management decision.

7.2 SOURCES OF CAPITAL EMPLOYED:

Following are components of Capital Structure

A] Own fund or Shareholders fund or Net Worth

B] Loan fund or Borrowed Fund or Owed fund

A. Own Fund:

1. Equity Share Capital
2. Preference Share Capital
3. Reserves and surplus/ ploughing back profit/ Retained earning

1. Equity Share Capital: Equity Share Capital is also known as “Risk” capital. Risk capital means which has chances of loss to the extent of amount invested in the business. Possessors of equity shares are called as ‘Equity share Holders’ they are ‘deemed owners’ of the firm. Equity share Holders have complete control on the assets of organization but without complete rights on cash flow that is generated by total assets. The debt holders have the first right on cash flow in the form of interest (Bhattacharya 2012).

2. Preference Share Capital: Preference Share Capital is also known as “Quasi Risk” capital. They are committed with the fixed rate of dividend only in case of profit of the concern. Preference shares are ‘Quasi Debt’ in case of profit, due to fixed rate of dividend. Whereas it is ‘Quasi Equity’, when there is no profit, due to no obligation to pay dividend in case of loss. Preference shareholders claims are settle before Equity shareholders claim but after debt claim.

3. Reserves and surplus: Reserves and surplus are the undistributed profits of the business, which are transferred to various Reserves for specific or unspecific reasons. This is also called as Retained Earnings which are ploughed back to the capital employed. Reserves and Surplus belong to Equity shareholders only.

B. Loan Fund:

1. Secured Loan
2. Unsecured Loan

1. Secured Loan: Amount of borrowing against the collateral security is called as ‘secured loan’. In case of collateral security the Debt holders has specific claim on Assets of the concern. Mortgage, hypothecate, charge pledge or lien on asset is covered for Secured Loan. Interest is obligatory even in case of loss. Debentures or Bonds issued by company are few examples of secured loans.

2. Unsecured Loan: Amount of borrowing without the collateral security is called as ‘unsecured loan’. In case of unsecured loan the Debt holders

has no specific claim on Assets of the concern. Interest is obligatory even in case of loss. Claims will be settled before share capital, in case of liquidation of firm. Public deposits are unsecured loans.

Table 7.1 COMPPARISION OF ELEMENTS OF CAPITAL STRUCTURE

Types Of Funds	Cost of Capital	Dilution of control	Risk	Restriction on managerial autonomy
Equity capital	High	Yes	Nil	No
Preference Capital	High	No	Negligible	No
Retained Earning	High	No	Nil	No
Debentures	Low	No	High	Some
Term Loans	Low	No	High	Moderate

7.3 PATTERN OF CAPITAL STRUCTURE:

Corporate firm does have to plan a suitable blend of different securities in total capitalization in such a way so as to abate the cost of capital and amplify the earnings per share to the equity shareholders. There can be four basic patterns of capital structure as follows:

- (i) Equity capital only (including Reserves and Surplus)
- (ii) Equity and preference capital
- (iii) Equity, preference and long term debt i.e. debentures, bonds and loans from financial institutions etc.
- (iv) Equity and long term debt.

Some authors use capital structure and financial structure interchangeably. But, both are different concepts. Financial structure refers to the way in which the total assets of a firm are financed. In other words, financial structure refers to the entire liabilities side of the Balance Sheet. But, capital structure represents only long term sources of funds and excludes all short term debt and current liabilities. Thus, financial structure is a broader one and capital structure is only a part of it.

7.4 EARNINGS OF CAPITAL STRUCTURES:

7.4.1 Concept of Scarce Returns on Capital: Over Capitalization:

According to Gerstenberg, “A company is over-capitalized when its earnings are not large enough to yield a fair return on the amount of stock and bonds that have been issued, or when the amount of securities outstanding exceeds the current value of the assets”.

Over-capitalization means no proper use of invested funds. Over-capitalization arises when the earnings of the company are not adequate to give a normal rate of return on capital employed. If, the value of real assets is less than the sum total of paid up value of shares and debentures. Over-capitalization means there is existence of fictitious and less earning as compared to normal rate earn by other companies from the same industry.

Causes of Scarce Returns on Capital of a company are Promotion, formation or development during inflation. This is because in inflation, prices are high and value is less, it will be a cause of over-capitalization. Obtaining loan funds at high rate of interest results in over-capitalization. Excess-issue of capital. If promoters buy assets of lower values at higher prices, and provide inadequate depreciation, it will result in over-capitalization. High rates of taxation may leave little in the hands of the management to deliver for depreciation, replacements and dividends. If a company's products record a continuous decline, it will bring down the earnings of the company and as a result, normal rate of returns on capital employed will be reduced which represents over-capitalization.

It will also reduction in face value of shares and loss to its owners, due to writing off the accumulated losses. Over-Capitalization affects not only the company and its owners but also the society as a whole. Over-capitalized organization goes to increase prices and decreased in quality of its products. It's been affecting the entire industry and the society, and ultimately leads to recession of economy.

Management must take remedial actions to resolve the situation as soon as the over-capitalization is experienced by the firm to avert losses. Various remedial measures such as reduction of high interest bearing funded debt, increasing the efficiency of management, redemption of preference shares, reduction in face value and number of shares, etc., have been suggested.

7.4.2 Concept of Prolific Returns on Capital: Under Capitalization:

Bonneville and Dewey observe that when a corporation is earning an extraordinary large return on its outstanding stock it is said to be undercapitalized. Under-capitalization is the contrary to over-capitalization. A company is said to be under-capitalized when it is earning remarkably higher profits as evaluated to other companies or the value of its assets is substantially higher than the capital raised. For instance, the average rate of return of the industry is 12%. But the

company is earning 25% on the capital employed; it is a case of under-capitalization.

Following are the indicators of Prolific Returns on Capital:

- (a) There is a surprising increase in earnings of the company.
- (b) Future earnings of the company were under- approximated at the time of endorsement.
- (c) Assets might have been acquired at very low cost.

A company may have huge past accumulated secret reserves, and follows a cautious dividend policy. This would increase the earning capacity of the company. High profitability of the company may be very high. This will result in the higher rate of earnings per share. With the high value of its equity share in the market will be high. The financial reputation of the company will also increase in the market. The shareholders can anticipate higher dividends recurrently.

Under-capitalization may be remedied by increasing the number of equity shares by fresh issue. This will dilute the earnings per share. Dilute the earnings per share by issuing bonus shares to the equity shareholders. If under-capitalization is due to insufficiency of capital, issue more shares and debentures to the public,

7.5 THEORIES OF CAPITAL STRUCTURE:

The existence of an optimum capital structure is not accepted by all. There are two extreme considerations regarding the existence of an optimum capital structure.

Different theories of capital structure have been developed. The main contributors to the theories are David Durand, Ezra Solomon, Modigliani and Miller.

The important theories of capital structure are:

- **Net Income Approach**
- **Net Operating Income Approach**
- **The Traditional view**
- **Modigliani and Miller hypothesis**

Assumptions Underlying the Theories:

With the following assumptions, there is a clear understanding of these theories and the relationship between capital structure and value of the firm or cost of capital,

- (i) There are only two sources to employ by firms, i. e. debt and equity.
- (ii) The total assets of the firm are given.

- (iii) The firm's total capital employed remains constant. The degree of leverage can be altered by vending debt to repurchase shares or vending shares to redeem debt.
- (iv) The firm has 100% payout ratio, i.e., it pays 100% dividends out of its earnings.
- (v) The operating earnings (EBIT) of the firm are not likely to grow.
- (vi) The business risk is assumed to be constant and not dependent of capital structure and financial risk.
- (vii) Investors have the same subjective probability distribution of expected future operating earnings for a given firm.
- (viii) There is absence of corporate and personal taxes. This assumption is relaxed later.

In analyzing the capital structure theories the following basic definitions are used:

S = Market value of common shares

D = Market value of debt

V = S + D = Market value of the firm

NOI = X = Expected net operating income, i.e.,

Earnings before interest and taxes (EBIT)

NI = NOI - Interest = Net Income or shareholders earning.

$$K_o = \frac{Q}{V} = \frac{\text{Operating Income}}{\text{Market value of the firm}}$$

$$K_o = K_d \left[\frac{D}{D+E} \right] + K_e \left[\frac{E}{D+E} \right]$$

$$K_d = \frac{I}{D} = \frac{\text{Annual Interest Charges}}{\text{Market value of Debt}}$$

$$K_e = \frac{E}{P} = \frac{\text{Equity Earning}}{\text{Market value of Equity}}$$

K_d = Cost of Debt [cheap source of finance],

K_e = Cost of Equity [costly source of finance] and

K_o = Overall Cost of Capital / Weighted average cost of Capital (WACC)

7.5.1. Net Income Approach

This approach was identified by David Durand. According to his approach, capital structure has consequence. A firm can upsurge the value of the firm and curtail the overall cost of capital by hiring debt capital in

its capital structure. As per this theory, greater the debt capital hired, lesser shall be the overall cost of capital and greater the value of the firm.

This theory is subject to the following assumptions:

- The cost of debt (K_d) is always cheaper source of capital than cost of equity (K_e).
- The risk assessment of investors is not pretentious by the use of debt. As a result, the cost of equity (K_e) and the cost of debt (K_d) don't change with leverage.
- There is no existence of corporate taxes.

According to the above assumptions, cost of debt is cheaper than cost of equity and they remain constant irrespective of the degree of leverage. If maximum debt capital is hired because of its relative inexpensiveness, the overall cost of capital decreases and the value of the firm upsurges.

According to this approach:

$$V = S + D$$

Where,

V = Total value of firm

S = Market value of equity shares

D = Market value of debt.

And, overall cost of capital or weighted average cost of capital can be calculated as:

$$\text{Overall cost of Capital } (K_o) = \frac{EBIT}{V}$$

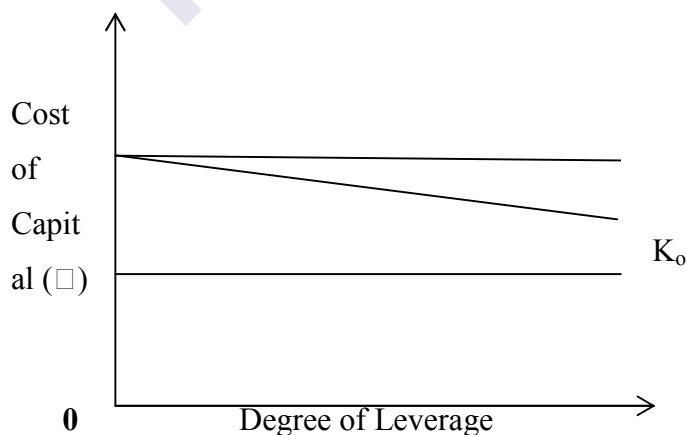


Figure 7.1: Leverage and Cost of Capital (NI Approach)

(Source: Chandra, 2011)

Above diagram 7.1 is evidence that when there is no debt fund means degree of leverage is null, only equity capital is employed then overall cost of capital is equal to cost of equity ($K_o = K_e$). Debt identical fund is relatively inexpensive as compared to cost of equity, if debt capital is hired more and more, the overall cost of capital declines, and it becomes identical to cost of debt (K_d) when the firm is fully financed by debt. Thus, corresponding to this theory, the firm's capital structure will be optimum, when degree of leverage is one.

7.5.2. Net Operating Income Approach

This net operating income (NOI) approach is also suggested by David Durand. This represents another diverge opinion that capital structure and value of the firm are independent means irrelevant. NOI methodology does not influence cost of capital and value of the firm. The value of the firm (V) is determined as follows:

$$V = S + D = \frac{NOI}{K_o}$$

Weighted Average Cost of Capital (WACC) means K_o depends on the business risk of the firm. It is not influenced by financing mix i.e. Leverage. Value of firm (V) will not be alter with the alteration in capital structure.

Rendering to this theory, higher degree of leverage creates risky situation for equity investors, hence they pursue higher reimbursement. The use of less expensive debt fund is offset by an increase equity capitalization rate. Thus, the overall Capitalization rate (K_o) remains unaffected and subsequently the value of the firm does not change. There is no existence of an optimum capital structure. As per NOI Approach any capital structure is optimum. Following are the critical assumptions of this theory:

- The market capitalizes the value of the firm as a whole. Thus, the split between debt and equity is not important.
- Weighted Average Cost of Capital (K_o) depends on the business risk of the firm. If the business risk remains constant at every level of debt - equity mix, then K_o is constant.
- There is no existence of corporate taxes.
- There is no alteration in Cost of Debt (K_d).

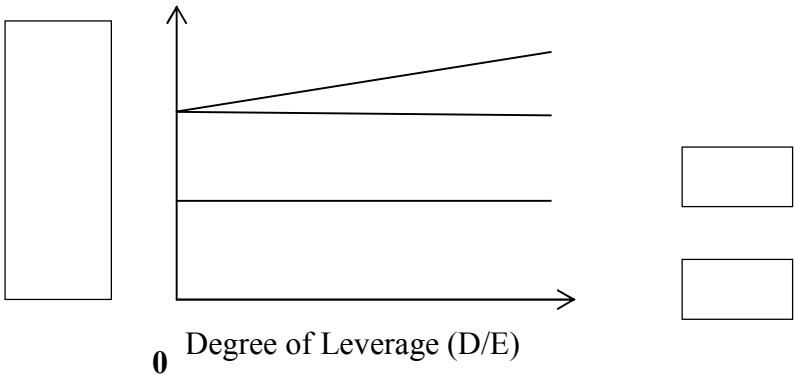


Figure 7.2: Leverage and Cost of Capital (NOI Approach)

(Source: Chandra, 2011)

The above 7.2 diagram shows that K_o and K_d are constant and K_e increases with leverage continuously. The increase in cost of equity (K_e) exactly counterbalances the benefit of cheap cost of debt, so that overall cost of capital (K_o) remains constant, at every degree of leverage. It denotes that every capital structure is optimum and there is no exceptional optimum capital structure.

7.5.3. THE TRADITIONAL APPROACH

This approach, which is also known as midway approach, has been universalized by Ezra Solomon. It is a transitional between the two extreme Approaches of Net Income Approach and Net Operating Income Approach. Rendering to this approach, cost of capital (K_o) can be decreased or the value of the firm can be increased with a prudent mix of debt and equity. This theory says that WACC falls with upsurge in debt capital up to a judicious level and later it upturns with a further escalation in debt capital.

Following are assumptions of Traditional Approach:

- The K_d remains unchanged up to reasonable degree of leverage but upsurge thereafter at an increasing rate.
- The K_e also remains unaltered or rises only progressively up to reasonable degree of leverage and rises suddenly thereafter.
- Behaviour of K_d and K_e varies the K_o as initially it decreases up to a certain point, remain more or less constant or moderate and upsurge beyond a certain point.

The way in which the WACC (K_o) reacts to changes in capital structure can be alienated into three stages under traditional position.

Stage I: Decreasing WACC and Increasing Value of Firm:

In the stage I, the cost of equity (K_e) and the cost of debt (K_d) are constant and cost of debt is less than cost of equity. The employment of debt capital upto a reasonable level will cause the overall cost of capital to decline and increasing value of firm due to the cheap cost of debt.

Stage II: Optimum Capital Structure:

As and when the firm has reached a judicious level of leverage, additional escalation in debt will have no effect on the value of the firm (V) and the WACC (K_o). The further surge in debt capital increases the risk to equity shareholders which leads to a rise in equity Capitalization rate (K_e). This rise in cost of equity exactly counterbalances the cheap cost benefit of debt capital so that the WACC (K_o) remains constant.

Stage III: Increasing WACC and Decreasing Value of Firm:

If the firm increases debt capital extend beyond reasonable level, it will cause intensification in risk to both equity shareholders and debt – holders,

because of which both K_d and K_e start escalating in this stage. This will result in an increase in the WACC (K_o) and ultimately decreasing value of firm.

If the overall effect of all the three stages is taken, it is evident that cost of capital declines and the value of the firm increase with a rise in debt capital upto a certain reasonable level.

If debt capital is further increased beyond this level, the overall cost of capital (K_o) tends to rise and as a result the value of the firm will decline.

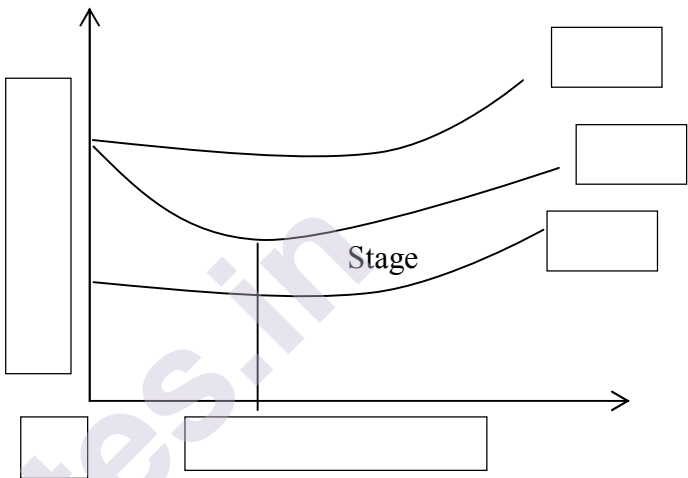


Figure 7.3: Leverage and Cost of Capital (Traditional Approach)

(Source: Chandra, 2011)

Traditional View

It is evident from above graph that the overall cost of capital declines with an increase in leverage upto Stage I and it increases with rise in the leverage after Stage III. Hence, the optimum capital structure lies in Stage II.

7.5.4. Modigliani – Miller (MM) Hypothesis

The Modigliani – Miller hypothesis is matching with the Net Operating Income Approach.

Modigliani and Miller (1958) proposed the capital structure irrelevance theory, which states that under the assumption of a perfect capital market, the choice of bonds or stocks makes no difference to firm value; in other words, capital structure has no influence on firm value. A perfect capital market does not have corporate tax or transaction costs, and when information asymmetry is not a concern, a firm's value is determined by its ability to create value, no matter whether the capital it uses is from internal or external sources.

Modigliani and Miller explored that, if there are no taxes the cost of capital and the value of the firm are not affected by the alterations in capital structure. In other words, capital structure decisions are irrelevant and value of the firm is autonomous of debt – equity combination.

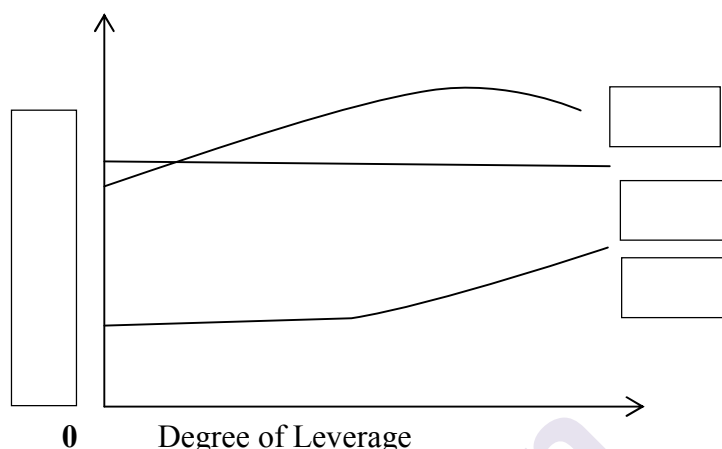


Figure 7.4: Leverage and Cost of Capital (M-M Approach)

Assumptions of the MM Approach:

- There is a perfect capital market, where investors are unrestricted to buy and sell securities, they can borrow funds free at the same terms as the firms do, they behave rationally, they are cognizant, and there are no transaction costs.
- Firms can be classified into identical risk classes. All the firms in the same risk class will have the same degree of financial risk.
- All investors have the same anticipation of a firm's net operating income (EBIT).
- There are no retained earnings, as the dividend payout ratio is 100%.
- There is no existence of corporate taxes. This assumption has been detached later.

Basic Propositions: M -M Hypothesis can be explained in terms of two propositions of Modigliani and Miller. They are:

- (i) The WACC (K_o) and the value of the firm (V) are autonomous of debt – equity combination. The total market value of the firm is given by capitalizing the expected net operating income by the rate appropriate for that risk class.
- (ii) The financial risk increases with more debt gratified in the debt – equity combination. As a result cost of equity (K_e) increases in a manner to counterbalance exactly the cheap cost benefit of debt.

Hence, overall cost of capital remains the same.

Proposition I

According to M – M Approach, for the firms in the same risk class, the total market value is independent of the debt – equity combination and is

determined by capitalizing net operating income by the rate appropriate to that risk class. Proposition I can be expressed as follows:

$$V = \frac{S + D + EBIT}{K_o}$$

Where, V = The market value of the firm

S = The market value of equity

D = The market value of debt

EBIT = Earnings before Interest and Tax

K_o = Weighted Average Cost of Capital

According to Proposition I the average cost of capital is not affected by degree of leverage and is determined as follows:

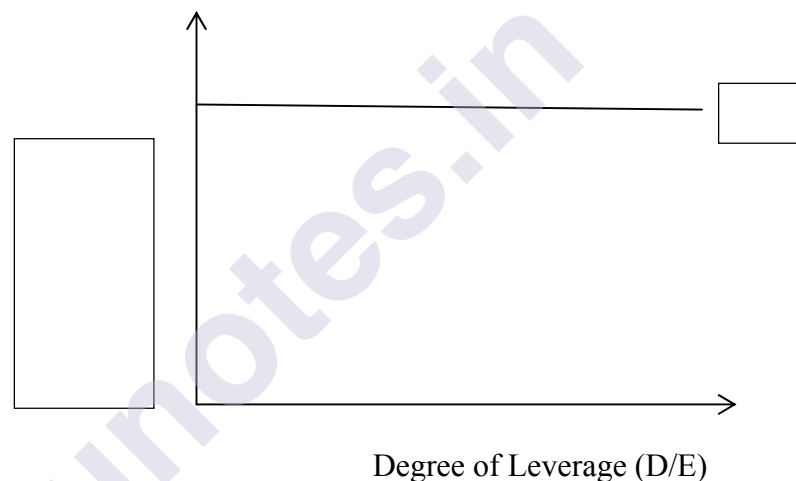


Figure 7.5: Leverage and Cost of Capital (M-M Proposition I)

I)

Arbitrage Process

According to M –M's Proposition I, two firms alike in all respects except their debt – equity combination cannot have dissimilar market values or diverse cost of capital. In case, these firms have different market values, the arbitrage will take place and equilibrium in market values is restored in no time. Arbitrage process refers to switching of investment from one firm to another. Arbitrage will take place to enable investors to engage in personal leverage as against the corporate leverage to maintain equilibrium in the market; hence the capital structure decision is irrelevant.

Proposition II

Proposition II, defines the cost of Equity $K_e = \frac{EBIT - K_o D}{S}$

Where,

S = The market value of equity Shares

D = The market value of debt

EBIT = Earnings before Interest and Tax

K_e = Cost of Equity

K_o = Cost of Debt

According to the Proposition II, for any firm in a given risk class the Cost of Equity (K_e) is identical to the constant WACC (K_o), plus a premium for the financial risk, which is equivalent to Debt-Equity ratio times spread between K_o and K_d . Hence, Leverage will result in more earning per share. The benefit of leverage is exactly compensated by the boosted cost of equity so firm's market value will be irrelevant.

7.6 SUMMARY

Different theories of capital structure have been developed. The main contributors to the theories are David Durand, Ezra Solomon, Modigliani and Miller.

The important theories of capital structure are:

- **Net Income Approach**
- **Net Operating Income Approach**
- **The Traditional view**

Modigliani and Miller hypothesis

7.8 QUESTIONS

Q.01. Explain Theory of Net Income Approach?

Q.02 Evaluate Theory of Operating Net Income Approach?

Q.03 Examine Traditional Theory Approach?

Q.04. Write Short note on Over Capitalisation?

Q.05 Write Short note on Under Capitalisation?

7.9 REFERENCES:

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CAPITAL STRUCTURE: EBIT, EPS MPS APPROACH

Unit Structure

- 8.0 Objectives
- 8.1 Introduction
- 8.2 Definition
- 8.3 Characteristics of Capital Structure:
- 8.4 Factors Affecting Capital Structure
- 8.5 EBIT
- 8.6 EPS
- 8.7 MPS
- 8.8 Summary
- 8.9 Questions
- 8.10 References

8.0 OBJECTIVES:

- To understand the concept of EBIT
- To Study the concept of EPS
- To understand the concept of MPS
- To Examine the Factors Affecting Capital Structure

8.1 INTRODUCTION:

Capital structure includes proportion of debt and equity in the total capital of a firm. In term “Capital Structure” **capital** refers to **long terms funds** and **structure** refers to the **proportion of debt and equity** in capital. One should study financial leverages to check their effect on returns on equity. Leverages may increase or decrease returns on equity in different situation. Capital structure planning helps to maximize the profit of the owner by considering securities carrying less cost of capital. Capital structure decision is of critical importance to the organizations, because it affects firm’s value and stockholders wealth. There is a significant relationship between firm value and its capital structure, which implies that capital structure affects financial performance and shareholders’ value.

Capital structure is the blend of funds employed in the corporation. This blend includes Equity share capital, Preference share capital, Retained earnings and secured, unsecured borrowed funds. Equity share capital holders are the deemed owners of an organization. Preference shares the deemed debt which have fixed rate of dividend. Retained earnings are the undistributed profit which can be ploughed back to the employed capital. Borrowed funds or Loan funds or Owed funds are further classified in Secured debts or and Unsecured debts.

8.2 DEFINITION:

According to Gerestenberg, — “Capital structure of a company refers to the composition or make -up of its capitalization and it includes all long term capital resources, viz, loans, bonds, shares and reserves”. Thus capital structure is made up of debt and equity securities and refers to permanent financing of a firm.

8.3 CHARACTERISTICS OF CAPITAL STRUCTURE:

A capital structure will be considered to be appropriate if it possesses following Characteristics:

- 1) Conservatism:** Conservatism means the debt substance in the total capital structure does not exceed the proportionate limit which the company can bear. It should be commensurate with the company's ability to harvest future cash flows.
- 2) Solvency:** The pattern of capital structure should be so formulated so as to ensure the firm's solvency. If there is disproportionate rise in debts over equity, it will lead to insolvency of the company. Debt constituent should not be the cause that results in increased risk beyond acceptable limits.
- 3) Flexibility:** Capital structure should be flexible to meet the requirements of changing conditions. Moreover, it should also be possible for the company to provide funds whenever needed to finance its profitable activities.
- 4) Profitability:** The capital structure of the company should be utmost profitable. The most profitable capital structure is one that tends to minimize weighted Average Cost of Capital (WACC) and maximize earnings per equity share.
- 5) Control:** The capital structure should be so strong that Owner of the company should have complete control and risk of losing control to be minimised. Debt fund should not be able to dominate the company's policies.

8.4 FACTORS AFFECTING CAPITAL STRUCTURE DECISION:

Capital Structure: EBIT, EPS
MPS Approach

The capital structure of a firm depends on a number of factors and each factor is of equal importance. Generally, the following factors affecting the capital structure decisions of a company.

➤ **Leverage effect:**

Capital gearing ratio helps in understanding leverage effect, the long term debt and preference share capital are the funds bearing fixed rate of interest and dividend, if they are employed with equity share capital is called financial leverage or trading on equity. Cost of preference capital is less than cost of equity share capital, which leads high Earning Per Share (EPS). The use of long term debt capital also increases the EPS, because of its lower cost as compared to Equity and Preference. Debt is also important for tax benefit.

The possible fluctuations in Earnings Before Interest and Taxes (EBIT) and their impact on EPS can help in analyzing different financing plans. Financial leverage is one of the important considerations in planning the capital structure of a company, because of its effects on the earnings per share, Financial leverage increases EPS, along with financial risk to shareholders. Hence, the firm should employ debt in such way that financial risk does not hamper the leverage effect.

➤ **Cost of Capital:**

Cost of capital is another important factor that should be kept in mind while designing the capital structure of a firm. The capital structure should be designed in such a way that the firm's overall cost of capital (k_o) is the minimum. Cost of capital is the minimum return expected by its suppliers. Of all the sources of capital, equity capital is the costliest as the equity shareholders bear the highest risk. Cost of Equity (k_e) > Cost of Debts (k_d) On the other hand, debt capital is the cheapest source because the interest is paid on it by the firm whether it makes profits or not. Moreover, interest on debt capital is tax deductible which makes it further cheaper. Cost of Preference share capital (k_p) is also cheaper than equity capital as the dividends are paid at a fixed rate on preference shares. Retained earnings (k_r) do not require any flotation cost. So, the overall cost of capital depends on the proportion in which the capital is mobilized from different sources of finance. Hence, capital structure should be designed carefully so that overall cost of capital is minimized.

➤ **Dilution of Control:**

Sometimes, the designing of capital structure of a firm is influenced by the desire of the existing management to retain control over the firm. Whenever supplementary funds are mandatory, the management of the firm desires to raise the funds without any damage to control over the firm. If equity shares are issued for raising funds, the control of the existing shareholders is diluted. This is why; they may raise the funds by allotting fixed charge bearing debt and preference share capital, as

preference shareholders and debt holders do not have any voting right. The Debt financing is advisable from the point of view of no dilution of control.

But overdependence on debt capital may result in heavy burden of interest and fixed charges and may lead to liquidation of the company in extreme cases.

➤ **Fluctuation of sales:**

This is another important factor which influences the capital structure of a firm. Consistency of sales guarantees constant earnings, so that the firm will not face any exertion in meeting its fixed commitments of interest payment and repayment of debt. So the firm can raise a higher level of debt. In the same way, the rate of growth in sales also affects the capital structure decision. Usually, greater the rate of growth of sales, greater can be the use of the debt in the financing of a firm. On the other hand, the firm should be very careful in employing debt capital if its sales are highly fluctuating and declining.

➤ **Utilisation of Source of Finance:**

The purpose for which funds are raised should also be considered while determining the sources of capital structure. If funds are raised for prolific purpose, loan fund is suitable as the interest can be paid out of profits engendered from the investment. But, if it is for infertile purpose, equity should be favored.

➤ **Flexibility:**

Flexibility means the firm's competence to acclimate its capital structure to the needs of the changing circumstances. Capital structure should be flexible enough to raise additional funds whenever required, without much delay and cost. The capital structure of the firm must be designed in such a way that it is possible to substitute one form of financing for another to economise the use of funds. Preference shares and debentures offer the highest flexibility in the capital structure, as they can be redeemed at the discretion of the firm.

➤ **Issue Expenses:**

Flotation costs are not a very significant factor in the determination of capital structure. These costs are incurred when the funds are raised externally. They include cost of the issue of prospectus, brokerage, commissions, etc. Generally, the cost of flotation for debt is less than for equity. So, there may be a temptation for debt capital. There will be no flotation cost for retained earnings. As is said earlier, flotation costs are not a significant factor except for small companies.

Flotation costs can be an important consideration in deciding the size of the issue of securities, because these costs as a percentage of funds raised, will decline with the size of the issue. Hence, greater the size of the issue more will be the savings in terms of flotation costs. However, a large issue affects the firm's financial flexibility.

➤ **Market conditions:**

Capital market conditions may change from time to time. Sometimes there may be depression and at times there may be boom condition in the market. The firm should decide whether to go for equity issue or debt capital by taking market sentiments into consideration. In the case of bearish conditions in the share market, the firm should not issue equity shares but go for debt capital. On the other hand, under boom conditions, it becomes easy for the firm to mobilise funds by issuing equity shares.

The internal conditions of a firm may also determine the marketability of securities. For example, a highly levered firm may find it difficult to raise additional debt. In the same way, a firm may find it very difficult to mobilise funds by issuing any kind of security in the market merely because of its small size.

➤ **Statutory requirements:**

The various guidelines issued by the Government from time to time regarding the issue of shares and debentures should be kept in mind while determining the capital structure of a firm. These legal restrictions are very significant as they give a framework within which capital structure decisions should be made.

8.5 EBIT:

Earnings before interest and taxes (EBIT) is an indicator of a company's profitability. EBIT can be calculated as revenue minus expenses excluding tax and interest. EBIT is also referred to as operating earnings, operating profit, and profit before interest and taxes.

- EBIT (earnings before interest and taxes) is a company's net income before income tax expense and interest expenses are deducted.
- EBIT is used to analyze the performance of a company's core operations without the costs of the capital structure and tax expenses impacting profit.
- EBIT is also known as operating income since they both exclude interest expenses and taxes from their calculations. However, there are cases when operating income can differ from EBIT.

8.6 EPS:

Earnings per share (EPS) is calculated as a company's profit divided by the outstanding shares of its common stock. The resulting number serves as an indicator of a company's profitability. It is common for a company to report EPS that is adjusted for extraordinary items and potential share dilution.

Earnings per share (EPS) is a company's net profit divided by the number of common shares it has outstanding.

EPS indicates how much money a company makes for each share of its stock and is a widely used metric for estimating corporate value.

A higher EPS indicates greater value because investors will pay more for a company's shares if they think the company has higher profits relative to its share price.¹

EPS can be arrived at in several forms, such as excluding extraordinary items or discontinued operations, or on a diluted basis.

Like other financial metrics, earnings per share is most valuable when compared against competitor metrics, companies of the same industry, or across a period of time.

8.7 MPS:

Market price per share simply refers to the most recent price of a single share in a publicly-traded stock. This is not a fixed price—it fluctuates throughout the trading day as various market forces push the price in different directions. Unlike the book value per share, the market price per share has no specific relation to the value of the company's assets or any other balance sheet information.

- Market price per share tells you the latest price for which a single share of a company's stock was sold.
- Forces of supply and demand push market prices up and down throughout the trading day.
- Market price per share is used to determine a company's market capitalization.

8.8 SUMMARY:

Capital structure is the blend of funds employed in the corporation. This blend includes Equity share capital, Preference share capital, Retained earnings and secured, unsecured borrowed funds. Equity share capital holders are the deemed owners of an organization. Preference shares are the deemed debt which have fixed rate of dividend. Retained earnings are the undistributed profit which can be ploughed back to the employed capital. Borrowed funds or Loan funds or Owed funds are further classified in Secured debts or and Unsecured debts.

8.9 QUESTIONS:

Illustration: 01: Indian industries Ltd. is a profit-making company with a paid-up capital of 100 lakhs consisting of 10 lakh ordinary shares of 10 each. Company is earning an annual pre-tax profit of 60 lakhs. The company's shares are listed and are quoted in the range of 50 to 80. The management wants to diversify production and has approved a project which will cost 50 lakhs and which is expected to yield a pre-tax income

of 40 lakhs p.a. To raise this additional capital, the following options are under consideration of the management:

Capital Structure: EBIT, EPS
MPS Approach

- (a) To issue equity capital for the entire additional amount. It is expected that the new shares (face value of 10) can be sold at a premium of 15.
- (b) To issue 16% non-convertible debentures of 100 each for the entire amount.
- (c) To issue equity capital for 25 lakhs (face value of 10) and 16% non-convertible debentures for the balance amount. In this case the company can issue shares at a premium of 40 each. Advise the management as to how the additional capital can be raised. Show workings. **Note:** The management wants to maximise the earning per share to maintain its goodwill. The company is paying income-tax at 50%. **(Oct. 2013, adapted)**

Solution:

Indian industries Ltd.

Earnings Per Share under the Three Options (in lakhs)

Particulars	Option I (Issue of Equity only)	Option II (Issue of Debenture only)	Option III (Issue of equity Debentures only)
No. of equity shares:			
Existing	10	10	10
New issued	2	-	0.50
Total numbers	12	10	10.50
16% debentures	Nil	50	25
Estimated total income: From current operations	60	60	60
From new projects	40	40	40
Less: Interest on 16% debenture	100	100	100
Profit before tax	-	8	4
Tax at 50%	100	92	96
Profit after tax	50	46	48
Earnings per share	50	46	48
	4.17	4.60	4.57

Option II, namely issue of 16 debentures is most suitable to maximize earning per share.

Working:

I

Additional amount of 50 lakhs entirely

Total amount 50 lakhs

Issue price including share premium 25

No. of shares to be issued 2 lakhs

II

Additional amount of 50 lakhs issued as equity and debenture in the ratio of 1:1 on equity

Total amount of equity (new issue)? 25 lakhs Issue price including share premium? 50 lakhs No. of shares to be issued 0.50 lakh

Illustration: 02: Captain Ltd. has Equity share capital of 25 lakhs, divided into shares of 100 each. It wishes raise further 2 10,00,000 for expansion programme. The company plans to the following Alternatives.

1. By issuing Equity Share Capital only.
 2. 5,00,000 by issuing Equity Shares and 5,00,000 by 10% Debentures.
 3. 5,00,000 Equity Shares, 3,00,000, 8% Preference Share Capital and 2,00,000, 10% Debentures.
 4. 5,00,000, 10% Debentures and 5,00,000, 8% Preference Share Capital.
- You are required to suggest the best alternative giving your comments, assuming that the estimated EBIT after expansion is 5,00,000 and Corporate Tax rate is 30%. (April 2014, adapted)

Solution:

Captain Ltd.

Financing Alternatives

Particulars	Financing Alternatives			
	I	II	III	IV
Equity Existing	2500000	2500000	2500000	2500000
Equity New	1000000	500000	500000	-
8% Pref Shares	-	-	300000	500000
Capital	-	500000	200000	500000
9% Debentures				
	3500000	3500000	3500000	3500000

Calculation of EPS

Capital Structure: EBIT, EPS
MPS Approach

Particulars	Financing Alternatives			
	I (Rs.)	II (Rs.)	III (Rs.)	IV (Rs.)
Pref Dividend	-	-	24000	24000
Int on Deb	-	50000	20000	50000
No. of Equity Shares (A)	35000	30000	30000	20000
EBIT	500000	500000	500000	500000
Less: Interest	-	50000	20000	50000
EBT	500000	450000	480000	450000
Less: Tax 30%	150000	135000	144000	135000
EAT	350000	315000	336000	315000
Less: Pref Dividend	-	-	24000	40000
Earnings available for Equity shareholder (B)	350000	315000	312000	275000
EPS (B / A)	10	10.5	10.4	11

Analysis: EPS is highest in alternative IV. It is suggested 5,00,000, 10% Debentures and 5,00,000, 8% Preference Share Capital offers best sources for raising finance.

Illustration: 03: The existing capital structure of BAC Ltd. Is as follows: The company earns a return before interest and tax at 12% and the tax on income is 50%. Company wants to raise 25,00,000 for its expansion programme, for which it is considering following alternatives

- Issue of 20,000 Equity Shares at a premium of 25 per share.
- Issue of 10% Preference Shares
- Issue of 9% Debentures.

It is forecasted that the price-earning ratio in case of these alternatives are (a) 20 (b) 17 and (c) 16. Which alternative would you consider to be the best?

Give reasons for your choice.

Also calculate expected market price in case of three alternative financing proposals.

Solution:**BAC Ltd.**

Capital structure

Source of finance	Alternatives			
	Existing	A (Rs.)	B (Rs.)	C (Rs.)
Equity shares	4000000	6000000	4000000	4000000
Securities premium	-	500000	-	-
Retained earnings	1000000	1000000	1000000	1000000
9% Pref shares	2500000	2500000	2500000	2500000
10% Pref capital	-	-	2500000	-
7% debentures	2500000	2500000	2500000	2500000
9% Debentures	-	-	-	2500000
Total	10000000	12500000	12500000	12500000

Calculation of EPS and Market price per shares

Source of finance	Existing (Rs.)	A (Rs.)	B (Rs.)	C (Rs.)
EBIT (@ 12%)	1200000	1500000	1500000	1500000
Less: Int on Deb	175000	175000	175000	400000
EBT	1025000	1325000	1325000	1100000
Less: Tax @ 50%	512000	662500	662500	550000
Less: Pref Dividend	225000	225000	475000	225000
1.Earnings available to Equity shareholders	287500	437500	187500	325000
2.No. of equity shares (No.)	40000	60000	40000	40000
3. Eps (i + ii)	7.19	7.29	4.69	8.12
4. P/E ratio forecasted	-	20	17	16
Expected market price per equity shares (iii) * (iv)	-	145.80	79.73	129.92

Alternative 'a' financing is the best, because market value per share of Equity shares is the highest

Illustration: 04: Seven-up Ltd. has Equity Share Capital of 5,00,000 divided into shares of 100 each. It wishes: raise further 3,00,000 for expansion-cum-moderation scheme. The company plans the following financing alternatives

(I) By issuing Equity Shares only.

Capital Structure: EBIT, EPS
MPS Approach

(II) 1,00,000 by issuing Equity Shares and 2,00,000 through Debentures or term loan @ 10% per annum.

(III) By raising term loan only at 10% per annum.

(IV) 1,00,000 by issuing Equity Shares and 2,00,000 by issuing 8% Preference Shares: You are required to suggest the best alternative giving your comments assuming that the estimated 'Earning Before Interest and Taxes (EBIT)' after expansion is 1,50,000 and corporate rate of tax 35% (April 2011, adapted)

Solution:

Seven Up Ltd.

Calculation of EPS

Particulars	Financing alternatives			
	I	II	III	IV
Equity				
-Existing	500000	500000	500000	500000
-New	300000	100000	-	100000
8% Preference Shares	-	-	-	200000
10% Term Loan/Debenture	-	200000	300000	-
	800000	800000	800000	800000

Calculation of EPS

Particulars	Financing alternatives			
	I	II	III	IV
Preference dividend	-	-	-	16000
Int on term loan or debentures	-	20000	30000	-
No. of Equity shares	8000	6000	5000	6000
(A)	150000	150000	150000	150000
EBIT	-	20000	30000	-
Less: Interest	150000	130000	120000	150000
EBT	52500	45500	42000	52500
Less: 30% tax	97500	84500	78000	97500
EAT	-	-	-	16000
Less: Pref. dividend	97500	84500	78000	81500
Earnings available for equity shareholder (B)	12.19	14.08	15.60	13.58
EPS (B/ A)				

Analysis: From the above analysis, it is observed that EPS is highest with the 3rd alternative, i.e. further financing of * 3.00.00 can be done by raising term loan only at 10% per annum.

Illustration: 05: Amount Products Ltd. wants to raise 100 lakhs for a diversification project. Current estimated earnings before interest and taxes (**EBIT**) from the new projects * 22 lakhs per annum. Cost of debt will be 15% for amounts up to and including 40 lakhs, 16% for additional amounts up to and including 50 lakhs and 18% for additional amounts above 50 lakhs. The equity shares (face value 10) of the company have a current market value of? 40. This is expected to fall to 32 if debts exceeding 50 lakhs are raised. The following options are under consideration of the company:

OPTION. Equity. Debt

I	50%.	50%
II	60%.	40%
III.	40%.	60%

Determine the earning per share (E.P.S.) for each option and state which option the company should exercise. Tax rate applicable to the company is 50%. (**ICWA, Dec. 1997, adapted**)

Solution:

Statement Showing Comparative Earnings Per Share

Particulars	Option I lakhs	Option II lakhs	Option III lakhs
Equity	50	60	40
Equity shares (to issue) Nos.	125000	150000	125000
Debt	50	40	60
EBIT	22.00	22.00	22.00
Less: interest on debt	7.60	6.00	9.40
EBT	14.40	16.00	12.60
TAX@50%	7.20	8.00	6.30
PAT	7.20	8.00	6.40
EPS	5.76	5.33	5.04

Option I being the

Working note:Capital Structure: EBIT, EPS
MPS Approach

Option / Debt in Rs. Lakhs		Interest	Rate	Amount
I.	50	First 40 lakhs	15	6.00
		Next 10 lakhs	16	1.60
II.	40			7.60
III.	60	On 40 lakhs	15	6.00
		First 10 lakhs	15	6.00
		Next 10 lakhs	16	1.60
		Next 10 lakh's	18	1.80
				9.40

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CAPITAL STRUCTURE: PLANNING AND LEVERAGE ANALYSIS

Unit Structure

- 9.0 Objectives
- 9.1 Introduction
- 9.2 Meaning of Leverage
- 9.3 Operating Leverage
- 9.4 Financial Leverage
- 9.5 Degree of Combined Leverage
- 9.6 Significance of Financial and Operating Leverages
- 9.7 Cost of Capital
- 9.8 Self Assessment Test
- 9.9 References

9.0 OBJECTIVES:

After studying this chapter you will be able to:

- Define, discuss, and quantify–business risk□ and–financial risk□.
- Explain in detail operating and financial leverage and identify causes of both.
- Understand how to calculate and interpret firm’s leverage?
- Calculate a firm’s operating break-even (quantity) point and break-even(sales) point
- Understand what is involved in determining the appropriate amount of financial leverage for a firm?

9.1 INTRODUCTION

The main objective of this lesson is to make the students learn about the basic concepts of leverages with reference to operating, financial and composite leverages. The financing or capital structure decision is of fabulous significance for the management, as it influences the debt-equity blend of the company, which ultimately affects shareholders return and risk.

If it is not obligatory for a firm to pay fixed cost or fixed return, there will be no leverage. Since fixed cost or return has to be paid or incurred irrespective of the level of output or sales, the size of such cost or return has substantial influence over the amount of profits available for the shareholders. When the level of sales changes, leverage helps in quantifying such influence. It may therefore be defined as relative change in profits due to a change in sales. A high degree of leverage implies that there will be a stout change in profits due to a relatively minute change in sales and vice versa. Thus, higher is the leverage, higher is the risk and higher is the expected return.

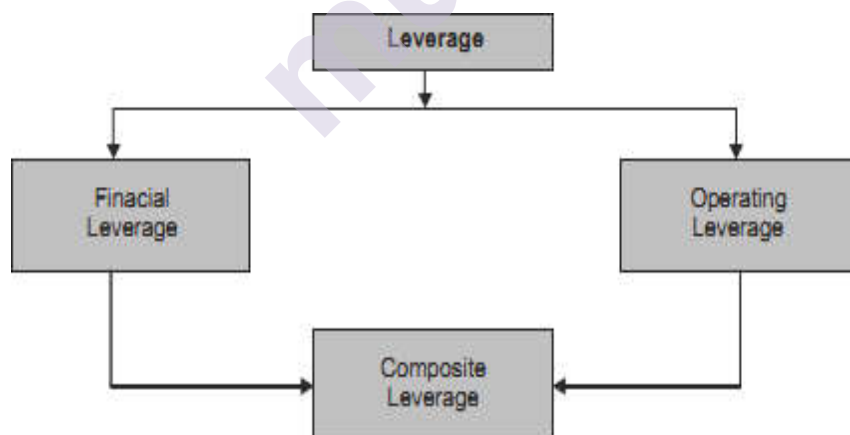
9.2 MEANING OF LEVERAGE

The dictionary sense of the term leverage refers to an increased means of accomplishing some purpose. For example, leverage helps us in lifting heavy objects, which may not be otherwise feasible. Nevertheless, in the area of finance, the term leverage has a special connotation. It is used to describe the firm's ability to use fixed cost assets or funds to blow up the return to its owners.

James Van Horne has defined leverage as—the employment of an asset or funds for which the firm pays a fixed cost or fixed return. A high degree of leverage implies that there will be a stout change in profits due to a relatively minute change in sales and vice versa. Thus, higher is the leverage, higher is the risk and higher is the expected return.

Types of Leverages

Leverages are of three types: (i) Operating leverage, (ii) Financial leverage and (iii) Composite leverage. Let us discuss these leverages taking one by one.

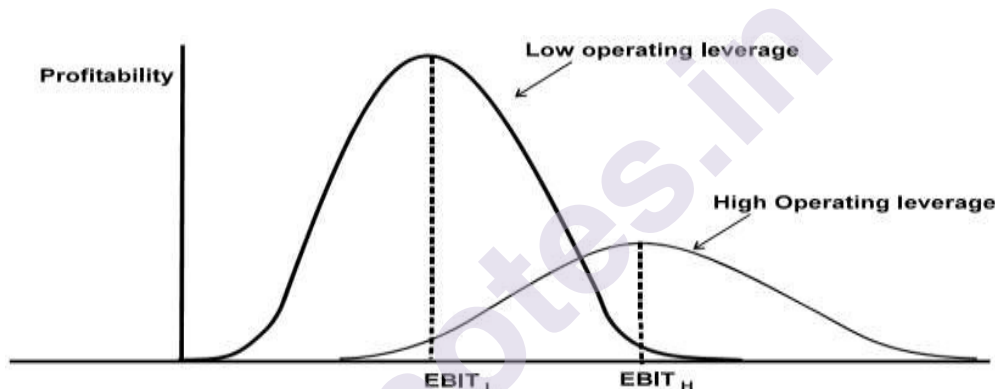


Types of Leverages

9.3 OPERATING LEVERAGE

The operating leverage may be defined as the tendency of the operating profit to vary disproportionately with sales. It is assumed to exist when a firm has to pay fixed cost regardless of level of output or sales. The firm is said to have a high degree of operating leverage if it employs a greater amount of fixed costs and a small amount of variable costs. On the other hand, a firm will have a low operating leverage when it employs a greater amount of variable costs and a smaller amount of fixed costs. Thus, the degree of operating leverage depends upon the amount of fixed elements in the cost structure. Operating leverage in a firm is a function of three factors:

1. The amount of fixed costs.
2. The contribution margin.
3. The volume of sales.



Of course, there will be no operating leverage, if there are no fixed operating costs. Computation of Operating Leverage : The operating leverage can be calculated by the following formula:

$$\text{Operating Leverage} = \frac{\text{Contribution [C]}}{\text{Operating Profit [OP]}} \quad \text{or} \quad C/OP$$

Operating profit here means—Earnings Before Interest and Tax (EBIT). Operating leverage may be favourable or unfavourable. In case the contribution (i.e., sales less variable cost) exceeds the fixed cost, there is favourable operating leverage. In a reverse case, the operating leverage will be termed as unfavourable.

Degree of operating leverage: The degree of operating leverage may be defined as percentage change in the profits resulting from a percentage change in the sales it.

May be put in the form of following formula :

$$\text{Degree of operating leverage} = \frac{\text{Percentage change in operating profits}}{\text{Percentage change in sales}}$$

Operating leverage is directly proportional to business risk. More operating leverage leads to more business risk, for then a small sales decline causes a big profit. This can be illustrated graphically as:

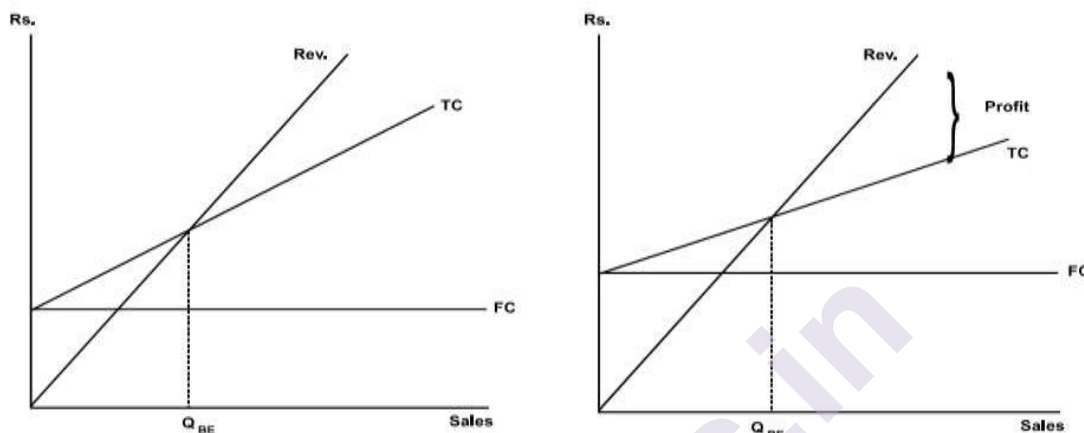


Illustration1 : A Company produces and sells 10,000 shirts. The selling price per shirt is Rs 500. Variable cost is Rs. 200 per shirt and fixed operating cost is Rs. 25,00,000.

- Calculate operating leverage.
- If sales are up by 10%, then what is the impact on EBIT?

Solution

Statement of Profit ability		Rs.
Sales Revenue(10,000× 500)	50,00,000	
Less : Variable Cost(10,000 ×200)	<u>20,00,000</u>	
Contribution	30,00,000	
Less: Fixed Cost	<u>25,00,000</u>	
EBIT	<u>5,00,000</u>	

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{30 \text{ lakhs}}{5 \text{ lakhs}} = 6 \text{ times}$$

$$\begin{aligned} \text{(b)} \quad \text{OL} &= \frac{\% \Delta \text{ in EBIT}}{\% \Delta \text{ in sales}} \\ 6 &= \frac{x / 5,00,000}{5,00,000 / 50,00,000} \\ x &= 30,000 \\ \therefore \Delta \text{EBIT} &= 30,000 / 5,00,000 \\ &= 6\% \end{aligned}$$

Illustration 2: Calculate the operating leverage for each of the four firms A, B, C and D from the following price and cost data.

	Firms			
	A	B	C	D
	Rs.	Rs.	Rs.	Rs.
Sale price per unit	20	32	50	70
Variable cost per unit	6	16	20	50
Fixed operating cost	80,000	40,000	2,00,000	Nil

What calculations can you draw with respect to levels of fixed cost and the degree of operating leverage result? Explain. Assume number of units sold is 5,000.

Solution:

	Firms			
	A	B	C	D
Sales (units)	5,000	5,000	5,000	5,000
Sales revenue (Units × price) (Rs.)	1,00,000	1,60,000	2,50,000	3,50,000
Less: Variable cost	30,000	80,000	1,00,000	2,50,000
(Units × variable cost per unit) (Rs.)				
Less: Fixed operating costs (Rs.)	80,000	40,000	2,00,000	Nil
EBIT	(10,000)	40,000	(50,000)	1,00,000

$$\text{DOL} = \frac{\text{Current sales (S)} - \text{Variable costs (VC)}}{\text{Current EBIT}}$$

$$\text{DOL}_{(A)} = \frac{\text{Rs. } 1,00,000 - \text{Rs. } 30,000}{\text{Rs. } 10,000} = 7$$

$$\text{DOL}_{(B)} = \frac{\text{Rs. } 1,60,000 - \text{Rs. } 80,000}{\text{Rs. } 40,000} = 2$$

$$\text{DOL}_{(C)} = \frac{\text{Rs. } 2,50,000 - \text{Rs. } 1,00,000}{\text{Rs. } 50,000} = 3$$

$$\text{DOL}_{(D)} = \frac{\text{Rs. } 3,50,000 - \text{Rs. } 2,50,000}{\text{Rs. } 1,00,000} = 1$$

The operating leverage exists only when there are fixed costs. In the case of firm D, there is no magnified effect on the EBIT due to change in sales. A 20 per cent increase in sales has resulted in a 20 per cent increase in EBIT. In the case of other firms, operating leverage exists. It is maximum in firm A, followed by firm C and minimum in firm B. The interpretation of DOL of 7 is that 1 per cent change in sales results in 7 per cent change in EBIT level in the direction of the change of sales level of firm A.

9.4 FINANCIAL LEVERAGE

Financial leverage (FL) maybe defined as ‘the use of funds with a fixed cost in order to increase earnings per share.’ In other words, it is the use of company funds on which it pays a limited return. Financial leverage involves the use of funds obtained at a fixed cost in the hope of increasing the return to common stockholders.

Degree of financial leverage is the ratio of the percentage increase in earnings per share (EPS) to the percentage increase in earnings before interest and taxes (EBIT).

Favourable and unfavourable financial leverage: Financial leverage may be favourable or unfavourable depending upon whether the earnings made by the use of fixed interest or dividend bearing securities exceeds the explicit fixed cost, the firm has to pay for the employment of such funds, or not. The leverage will be considered to be favourable if the firm earns more on assets purchased with the funds than the fixed costs of their use. Unfavourable or negative leverage occurs when the firm does not earn as much as the funds cost.

Trading on equity and financial leverage : The Financial leverage is sometimes termed as

–trading on equity ☐ . However, most of the scholars on financial management are of the opinion that the term trading on equity should be used for the term financial leverage only when the

financial leverage is favourable. The company resorts to trading on equity with the objective of giving the equity shareholders a high rate of return than the general rate of earning on capital employed in the company, to compensate them for the risk that they have to swallow.

Computation of Financial Leverage : The computation of financial leverage can be done according to the following methods:

(i) Where capital structure consists of equity shares and debt: In such a case, financial leverage can be calculated according to the following formula:

Financial leverage = $\frac{OP}{PBT}$

Where, OP = Operating profit or earnings before interest and tax.(EBIT)
PBT = Profit before tax but after interest.

Illustration 3 : A company has any choice of the following three financial plans. You are required to calculate the financial leverage in each case and interpret it.

	X	Y	Z
Equity Capital	2000	1000	3000
Debt	2000	3000	1000
Operating Profit (EBIT)	400	400	400

Interest @ 10% on debt in all cases and tax rate 50% only.

Solution:

The financial leverage will be computed as follows in case of each of these financial plans :

	X	Y	Z
Operating Profit(OP)	400	400	400
Interest(10% on debt)	200	300	100
Profit before tax PBT	200	100	300
Financial leverage	$400/200$ =2	$400/100$ 4	$400/300$ 1.33

Financial leverage, as explained earlier, indicates the change that will take place in the tax able income as a result of change in the operating income. For example, taking Financial Plan X as the basis, if the operating profit decreases to Rs.200, its impact on taxable income will be as follows:

Operating Profit (OP or EBIT)	Rs. 200
Less : Interest	Rs. 200
Profit before tax PBT	NIL

Financial leverage in case of plan X is 2. It means every 1% change in operating profit will result in 2% change in the taxable profit. In the above case operating profit has decreased from Rs.400 to Rs.200 (i.e. 5% decrease), as a result the taxable profit has decreased from Rs.200 to zero 100% decrease.

Degree of financial leverage is the ratio of the percentage increase in earnings per share (EPS) to the percentage increase in earnings before inter stand taxes (EBIT).

$$\text{Degree of financial leverage} = \frac{\text{Percentage increase in earning per share (EPS)}}{\text{Percentage increase in earnings before interest and tax (EBIT)}}$$

$$FL = \frac{Y}{Y - I}$$

Or, $FL = \frac{EBIT}{EBIT - \text{Interest}}$

Where,
 Y = EBIT at a point for which the degree of financial leverage is being calculated
 I = Amount of interest charges

Capital Structure: Planning and Leverage Analysis

Illustration 4 : A Company has the following capital structure. Rs.

Equity share capital	1,00,000
10% Prof. share capital	1,00,000
8% Debentures	1,25,000

The present EBIT is Rs.50,000. Calculate the financial leverage assuring that the company is in 50% tax bracket.

Solution :	Statement of Profit	Rs.
Earning Before Interest and Tax (EBIT)	50,000 (or) Operating Profit	
Less : Interest on Debenture	$1,25,000 \times 8 \times 100$	<u>-10,000</u>
Earning before Tax (EBT)		40,000
Income Tax 50% of 40,000		<u>-20,000</u>
Profit		<u>20,000</u>
Financial leverage = <u>Operating Profit (OP)</u>		<u>=50,000</u>
Profit Before Tax (PBT)	40,000	=1.25

Financial leverage helps to examine the relationship between EBIT and EPS. Financial leverage measures the percentage of change in taxable income to the percentage change in EBIT.

Financial leverage locates the correct profitable financial decision regarding capital structure of the company. Financial leverage is one of the important devices which is used to measure the fixed cost proportion with the total capital of the company.

If the firm acquires fixed cost funds at a higher cost, then the earnings from those assets, the earning per share and return on equity capital will decrease.

(ii) Where the capital structure consists of preference shares and equity shares . The formula for computation of financial leverage can also be applied to a financial plan having preference shares. Of course, the amount of preference dividends will have to be grossed up (as per the tax rate applicable to the company) and then deducted from the earnings before interest and tax. **Illustration 5 :** The capital structure of a company consists of the following securities:

10 % Preference share capital	Rs.100000
Equity share capital (Rs.10/-shares)	Rs.100000

The amount of operating profit is Rs. 60,000. The company is in 50% tax bracket. You are required to calculate the financial leverage of the company. What would be new financial leverage if the operating profit increase to Rs.90000 and read between the lines your results?

Solution: Computation of the present financial leverage

Operating profit (OP or EBIT)	Rs.60, 000
Less : Preference dividend (after grossing up)	<u>Rs.20, 000</u>
PBT	Rs.40, 000

Present Financial Leverage = $OP/PBT = 60000/40000 = 1.5$

Computation of new financial leverage

New operating Profit	Rs.90000
Less : Preference Dividend (after grossing up)	<u>Rs.20000</u>
PBT	Rs.70000

Financial Leverage = $OP/PBT = 90000/70000 = 1.286$

The existing financial leverage is 1.5. It means 1% change in operating profit (OP or EBIT) will cause in taxable profit (PBT) in the same direction. For example, in the present case operating profit has increased by 50% (i.e. from Rs. 60000 to Rs. 90000).

This has resulted in 75% increase in the tax able profit (i.e. from Rs.40000 to Rs.70000).

(iii) Where the capital structure consists of equity shares, preferences, shares and debt: In such a case the financial leverage is calculated for deducting from operating profit both interest and preference dividend on a before tax basis.

Illustration 6 : A company has the following capital structure:

Equity share capital	Rs. 1,00,000
10%Preference share capital	Rs. 1,00,000
8% Debentures	Rs. 1,25,000

The present EBIT is Rs .50,000. Calculate the financial leverage assuming that company is in 50 % tax bracket.

Solution:	Operating Profit	Rs.50,000	Capital Structure: Planning and Leverage Analysis
	Less: Interest on debenture	<u>Rs.10,000</u>	
	Pref. dividend (pre-tax basis)	Rs. 20,000	
	Profit before tax	<u>Rs. 20,000</u>	

Financial leverage = OP/ PBT = 50,000/ 20,000 = 2.5

Illustration 7: A company has the following capital structure;10,000
Equity shares of Rs.10 each Rs.1,00,000

2,00010 % Prof. shares of Rs.100 each Rs. 2,00,000

2,00010 % Debentures of Rs.100 each Rs.2,00,000

Calculate the EPS for each of the following levels of EBIT:

(i)Rs. 1,00,000 (ii)Rs. 60,000 (iii) Rs.1,40,000.

The company is in 50 % tax bracket. Calculate also the financial leverage
EBIT level under (i) as base

Solution: **Computation of earnings per share**

	(i)Rs.	(ii)Rs.	(iii)Rs.
EBIT	1,00,000	60,000	1,40,000
Less: Interest on debenture	<u>-20,000</u>	<u>-20,000</u>	<u>-20,000</u>
PBT	80,000	40,000	1,20,000
Less: Income Tax	<u>-40,000</u>	<u>-20,000</u>	<u>-60,000</u>
PAT	40,000	20,000	60,000
Less: Preference dividend	<u>-20,000</u>	<u>-20,000</u>	<u>-20,000</u>

Earnings available for equity

Shareholders(EAS)	20,000	_____	
	40,000	Earningspershare(EPS)	2
Nil	4		

The above table shows that (a) Incase (ii) the EBIT has decreased by 40% (i.e. from Rs.1,00,000 to Rs. 60,000 while the earning per share has decreased by 100% (from Rs. 2 per share to nil); (b) In case (iii) the EBIT has increased by 40% (from Rs. 1,00,000 to Rs. 1,40,000 as compared to case(i), while the earning per share has increased by100%(from Rs. 2 to Rs. 4).

The degree of financial leverage can there fore be computed as follows
:DFL=Percentage change in EPS/Percentage change in EBIT

Financial Leverage in between(i) and (ii)=100/40
=2.5
Financial Leverage in between(i) and(iii)=100/40
=2.5

The same result can be obtained by using the equation OP/PBT as shown below.

Computation of Financial Leverage

	(i)Rs.	(ii)Rs.	(iii)Rs.
OP	1,00,000	60,000	1,40,000
Less: Interest	20,000		
Preference Dividend	40,000	-60,000	-60,000
(Grossed up)			
PBT	40,000	--	80,000
Financial leverage =OP/PBT	=2.5		

This means that with every 1% change in operating profit (OP), profit before tax (PBT) will change (in the same direction) by 2.5%. For example, in situation (ii) OP has decreased by 40%. This has resulted in decrease of PBT by 100% (i.e., 40 x 2.5). In situation (iii) OP has increased by 40%. This has resulted of PBT by 100% (i.e., 40 x 2.5).

Usefulness: Financial leverage helps considerably the financial manager while devising the capital structure of the company. A high financial leverage means high fixed financial costs and high financial risk. A financial manager must plan the capital composition in a way that the firm is in a position to meet its fixed financial costs. Increase in fixed financial costs requires indispensable increase in EBIT level. In the event of collapse to do so, the company may be in principle forced into insolvency.

9.5 DEGREE OF COMBINED LEVERAGE

Combined leverage may be defined as the potential use of fixed costs, both operating and financial, which magnifies the effect of sales volume change on the earning per share of the firm. Degree of combined leverage (DCL) is the ratio of percentage change in earning per share to the percentage change in sales. It indicates the effect the sales changes will have on EPS.

Degree of combined leverage = Degree of operating leverage × Degree of financial leverage
DCL = DOL × DFL
Where,
DCL = Degree of combined leverage
DOL = Degree of operating leverage
DFL = Degree of financial leverage
Degree of combined leverage = $\frac{\text{Percentage change in EPS}}{\text{Percentage change in sales}}$

Illustration 8: A company has sales of Rs. 1,00,000. The variable costs are 40% of the sales while the fixed operating costs amount to Rs. 30,000. The amount of interest on long-term debt is Rs. 10,000. You are required to calculate the composite leverage and illustrate its impact if sales increase by 5%.

Solution:

Statement showing computation of composite leverage

Sales	1,00,000
Less: Variable costs (40% of sales)	<u>-40,000</u>
Contribution ©	60,000
Less: Fixed operating costs	<u>30,000</u>
Earnings before interest and tax (EBIT) or Operating profit (OP)	30,000
Less: Interest	<u>10,000</u>
Taxable Income (PBT)	<u>20,000</u>

Composite leverage = $C/PBT = 60,000/20,000 = 3$.

The composite leverage of 3 indicates that with each of Re. 1 in sales, the taxable income will increase by Rs. 3.

Income will increase by Rs. 3 (i.e. 1×3).

This can be verified by the following computations when the sales increase by 5%.

Sales	1,05,000
Less: Variable costs	<u>-42,000</u>
Contribution (C)	63,000
Less: Fixed operating costs	<u>-30,000</u>
Earnings before interest and tax (EBIT) or Operating profit (OP)	33,000
Less: Interest	<u>-10,000</u>
Taxable Income (PBT)	<u>23,000</u>

It is clear from the above computation that on account of increase in sales by 5% the profit before tax has increased by 15%. This can be verified as follows:

Increase in percentage profits = $[\text{Increase in profit} / \text{Base Profit}] \times 100$

$= [3,000 / 20,000] \times 100 = 15\%$

9.6 SIGNIFICANCE OF FINANCIAL AND OPERATING LEVERAGES

The operating leverage and the financial leverage are the two quantitative tools used by the financial experts to measure the return to the owners (viz., earning per share) and the market price of the equity shares. The financial leverage is considered to be superior of these two tools, since it focuses the attention on the market price of the shares, which the management always strives to increase by increasing the net worth of the firm.

The management for this purpose resorts to trading on equity because when there is increase in EBIT then there is corresponding increase in the price of the equity shares. However, low operating leverage and a high financial leverage is well thought-out to be an ideal situation for the maximization of the profits with bare minimum of risk.

9.7 COST OF CAPITAL:

Cost of capital is another important factor that should be kept in mind while designing the capital structure of a firm. The capital structure should be designed in such a way that the firm's overall cost of capital (k_o) is the minimum. Cost of capital is the minimum return expected by its suppliers. Of all the sources of capital, equity capital is the costliest as the equity shareholders bear the highest risk. Cost of Equity (k_e) > Cost of Debts (k_d). On the other hand, debt capital is the cheapest source because the interest is paid on it by the firm whether it makes profits or not. Moreover, interest on debt capital is tax deductible which makes it further cheaper. Cost of Preference share capital (k_p) is also cheaper than equity capital as the dividends are paid at a fixed rate on preference shares. Retained earnings (k_r) do not require any flotation cost. So, the overall cost of capital depends on the proportion in which the capital is mobilized from different sources of finance. Hence, capital structure should be designed carefully so that overall cost of capital is minimized.

1. **Cost of Debt** = a) $k_d = I(1-t)$

b) $k_d = I(1-t) / NP$ [NP = FV + Premium(-discount) - Flotation Costs]

c) $k_d = I(1-t) + (RV - NP)/N / (RV + NP / 2)$

RV = Redeemable value

NP = Net Proceeds = FV + Premium(- discount) - Flotation Costs

2. **Cost of Preference** = $k_p = \text{Preference Dividend} / \text{Net Proceeds} \times 100$ [PD/NP X 100]

$k_p = PD + (RV - NP / N) / (RV + NP / 2)$

3. **Cost of Equity** = $k_e = \text{Dividend} / \text{Price} \times 100 + \text{Growth} = [K_e = D/P \times 100 + g]$

$k_e = E / P \times 100 + G$ [Earning / Price X 100 + Growth]

4. Weighted Average Cost of Capital = WACC = Weights X Cost of Capital

Q. 01. A ltd issued 12,000 debentures, 10% of Rs 100 each at par. The Tax rate is 50%. Calculate after tax cost of debt.

Solution: $I = 100 \times 10\% = 10$, $T = 50\%$ 0.5

$$k_d = I(1-t)$$

$$= 10 (1-0.5)$$

$$k_d = 5\%$$

$$I = 12,000 \times 100 \times 10\% = 60,000, T = 50\%$$

$$k_d = I(1-t) = 60,000 (1- 0.5)$$

$$k_d = Rs 60,000$$

Q.02. V ltd issued Rs 300,000, 8% Debentures of Rs 100 each at a premium of 10%. The Flotation costs are 2% on the net proceeds. The tax rate is 50%. Ascertain Cost of Debt after tax.

Solution: $FV = 300,000$, $Np = 300,000 + 10\% - 2\% = Rs 323,400$ Interest = Rs 24,000, $T = 50\%$

$$k_d = I(1-t) / Np$$

$$= 24,000(1 - 0.50) / 323,400$$

$$k_d = 3.71 \%$$

Q.03. Calculate Cost of Capital, Rs 20,00,000 14% Debentures of Rs 100 each issued at 95Rs each, Redeemable at 120 Rs Each After 7 years. Tax rate applicable is 40%.

Solution:

$$FV = Rs 100, NP = 95, RV = Rs 120, N = 7yrs, T = 0.40, I = 14$$

$$k_d = I(1-t) + (RV - NP)/N / (RV + NP / 2)$$

$$k_d = 11.33\%$$

$$k_d = 11.33\%$$

$$k_d = 11.33\%$$

$$k_d = 11.33\%$$

$$k_d = 11.33\%$$

Q.04 D Ltd issued 9% Preference shares of Rs 100 each. The issue expenses were Rs 3 per share. Calculate K_p in following cases:

a. Issued at par b. Issued at premium of 10% c. Issued at discount of 10%

Solution:

$$k_p = PD / NP \times 100$$

a. Issued at par
PD = 100 X 9% = 9Rs , NP = 100(par) - 3=97Rs
= 9 / 97 x 100 = 9.28%

b. Issued at premium of 10%
PD = Rs 9, NP = 100 + 10% - 3 = 107Rs
= 9 / 107 x 100 = 8.41%

c. Issued at discount of 10%
PD= 9 , NP = 100 -10%(DISC) - 3(Exp)
= 9 / 87 x 100 = 10.34%
Q.05. K ltd issued 8800 10% Preference Shares of Rs 100 each at par. Shares are redeemable after 5 years at premium of 10%. The Issue expenses are 4% of Face value. Calculate k_p ?
Solution:
$k_p = PD + (RV - NP / N) / (RV + NP / 2) \times 100$
PD = 100 X 10% =Rs 10,
NP = Rs100(par) - 4% =96Rs,
RV = 100 +10%(premium) =Rs110,
N= 5 yrs
$k_p = 10 + (110 - 96 / 5) / (110+96/2) \times 100$
$k_p = 12.8 / 103 \times 100$
$k_p = 12.43\%$

Q.06. For T ltd, Share is quoted at Rs 4, Dividend Paid is Rs 1 per share,. The growth rate expected is 6%p.a. Calculate k_e ?

Solution:

$k_e = D / P \times 100 + G$
$k_e = 1 / 4 \times 100 + 6$
$k_e = 25 + 6 = \mathbf{31\%}$

Q.07. For S ltd Earnings Per Share is Rs 3, Market price is Rs 12 & expected growth rate is 10% Calculate Cost of Equity?

Solution:

$k_e = E / MP \times 100 + G$
$k_e = 3/12 \times 100 + 10$
$k_e = 25 + 10 = \mathbf{35\%}$

Q.08

Source of Capital	Capital Amt	Cost of Capital
Equity	3,00,000	8%
Debt	6,00,000	13%
Preference Shares	4,00,000	5%
Determine WACC of Moon ltd?		

Solution:

<u>Source of Capital</u>	Capital Amt	Weights (W)	Cost of Capital (C)	W X C
Equity	3,00,000	0.2307	8	1.8456
Debt	6,00,000	0.4615	13	5.9995
Preference Shares	4,00,000	0.3076	5	1.538
	13,00,000	1		WACC = 9.38%

Q. 09.

Following are the details of ABC Ltd

10% Debentures (Rs 100 per debenture) -Rs 10,00,000

8% Preference shares (Rs 100 per share) - Rs 500,000

Equity Shares (Rs 10 per share) - Rs 20,00,000

Dividend expected at the end of the year Rs 3 per share, growth rate in dividend in 10% rate is 40%

Calculate WACC by considering above information?

Solution:

10% Debentures, $K_d = I(1 - t)$

$K_d = 10(1 - 0.40)$	$K_d = 0.6 \sim 6\%$
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8% Preference Shares $K_p = PD / NP \times 100$

$k_p = 8 / 100 \times 100$	$k_p = 8\%$
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Equity Shares = $K_e = D/P \times 100 + G$

$K_e = 3 / 10 \times 100 + 10$	$K_e = 40\%$
--------------------------------	--------------

<u>Source of Capital</u>	Capital Amt	Weights (W)	Cost of Capital (C)	W X C
10% Debentures	10,00,000	0.286	6	1.7142
8% Preference Shares	5,00,000	0.143	8	1.144
Equity Shares	20,00,000	0.571	40	22.856
	35,00,000			WACC = 25.712

9.9 PRACTICAL QUESTIONS:

Solved:

Statement of Income		
Particulars	Rs	Rs
Sales		
- Variable Cost		
Contribution		
- Fixed Cost		
EBIT		
- Interest		
EBT		
- Tax		
EAT / NPAT		
- Preference Dividend		
Profit for Eq. Shareholders		
/ No of Equity Shares		
EPS		

Q.01. From the following, Calculate, OL, FL & CL

Sales= Rs. 300,000, Variable Cost= Rs. 72,000, Interest= Rs. 100,000 @ 10%

Fixed Cost= Rs. 50,000 , Tax @ 50%

Solution:

Particulars	
Sales	300,000
-Variable Cost	-72,000
Contribution	228,000
-Fixed Cost	-50,000
EBIT	178,000
- Interest 100,000 x 10%	-10,000
EBT	168,000
- Tax @ 50%	-84,000
EAT	84,000

$OL = 228,000 / 178,000 = 1.28 \text{ times}$
$FL = 178,000 / 168,000 = 1.06 \text{ times}$
$CL = 1.28 \times 1.06 = 1.36 \text{ times}$

Q.2	
Sales	100,000 units
Variable Cost	Rs 90 p.u
Fixed Cost Including Interest	18,00,000
Selling Price p.u	120Rs
10% Debentures	Rs 30,00,000
Tax Rate	30%

Determine Leverages:

Solution:

Particulars	
Income Statement	
Particulars	Rs
Sales(100,000U X 120Rs)	1,20,00,000
-Variable Cost(100,000U X 90Rs)	(90,00,000)
Contribution	30,00,000
-Fixed Cost*	15,00,000
EBIT	15,00,000
-Interest*	-300,000
EBT	12,00,000
-Tax @30% x 12,00,000	-360,000
EAT	840,000

Fixed including Interest	18,00,000
-Interest (30,00,000 X 10%)	-300,000
Fixed Cost	15,00,000

Capital Structure: Planning and Leverage Analysis

i)	Operating Leverage= Contribution / EBIT	30,00,000/15,00,000	2times
ii)	Financial Leverage= EBIT / EBT	15,00,000/12,00,000	1.25times
iii)	Combined Leverage= Contribution / EBT	30,00,000/12,00,000	2.5times
	CL= OL X FL		

Q.03

A firm has sales of Rs 40 lacs, Variable cost of Rs 25 lacs, Fixed Cost of Rs 6 lacs

10% Debentures of Rs 30 lacs & Equity Capital of Rs 45 lacs of Rs 10 Each.

Calculate Leverages & EPS

Solution:

Statement of Income	
Particulars	Rs.
Sales	40,00,000
-Variable Cost	(25,00,000)
Contribution	15,00,000
-Fixed Cost	-600,000
EBIT	900,000
-Interest(30,00,000x10%)	-300,000
EBT	600,000
No of Equity shares=45,00,000 / 10Rs	
450,000 Shares	

i)	Operating Leverage= Contribution / EBIT	15,00,000/900,000	1.67times
ii)	Financial Leverage= EBIT / EBT	900,000/600,000	1.5times
iii)	Combined Leverage= Contribution / EBT	1.67 x 1.5	2.5times
	CL= OL X FL		
iv)	Earnings Per Share=Profit Available to Equity Shareholders / No of Equity Shares	Rs 600,000 / 450,000 Shares	1.33Rs

Q.04	
Sales	90,00,000
Variable Cost @60%	
Annual Fixed Cost	10,00,000
(Excluding Interest)	
Tax Rate @ 40%	
400,000 Equity shares of Rs 10 each	
12% Debentures	40,00,000
Preference Shares @ 10%	30,00,000
Calculate Leverages & EPS	

Solution:

Statement of Income	
Particulars	Rs
Sales	90,00,000
- Variable Cost @60%	(54,00,000)
Contribution	36,00,000
-Fixed Cost	(10,00,000)
EBIT	26,00,000
-Interest(12% x 40,00,000)	-480,000

EBT	21,20,000
-Tax @ 40% x 21,20,000	-848,000
EAT	12,72,000
-Preference Dividend	-300,000
(10% x 30,00,000)	
Profit Available to	
Equity share holders	972,000
/No of Equity Shares	40,000
EPS	24.3Rs

i)	Operating Leverage= Contribution / EBIT	36,00,000/26,00,000	1.38times
ii)	Financial Leverage= EBIT / EBT	26,00,000/21,20,000	1.22times
iii)	Combined Leverage= Contribution / EBT	1.38 x 1.22	1.68times
iv)	EPS=Profit Available to Equity Shareholders /No of Equity Shares	972,000/400,000	24.3Rs
	No of Equity Shares = 400,000 / 10 = 40,000 shares		

Q.05 LS Ltd
Operating Leverage 3:1
Financial Leverage 2:1
Interest Charges 20,00,000
Tax Rate 50%
Variable Cost Percentage 60%

Prepare Income Statement

$OL = C/EBIT$

$FL = EBIT / EBT$

$EBT = EBIT - \text{Interest}$

Sol:

WN 1

Financial Leverage = $EBIT / EBT$

$2 = EBIT / EBIT - \text{Int}$

$2 = EBIT / [EBIT - 20,00,000]$

$2(EBIT - 20,00,000) = EBIT$

$2EBIT - 40,00,000 = EBIT$

$2EBIT - 1 EBIT = 40,00,000$

$EBIT = 40,00,000$

WN 2

Operating Leverage = $C/EBIT$

$3 = C / 40,00,000 \dots \text{WN.1}$

Contribution = 1,20,00,000

Income Statement						
Particulars	Rs.					
Sales	3,00,00,000	S	100	?	3,00,00,000	$1,20,00,000 / 40 \times 100$
-VC (60%)	1,80,00,000	V.C	60	?		
Contribution	1,20,00,000	C	40		1,20,00,000	

-FC (b.f)	80,00,000					
EBIT	40,00,000					
-Int (Given)	(20,00,000)					
EBT	20,00,000					
-Tax(50%)	(10,00,000)					
EAT	10,00,000					

Q.06
Operating Leverage=4:1
Financial Leverage=2:1
Annual Interest paid=Rs 10,00,000
Contribution / Sales =0.4
Tax Rate= 40%
Prepare Income Statement

Sol:
Working note: 01
Financial Leverage = EBIT / EBT
$2 = \text{EBIT} / \text{EBIT} - \text{Int}$
$2 = \text{EBIT} / \text{EBIT} - 10,00,000$
$2 \times (\text{EBIT} - 10,00,000) = \text{EBIT}$
$2\text{EBIT} - 20,00,000 = \text{EBIT}$
$2\text{EBIT} - \text{EBIT} = 20,00,000$
$\text{EBIT} = 20,00,000$

Working note: 02
Operating Leverage = C / EBIT
$4 = C / 20,00,000$
$C = 80,00,000$

$$C / \text{Sales} = 0.4 \text{ i.e } 40\%$$

100	Sales	2,00,00,000	$80,00,000 / 40 \times 100$
60	-VC	120,00,000	
40	Contribution	80,00,000	

Practice Questions:

01. Calculate Ke for Sanjana Ltd in Following cases:

1. Market price Rs 25 per share, Dividend is Rs 9 per share
2. Net proceeds being 125Rs, Dividend being Rs 50, growth rate being 8%
3. Earnings per share being Rs 6.6, Market proceeds being 60, growth rate being 10%
4. Earnings per share being 10, market price being 100 Rs

9.10 REFERENCES

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DIVIDEND POLICY

Unit Structure

- 10.0 Objectives
- 10.1 Introduction
- 10.2 Meaning of Dividend
- 10.3 Types of dividend/ form of dividend
- 10.4 The Dividend Payment Time Line
- 10.5 Dividend Decision
- 10.6 Relevance of dividend policy
- 10.7 Determinants of dividend policy
- 10.8 Questions
- 10.9 References

10.0 OBJECTIVES

After studying this chapter you will be able to:

- Define dividend and its various forms
- The concept of Dividend policy.
- Know the objectives and determinants of Dividend policy.
- Various approaches of Dividend policy.

10.1 INTRODUCTION

Financing an enterprise through its internal sources is known as internal financing. Such internal resources comprise of earnings retained by the company in the form of income left over after meeting all expenses. Such funds are available to an enterprise which has been carrying on its business successfully and thereby has been in a position to set aside a portion of its earnings for future needs. This retaining of earnings is technically termed as ploughing back of profits.

Dividend decision relates to how much of the company's net profit is to be distributed to the shareholders and how much of it should be retained in the business for meeting the investment requirements. This decision should be taken, keeping in view the overall objective of maximising shareholders' wealth. Every company has to decide whether

to return cash to its stockholders and, if yes, how much in the form of dividends. This is the dividend decision, and we begin this chapter by providing some background on three aspects of dividend policy. One is a purely procedural question about how dividends are set and paid out to stockholders. The second is an examination of widely used measures of how much a firm pays in the dividends. The third is an empirical examination of some patterns that firms follow in dividend policy.

10.2 MEANING OF DIVIDEND

Dividend refers to the business concerns net profits distributed among the shareholders. It may also be termed as the part of the profit of a business concern, which is distributed among its shareholders.

According to the **Institute of Chartered Accountant of India**, dividend is defined as "a distribution to shareholders out of profits or reserves available for this purpose".

The term dividend refers to that portion of profit (after tax) which is distributed among the owners/shareholders of the company and the profit which is not distributed is known as retained earnings. A company may have preference share capital as well as equity share capital and dividends may be paid on both types of capital. However, there is as such, no decision involved as far as the dividend payable to preference shareholders is concerned. The preference dividend is more or less, a contractual liability and is payable at a fixed rate. On the other hand, a firm has to consider a whole lot of factors before deciding for the equity dividend. The expected level of cash dividend, from the point of view of equity shareholders, is the key variable from which the shareholders and equity investors determine the share value.

10.3 TYPES OF DIVIDEND/ FORM OF DIVIDEND

Dividend may be distributed among the shareholders in the form of cash or stock. Hence, Dividends are classified into:

- A. Cash dividend
- B. Stock dividend
- C. Bond dividend
- D. Property dividend

A. Cash Dividend

If the dividend is paid in the form of cash to the shareholders, it is called cash dividend. It is paid periodically out the business concerns EAIT (Earnings after interest and tax). Cash dividends are common and popular types followed by majority of the business concerns.

B. Stock Dividend

Stock dividend is paid in the form of the company stock due to raising of more finance. Under this type, cash is retained by the business concern. Stock dividend may be bonus issue. This issue is given only to the existing shareholders of the business concern.

C. Bond Dividend

Bond dividend is also known as script dividend. If the company does not have sufficient funds to pay cash dividend, the company promises to pay the shareholder at a future specific date with the help of issue of bond or notes.

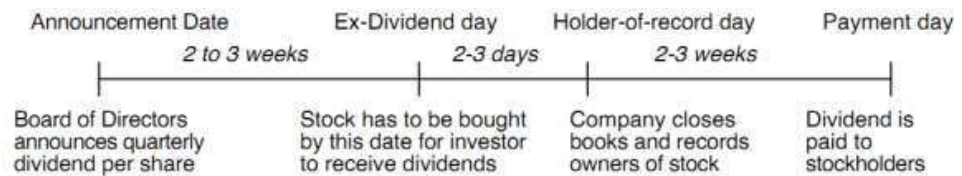
D. Property Dividend

Property dividends are paid in the form of some assets other than cash. It will be distributed under the exceptional circumstance. This type of dividend is not published in India.

10.4 THE DIVIDEND PAYMENT TIME LINE

Dividends in publicly traded firms are usually set by the board of directors and paid out to stockholders a few weeks later. There are several key dates between the times the board declares the dividend until the dividend is actually paid.

1. The first date of note is the dividend declaration date, the date on which the board of directors declares the dollar dividend that will be paid for that quarter (or period). This date is important because by announcing its intent to increase, decrease, or maintain dividend, the firm conveys information to financial markets. Thus, if the firm changes its dividends, this is the date on which the market reaction to the change is most likely to occur.
2. The next date of note is the ex-dividend date, at which time investors have to have bought the stock in order to receive the dividend. Since the dividend is not received by investors buying stock after the ex-dividend date, the stock price will generally fall on that day to reflect that loss.
3. At the close of the business a few days after the ex-dividend date, the company closes its stock transfer books and makes up a list of the shareholders to date on the holder-of-record date. These shareholders will receive the dividends. There should be generally no price effect on this date.
4. The final step involves mailing out the dividend checks on the dividend payment date. In most cases, the payment date is two to three weeks after the holder-of-record date. While stockholders may view this as an important day, there should be no price impact on this day either. The following Figure presents these key dates on a time line:



Dividend Policy

What happens to the value of the firm as dividend is increased, holding everything else (capital budgets, borrowing) constant. Thus, it is a trade-off between retained earnings on one hand, and distributing cash or securities on the other. The establishment and determination of an effective dividend policy is therefore, of significant importance to the firm's overall objective. However, the development of such a policy is not an easy job. A whole gamut of considerations affecting the dividend decision is there. The dividend decision may seem to be simple enough, but it evokes a surprising amount of controversy.

The dividend decision is one of the three basic decisions which a financial manager is required to take, the other two being the investment decisions and the financing decisions. In each period any earning that remains after satisfying obligations to the creditors, the Government, and the preference shareholders can either be retained, or paid out as dividends or bifurcated between retained earnings and dividends. The retained earnings can then be invested in assets which will help the firm to increase or at least maintain its present rate of growth. The dividend decision requires a financial manager to decide about the distribution of profits as dividends. It may be noted that the profits may be distributed either in the form of cash dividends to shareholders or in the form of stock dividends (also known as bonus shares).

In dividend decision, a financial manager is concerned to decide one or more of the followings:

1. Should the profits be ploughed back to finance the investment decisions?
2. Whether any dividend be paid?
3. How much dividends be paid?
4. When these dividends be paid?
5. In what form the dividends be paid?

All these decisions are inter-related and have bearing on the future growth plans of the company. If a company pays dividends, it affects the cash flow position of the firm but earns goodwill among the investors who therefore, may be willing to provide additional funds for the financing of investment plans of the firm. On the other hand, the profits which are not distributed as dividends become an easily available source of funds at no

explicit costs. However, in the case of ploughing back of profits, the firm may lose the goodwill and confidence of the investors and may also defy the standards set by other firms. Therefore, in taking the dividend decision, the financial manager has to consider and analyze various factors. Every aspect of dividend decision is to be critically evaluated. The most important of these considerations is to decide as to what portion of profit should be distributed.

This is also known as the dividend payout ratio. While deciding the dividend payout ratio the firm should consider the effect of such policy on the objective of maximization of shareholder's wealth. If payment of dividend is expected to increase the market value of the share (i.e. increase in the wealth of the shareholders) the dividend must be paid, otherwise, the profits may be retained and used as an internal source of finance. So, the firm must find out and establish a relationship between the dividend policy and the market value of the share.

10.5 DIVIDEND DECISION

Dividend decision of the business concern is one of the crucial parts of the financial manager, because it determines the amount of profit to be distributed among shareholders and amount of profit to be treated as retained earnings for financing its long term growth. Hence, dividend decision plays a very important part in the financial management. Dividend decision consists of two important concepts which are based on the relationship between dividend decision and value of the firm.

Irrelevance of Dividend: According to professors Solomon, Modigliani and Miller, dividend policy has no effect on the share price of the company. There is no relation between the dividend rate and value of the firm. Dividend decision is irrelevant of the value of the firm. Modigliani and Miller contributed a major approach to prove the irrelevance dividend concept. **Modigliani and Miller's Approach:** According to MM, under a perfect market condition, the dividend policy of the company is irrelevant and it does not affect the value of the firm. "Under conditions of perfect market, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of shares". MM approach is based on the following important assumptions:

1. The first assumption is the existence of a perfect market in which all investors are rational. In perfect market condition there is easy access to information and the flotation and the transaction costs do not exist. The securities are infinitely divisible and hence no single investor is large enough to influence the share value.
2. Secondly, it is assumed that there are no taxes implying that there are no differential tax rates for the dividend income and the capital gain.
3. Thirdly, a firm has a given investment policy which does not change. The operational implication of this assumption is that financing of new

investments out of retained earnings will not change the business risk complexion of the firm and, therefore, there would be no change in the required rate of return.

4. Finally, it was also assumed that the investors are able to forecast the future earnings, the dividends and the share value of the firm with certainty. This assumption was however, dropped out of the model.

In order to testify their model, MM has started with the following valuation model:

Step 1: The market price of a share in the beginning of the period is equal to the present value of dividends paid at the end of the period plus the market price of share at the end of the period. Symbolically,

$$P_0 = \frac{1}{(1+k_e)} (D_1 + P_1) \tag{1}$$

Where P_0 = Prevailing market price of a share
 K_e = Cost of equity capital
 D_1 = Dividend to be received at the end of period 1
 P_1 = Market price of a share at the end of period 1

Step 2: Assuming no external financing, the total capitalised value of the firm would be simply the number of shares (n) times the price of each share (P_0). Thus,

$$nP_0 = \frac{1}{(1+k_e)} (nD_1 + nP_1) \tag{2}$$

Step 3: If the firm's internal sources of financing its investment opportunities fall short of the funds required, and Δn is the number of new shares issued at the end of year 1 at price of P_1 , Eq. 2 can be written as:

$$nP_0 = \frac{1}{(1+k_e)} [nD_1 + (n + \Delta n) P_1 - \Delta n P_1] \tag{3}$$

where n = Number of shares outstanding at the beginning of the period
 Δn = Change in the number of shares outstanding during the period/
Additional shares issued

Equation 3 implies that the total value of the firm is the capitalized value of the dividends to be received during the period plus the value of the number of shares outstanding at the end of the period, considering new shares, less the value of the new shares. Thus, in effect, Eq. 3 is equivalent to Eq. 2.

Step 4: If the firm were to finance all investment proposals, the total amount raised through new shares issued would be given in Eq. 4

$$\begin{aligned} \Delta n P_1 &= I - (E - nD_1) \\ \text{or } \Delta n P_1 &= I - E + nD_1 \end{aligned} \tag{4}$$

Where ΔnP_1 =	Amount obtained from the sale of new shares
I =	Total amount/requirement of capital budget
E =	Earnings of the firm during the period
nD_1 =	Total dividends paid
$(E - nD_1)$ =	Retained earnings

According to Equation 4, whatever investment needs (I) are not financed by retained earnings, must be financed through the sale of additional equity shares.

Step 5: If we substitute Eq. 4 into Eq. 3 we derive Eq. 5

$$nP_0 = \frac{I}{(1+k_e)} (nD_1 + (n + \Delta n) P_1 - (I - E + nD_1)) \quad (5)$$

Solving Eq. 5 we have

$$nP_0 = \frac{nD_1 + (n + \Delta n) P_1 - I + E - nD_1}{(1 + k_e)}$$

There is a positive nD_1 and negative nD_1 . Therefore, nD_1 cancels. We then have

$$nP_0 = \frac{(n + \Delta n) P_1 - I + E}{(1 + k_e)} \quad (6)$$

Step -6: Since dividends (D) are not found in Eq. 6, Modigliani and Miller conclude that dividends do not count and that dividend policy has no effect on the share price.

MM's approach to irrelevance of dividend to valuation is illustrated here:

Illustration 1: A company belongs to a risk class for which the approximate capitalisation rate is 10 per cent. It currently has outstanding 25,000 shares selling at Rs. 100 each. The firm is

contemplating the declaration of a dividend of Rs. 5 per cent share at the end of the current financial year. It expects to have a net income of Rs. 2,50,000 and has a proposal for making new investments of Rs. 5,00,000. Show that under the MM assumption, the payment of dividend does not affect the value of the firm.

$$\begin{aligned}
 \text{(i)} \quad & \text{Price per share at the end of year 1, } P_0 = \frac{1}{(1+k_e)} (D_1 + P_1) \quad 1 \\
 & \text{Rs. } 100 = \frac{1}{1.10} (\text{Rs. } 5 + P_1) \\
 & 100 = \text{Rs. } 5 + P_1 \\
 & 105 = P_1
 \end{aligned}$$

$$\begin{aligned}
 \text{(ii)} \quad & \text{Amount required to be raised from the issue of new shares,} \\
 & \Delta n P_1 = 1 - (E - n D_1) \\
 & = \text{Rs. } 5,00,000 - (\text{Rs. } 2,50,000 - \text{Rs. } 1,25,000) = \text{Rs. } 3,75,000
 \end{aligned}$$

$$\text{(iii)} \quad \text{Number of additional shares to be issued, } \Delta n = \frac{\text{Rs. } 3,75,000}{\text{Rs. } 105} = \frac{75,000}{21} \text{ shares}$$

$$\begin{aligned}
 \text{(iv)} \quad & \text{Value of the firm,} \\
 & n P_0 = \frac{(n + \Delta n) P_1 - 1 + E}{1 + k_e} = \\
 & \left[\frac{25,000}{1} + \frac{75,000}{21} \right] (\text{Rs. } 105) - \text{Rs. } 5,00,000 + \text{Rs. } 2,50,000 \\
 & = \frac{\text{Rs. } 27,50,000}{1.10} = \text{Rs. } 25,00,000
 \end{aligned}$$

(b) Value of the firm when dividends are not paid :

$$\text{(i)} \quad \text{Price per share at the end of the year 1, } \text{Rs. } 100 = \frac{P_1}{1.10}, \text{ or } 110 = P_1$$

$$\begin{aligned}
 \text{(ii)} \quad & \text{Amount required to be raised from the issue of new shares,} \\
 & \Delta n P_1 = (\text{Rs. } 5,00,000 - \text{Rs. } 2,50,000) = \text{Rs. } 2,50,000
 \end{aligned}$$

$$\begin{aligned}
 \text{(iii)} \quad & \text{Number of additional shares to be issued} \\
 & = \frac{\text{Rs. } 2,50,000}{\text{Rs. } 110} = \frac{25,000}{11} \text{ shares}
 \end{aligned}$$

$$\begin{aligned}
 \text{(iv)} \quad & \text{Value of the firm} = \left[\frac{25,000}{1} + \frac{25,000}{11} \right] (\text{Rs. } 110) - \text{Rs. } 5,00,000 + \text{Rs. } 2,50,000 \\
 & = \frac{\text{Rs. } 27,50,000}{1.1} = \text{Rs. } 25,00,000
 \end{aligned}$$

Solution (a) Value of the firm, when dividends are paid:

Thus, whether dividends are paid or not, value of the firm remains the same.

The above example clearly demonstrates that the shareholders are indifferent between the retention of profits and the payment of dividend.

Criticism of MM approach

MM approach consists of certain criticisms also. The following are the major criticisms of MM approach:

1. MM approach assumes that tax does not exist. It is not applicable in the practical life of the firm.

2. MM approach assumes that, there is no risk and uncertain of the investment. It is also not applicable in present day business life.
3. MM approach does not consider floatation cost and transaction cost. It leads to affect the value of the firm.
4. MM approach considers only single decrement rate, it does not exist in real practice.
5. MM approach assumes that, investor behaves rationally. But we cannot give assurance that all the investors will behave rationally.

10.6 RELEVANCE OF DIVIDEND POLICY

The relevance approach propounds that the dividend policy has an effect on the market value of the share and the value of the firm. The market price of the share will increase if the firm pays dividends, otherwise it may decrease. A firm therefore, must pay a dividend to shareholders to fulfill the expectations of the shareholders in order to maintain or increase the market price of the share. Two models representing this argument may be discussed here:

A. *Walter Model*

The dividend policy given by James E Walter considers that dividends are relevant and they do affect the share price. In this model he studied the relationship between the internal rate of return

(r) and the cost of capital of the firm (k), to give a dividend policy that maximizes the shareholders' wealth.

According to Walter a firm can maximize the market value of its share and the value of the firm by adopting a dividend policy as follows:

- (i) If $r > k_e$, the payout ratio should be zero (i.e., retention of 100% profit).
- (ii) If $r < k_e$, the payout ratio should be 100% and the firm should not retain any profit, and
- (iii) If $r = k_e$, the dividend is irrelevant and the dividend policy is not expected to affect the market value of the share.

Assumptions: The relevance of the dividend policy as explained by the Walter's Model is based on a few assumptions, which are as follows:

- a. A retained earnings is the only source of finance available to the firm, with no outside debt or additional equity used.
- b. r and k are assumed to be constant and thus additional investments made by the firm will not change its risk and return profiles.
- c. Firm has an infinite life.

- d. For a given value of the firm, the dividend per share and the earnings per share remain constant.

In order to testify, Walter has suggested a mathematical valuation model i.e.

$$P = \frac{D}{k_e} + \frac{(r/k_e)(E-D)}{k_e}$$

Where

P = Market price of Equity share

D = Dividend per share paid by the Firm

r = Rate of return on Investment of the Firm k_e = Cost of Equity share capital, and

E = Earnings per share of the firm

As per the above formula, the market price of a share is the sum of two components i.e.,

- (i) The present value of an infinite stream of dividends, and
- (ii) The present value of an infinite stream of return from retained earnings.

Thus, the Walter's formula shows that the market value of a share is the present value of the expected stream of dividends and capital gains. The effect of varying payout ratio on the market price of the share under different rate of returns, r, have been shown in Example

Illustration 2: Given the following information about ABC Ltd., show the effect of the dividend policy on the market price of its shares, using the Walter's model:

Equity capitalization rate (k_e) = 12%, Earnings per share (E) = Rs. 8, Assumed return on investments (r) as follows: (i) r = 15%, (ii) r = 10%, (iii) r = 12%

Solution: To show the effect of the different dividend policies on the share value of the firm for the three levels of r let us consider the dividend pay-out (D/P) ratios of zero, 25%, 50%, 75% and 100%.

(i) $r > k_e$ ($r = 15\%$, $k_e = 12\%$)

a. D/P ratio = 0 ; dividend per share = zero

$$P = \frac{0 + (0.15/0.12) (8-0)}{0.12}$$

$$= \text{Rs. } 83$$

b. D/P ratio = 25%; dividend per share : Rs. 2.00

$$P = \frac{2.0 + (0.15/0.12) (8-2)}{0.12}$$

$$= \text{Rs. } 79$$

c. D/P ratio = 50%; dividend per share = Rs. 4

$$P = \frac{4.0 + (0.15/0.12) (8-4)}{0.12}$$

$$= \text{Rs. } 75$$

d. D/P ratio = 75%; dividend per share = Rs. 6

$$P = \frac{6 + (0.15/0.12) (8-6)}{0.12}$$

$$= \text{Rs. } 71$$

e. D/P ratio = 100%; dividend per share = Rs. 8

$$P = \frac{8.0 + (0.15/0.12) (8-8)}{0.12}$$

$$= \text{Rs. } 67$$

Interpretation: From the above calculations it can be observed that when the return on investment is greater than the cost of capital, there is an inverse relation between the value of the share and the pay-out ratio. Thus, the value of ABC Ltd. is the highest when the D/P ratio is zero ($P = \text{Rs. } 83$) and this goes on declining as the D/P ratio increases. Hence the optimum dividend policy for a growth firm is a zero dividend pay-out ratio.

(ii) $r < k_e$ ($r = 10\%$, $k_e = 12\%$)

a. D/P ratio = 0 ; dividend per share = zero

$$P = \frac{0 + (0.10/0.12) (8-0)}{0.12}$$

$$= \text{Rs. } 56$$

b. D/P ratio = 25%; dividend per share : Rs. 2

$$P = \frac{2.0 + (0.10/0.12) (8-2)}{0.12}$$

$$= \text{Rs. } 58$$

c. D/P ratio = 50%; dividend per share = Rs. 4

$$P = \frac{4.0 + (0.10/0.12) (8-4)}{0.12}$$

$$= \text{Rs. } 61$$

d. D/P ratio = 75%; dividend per share = Rs. 6

$$P = \frac{6 + (0.10/0.12) (8-6)}{0.12}$$

$$= \text{Rs. } 64$$

e. D/P ratio = 100%; dividend per share = Rs. 8

$$P = \frac{8.0 + (0.10/0.12) (8-8)}{0.12}$$

$$= \text{Rs. } 67$$

Interpretation: When the return on investment is less than the cost of equity capital, the calculations reveal that the firm's value will enhance as the D/P ratio increase. Due to this positive correlation between the share price and the dividend pay-out ratio, firms which have their return on investment less than the cost of equity capital should prefer a higher dividend pay-out ratio in order to maximize the share value.

(iii) $r = k_e$ ($r=12\%$, $k_e = 12\%$)

a. D/P ratio = 0 ; dividend per share = zero

$$P = \frac{0 + (0.12/0.12) (8-0)}{0.12}$$

$$= \text{Rs. } 67$$

b. D/P ratio = 25%; dividend per share : Rs. 2

$$P = \frac{2 + (0.12/0.12) (8-2)}{0.12}$$

$$= \text{Rs. } 67$$

c. D/P ratio = 50%; dividend per share = Rs. 4

$$P = \frac{4 + (0.12/0.12) (8-4)}{0.12}$$

$$= \text{Rs. } 67$$

d. D/P ratio = 75%; dividend per share = Rs. 6

$$P = \frac{6 + (0.12/0.12) (8-6)}{0.12}$$

$$= \text{Rs. } 67$$

e. D/P ratio = 100%; dividend per share = Rs. 8

$$P = \frac{8 + (0.12/0.12) (8-8)}{0.12}$$

$$= \text{Rs. } 67$$

Interpretation: In the final case where the firm has its' return on investment equal to the cost of equity capital, the dividend policy does not affect the share price of the firm. The price of the firm remains Rs. 67 for all the given levels of the D/P ratio. However, in actual practice r and k will not be the same and it can only be hypothetical case. Excepting the hypothetical cases of r

$= k_e$ in other cases where $r < k_e$ or $r > k_e$, according to Walter model the dividend policy of a firm, as shown above is relevant for maximizing the share price of the firm.

Limitations of the Walter's Model

Most of the limitations for this model arise due to the assumptions made.

The first assumption of exclusive financing by retained earnings is to make the model suitable only for all-equity firms.

Secondly, Walter assumes the return on investments to be constant. This again will not be true for firms making high investments.

Finally, Walter's model on dividend policy ignores the business risk of the firm which has a direct impact on the value of the firm.

Thus, k cannot be assumed to be constant.

B. Gordon's Dividend Capitalization Model

Yet another model that has given importance to the dividend policy of the firm is the Gordon Model. Myron Gordon used the dividend capitalization approach to study the effect of the firm's dividend policy on the stock price. The model is however, based on the following assumptions:

1. The firm will be an all-equity firm with the new investment proposals being financed solely by the retained earnings.
2. Return on investment (r) and the cost of equity capital (k_e) remain constant.
3. Firm has an infinite life.
4. The retention ratio remains constant and hence the growth rate also is constant ($g = br$).
5. $k > br$ i.e. cost of equity capital is greater than the growth rate.

Gordon's dividend capitalization model gives the value of the stock as follows:

$$P = \frac{E(1-b)}{k_e - br}$$

Where, P = Share price, E = Earnings per share, b = Retention ratio, (1-b) = Dividend pay-out ratio, k_e = Cost of equity capital (or cost capital of firm), br = Growth rate (g) in the rate of return on investment.

This mode shows that there is a relationship between payout ratio (i.e., 1-b), cost of capital k_e , rate of return, r, and the market value of the share.

Illustration 3: The following information is available in respect of XYZ Ltd: Earnings per share = Rs. 10 (Constant)

Cost of Capital, k_e , = .10 (Constant)

Find out the market price of the share under as per Gordon Model different rate of return, r, of 8%, 10% and 15% for different payout ratios of 0%, 40%, 80% and 100%.

Solution: The market price of the share as per Gordon's model may be calculated as follows:

If $r = 15\%$ and payout ratio is 40%, then the retention ratio b is .6 (i.e. 1-.4) and the growth rate, $g = br = .09$ (i.e., $.6 \times .15$) and the market price of the share is:

$$P = \frac{E (1-b)}{k_e - br}$$
$$P = \frac{10 (1-.6)}{.10 - .09}$$
$$= \text{Rs. 400}$$

If $r = 8\%$ and payout ratio is 80%, then the retention ratio b is .2 (i.e., 1-.8) and the growth rate, $g = br = .016$ (i.e., $.2 \times .08$) and the market price of the share is

$$P = \frac{10 (1-.2)}{.10 - .016}$$
$$= \text{Rs. 95}$$

Similarly, the expected market price under different combinations of 'r' and dividend payout ratio have been calculated and placed in Table given here:

Market Price under Gordon's Model for Different Combinations of 'r' and Payout Ratio

D/P Ratio =	r=15%	r=10%	r=8%
0%	0	0	0
40%	Rs. 400	Rs. 100	Rs. 77
80%	Rs. 114.3	Rs. 100	Rs. 95
100%	Rs. 100	Rs. 100	Rs. 100

It is clear from the table that if the firm adopts a zero payout then the investor may not be willing to offer any price. For a growth firm (i.e., $r > k_e$), the market price decreases when the payout ratio is increased. For a firm having $r < k_e$, the market price increases when the payout ratio is increased.

If $r = k_e$, the dividend policy is irrelevant and the market price remains constant at Rs. 100 only. However, in his revised model, Gordon has argued that even if $r = k_e$, the dividend payout ratio matters and the investors being risk averse prefer current dividends which are certain to future capital gains which are uncertain. The investors will apply a higher capitalization rate i.e., k_e to discount the future capital gains. This will compensate them for the future uncertain capital gain and thus, the market price of the share of a firm which retains profit will be adversely affected.

Thus, Gordon's conclusion about the relationship between the dividend policy and the value of the firm are similar to that of Walter's model. The similarity is due to the reason that the underlying assumptions of both the models are same.

10.7 DETERMINANTS OF DIVIDEND POLICY

The payment of dividend decision has to be taken considering the special circumstances of an individual case. The factors which determine the dividend policy are as follow:

1. **Dividend Payout (D/P) Ratio:** A major aspect of the dividend policy of a firm is its dividend payout (D/P) ratio, that is, the percentage share of the net earnings distributed to the shareholders as dividends. In other words, the dividend policy of the firm affects both the shareholders' wealth and the long-term growth of the firm. The optimum dividend policy should strike the balance between current dividends and future growth which maximises the price of the firm's shares. The D/P ratio of a firm should be determined with reference to two basic objectives – maximising the wealth of the firm's owners and providing sufficient funds to finance growth.
2. **General State of Economy :** In the following cases, the business may prefer to retain the whole or part of the earnings in order to build up reserves: (a) where there is uncertain economic and business conditions; (b) if there is a period of depression (management may withhold the payment of dividends for maintaining the liquidity position of the firm.) ; (c) if there is a period of prosperity (since there is large profitable investment opportunities) ; (d) where there is a period of inflation.
3. **Capital Market Considerations:** If easy access to the capital market is possible whether due to financially strong or, big in size, the firm in that case, may adopt a liberal dividend policy. In the opposite case, i.e., if easy access to capital market is not possible, it must have to adopt a low dividend payout ratio, i.e., they have to follow a conservative dividend policy. As such, they must have to rely more on their own funds, viz., retained earnings.

4. **Legal, Contractual, Internal Constraints and Restrictions:** The dividend decision is also affected by certain legal, contractual, and internal requirements and constraints. The Companies Act has put several restrictions regarding payments and declaration of dividends. Similarly, Income Tax Act, 1961 also lays down certain restrictions on payment of dividends.
5. **Profitable Position of the Firm:** Dividend decision depends on the profitable position of the business concern. When the firm earns more profit, they can distribute more dividends to the shareholders. The stability of earnings also has a significant bearing on the dividend decision of a firm. Generally, the more stable the income stream, the higher is the dividend payout ratio.
6. **Uncertainty of Future Income:** Future income is a very important factor, which affects the dividend policy. When the shareholder needs regular income, the firm should maintain regular dividend policy.
7. **Liquidity Position:** Liquidity position of the firms leads to easy payments of dividend. If the firms have high liquidity, the firms can provide cash dividend otherwise, they have to pay stock dividend.
8. **Sources of Finance:** If the firm has finance sources, it will be easy to mobilise large finance. The firm shall not go for retained earnings.
9. **Growth Rate of the Firm:** High growth rate implies that the firm can distribute more dividends to its shareholders. The firm is required to make plans for financing its expansion programmes and growth.
10. **Tax Policy:** Tax policy of the government also affects the dividend policy of the firm. When the government gives tax incentives, the company pays more dividends. If a firm has a large percentage of owners who are in high tax brackets, its dividend policy should seek to have higher retentions. Such a policy will provide its owners with income in the form of capital gains as against dividends.
11. **Financial Requirements:** Financial requirements of a firm are directly related to its investment needs. If a firm has abundant investment opportunities, it should prefer a low payout ratio, as it can usually reinvest earnings at a higher rate than the shareholders can. Such firms, designated as 'growth' companies, are constantly in need of funds.
12. **Control:** The management, in order to retain control of the company in its own hands, may be reluctant to pay substantial dividends and would prefer a smaller dividend payout ratio. This will particularly hold good for companies which require funds to finance profitable investment opportunities when an outside group is seeking to gain control of the firm. Dilution in earnings results because low retentions may necessitate the issue of new equity shares in the future, causing an increase in the number of equity shares outstanding and ultimately lowering earnings per share and their price in the market. By retaining

a high percentage of its earnings, the firm can minimize the possibility of dilution of earnings.

13. **Owner's Considerations:** The dividend policy is also likely to be affected by the owner's considerations of (a) the tax status of the shareholders, (b) their opportunities of investment, and (c) the dilution of ownership. It is well-nigh impossible to establish a policy that will maximise each owner's wealth.
14. **Opportunities of Investment:** If evaluation shows that the owners have better opportunities outside, the firm should opt for a higher dividend payout ratio. On the other hand, if the firm's investment opportunities yield a higher rate than that obtained from similar external investment, a low dividend payout is suggested.
15. **Inflation:** With rising prices, funds which are generated by way of depreciation may fall short in order to replace obsolete equipment. The shortfall may be made from retained earnings (as a source of funds). This is very significant when the assets are to be replaced in the near future. As such, the dividend payout ratio tends to be low during the periods of inflation.
16. **Stability of Dividends:** The dividend policy, of course, should have a degree of stability, i.e., earnings/profits may fluctuate from year to year but not the dividend since the equity shareholders prefer to value stable dividends than the fluctuating ones. In other words, the investors favour a stable dividend in as much as they do the payment of dividend.

10.8 QUESTIONS:

1. Explain the various factors which influence the dividend decision of a firm.
2. "A firm should follow a policy of very high dividend pay-out". Do you agree? Why or why not?
3. What do you understand by a stable dividend policy? Why should it be followed?
6. Discuss the various forms of dividends.
7. Explain the irrelevance and relevance dividend theories.
8. State the criticism of MM approach.
9. What are the assumptions of Walter's model?
10. What are the assumptions and criticisms of Gordon's model?
11. "Walter's and Gordon's models are based on the same assumptions. Thus, there is no basic difference between the two models". Do you agree or not? Why?

12. "The assumptions underlying the irrelevance hypothesis of Modigliani and Miller are unrealistic". Explain.
13. Explain the Modigliani-Miller hypothesis of dividend irrelevance. Does this hypothesis suffer from deficiencies?
14. The earnings per share of a company are Rs. 10. It has rate of return of 15% and the capitalization rate of risk class is 12.5%. If Walter's model is used: (i) What should be the optimum payout ratio of the firm? (ii) What would be the price of the share at this payout?
- (iii) How shall the price of the share be affected if a different payout was employed?
15. U Ltd. belongs to risk class of capitalization rate which is 14%. It has currently 3000 shares outstanding at Rs. 50 each; during the year Rs. 5 is declared as dividend. The net income of the company is Rs. 83,000. For the new project investment is required of Rs. 1,20,000. Calculate under MM hypothesis that the payment of dividend does not affect the value of the firm. (Ans. dividend paid Rs. 52 number of equity shares 1000 and value of the firm Rs. 1,50,000. Dividend not paid Rs. 57. Number of equity shares 37000/57 shares (approx. 650 shares) Value of the firm is Rs. 1,50,000)
16. X Ltd., had 25,000 equity shares of Rs. 100 each outstanding on 1st April, the shares are issued at par in the market, the company removed restraint in the dividend policy, the company ready to pay dividend of Rs. 15 per share for the current calendar year. The capitalization rate is 15%. Using MM approach assuming that no taxes, calculate the price of the shares at the end of the year:
 - (a) When dividend is not declared.
 - (b) When dividend is declared.
 - (c) Find out the number of new shares that the company issues to meet its investment needs of Rs 15,00,000 assuming that net income of Rs. 7,50,000 and assuming that the dividend is paid. (Ans. (a) Rs.105 (b) Rs.115 (c) 10,000 shares)
17. The following information is available in respect of a company's capitalization rate is 15% earnings per share Rs. 75. Assured rate on investment is 14%, 12%, 10%. The effect of dividend policy on market price of shares applying Walter's model the dividend payout ratio is (a) 0% (b) 40% (c) 60% (d) 100%)
18. The following data are available for R Ltd.
 - Earnings per share Rs. 8
 - Rate of return on investment 16% — Rate of return to shareholders 12%

If Gordon's basic valuation formula is applied what will be the price per share when the dividend payout ratio is 25%, 50%, 60% and 100%.

Dividend Policy

(Ans. Rs. 0, 100, 85.71, and 66.67)

10.9 REFERENCES

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