



Rai Technology University

ENGINEERING MINDS

Financial Management



SYLLABUS

Overview

Introduction to Financial Management: Objectives of Financial Management, Functions of Financial Management; Financial Instruments: Equity Shares, Preference Shares, Right Issues; Debts: Debentures, Types of Debentures; Indian Financial System: Functions of Financial Market, Classification of Financial Markets, Efficiency of Financial System, Skeleton of the Financial System; Time Value of Money; Valuation of Bonds and Shares.

Financial Statements

Comparative Statement: Importance of Financial Statement, Limitations, Constructing Comparative Statement; Common Size Statement: Advantages of Common Size Statement, Limitations of Common Size Statement, Constructing Common Size Statement; Trend Analysis: Advantages of Trend Percentages Analysis, Limitations of Trend Percentages Analysis, Method of Preparation of Trend Percentages, Precautions; Ratio Analysis: Importance, Limitations and Classification of Ratios.

Cash Flow

Fund Flow Statement: Objectives of Funds Flow Statement, Limitations, Preparation of Funds Flow Statement; Cash Flow Statement: Direct and Indirect Methods of Cash Flow.

Fixed Capital Analysis

Capital Budgeting: Features of Capital Budgeting, Importance of Capital Budgeting; Evaluations Techniques of Projects: Traditional Techniques: Pay Back Period, ARR, Time Adjusted Techniques: NPV, IRR, PI; Risk and Uncertainty in Capital Budgeting.

Capital Structure and Dividend Policy

Leverage Analysis: Operating Leverage, Financial Leverage, Combined Leverage; Capital Structure: Factors Determining the Capital structure, Theories of Capital Structure; Cost of Capital: Significance of Cost of Capital, Computation of Cost of Capital, EPS, EBIT Analysis; Dividend Policy: Dividend decision and valuation of Firm, Determinants of Dividend Policy, Types of Dividends, Forms of Dividend, Bonus Issue.

Working Capital Analysis

Working Capital: Operating Cycle/Working Capital Cycle, Factors Effecting Working Capital, Importance of Adequate Working Capital, Financing of Working Capital, Determining Working Capital Financing Mix, Working Capital Analysis, Estimation of Working Capital Requirements; Receivables Management: Costs of Maintaining Receivables, Meaning and Definition of Receivables Management, Dimensions of Receivables Management.

Inventory Management

Inventory Management: Meaning of Inventory, Purpose of Holding Inventory, Inventory Management, Objectives of Inventory Management; Inventory Management Techniques.

Cash Management Analysis

Cash Management: Motives for Holding Cash, Cash Management, Managing Cash Flows; Cash Management Models.

Foreign Exchange Orientation

International Finance: Exchange Rate, Arbitrage Process as a Means of Attaining Equilibrium On Spot Markets, Arbitrage in Forward Market; Managing of Foreign Exchange Risk: Foreign Exchange Risk Management, Management of Economic exposure, Management of Operating Exposure; Raising Foreign Currency Finance.

Suggested Reading:

1. Financial Management: Text and Problems by M Y Khan & P K Jain, Publisher: TMH, New Delhi.
2. Financial Management Theory & Practice by Prasanna Chandra, Publisher: TMH, New Delhi.
3. Financial Management by I M Pandey, Publisher: Vikas Publishing House, New Delhi.
4. Fundamentals of Financial Management by Van Horne, Publisher: Prentice Hall of India.
5. Advanced Accounting by Gupta R.L. and Radha Swamy M., Publisher: Sultan Chand & Sons, New Delhi.
6. Financial Management by Kishore R., Publisher: Taxman's Publishing House, New Delhi.

OVERVIEW

Structure

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1.1 INTRODUCTION TO FINANCIAL MANAGEMENT

Finance is defined as the provision of money at the time when it is required. Every enterprise, whether big, medium, small, needs finance to carry on its operations and to achieve its target. In fact, finance is so indispensable today that it is rightly said to be the blood of an enterprise. Without adequate finance, no enterprise can possibly accomplish its objectives.

Meaning of Financial Management: Financial management refers to that part of the management activity, which is concerned with the planning, & controlling of firm's financial resources. It deals with finding out various sources for raising funds for the firm. Financial management is practiced by many corporate firms and can be called Corporation finance or Business Finance.

According to Guthmann and Dougall: "Business finance can be broadly defined as the activity concerned with the planning, raising controlling and administrating the funds used in the business."

According to Joseph & Massie: "Financial Management is the operational activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operations"

Financial Management is the application of the general management principles in the area of financial decision-making, namely in the areas of investment of funds, financing various activities, and disposal of profits.

Financial management is the art of planning; organizing, directing and controlling of the procurement and utilization of the funds and safe disposal of profits to the end that individual, organizational and social objectives are accomplished.

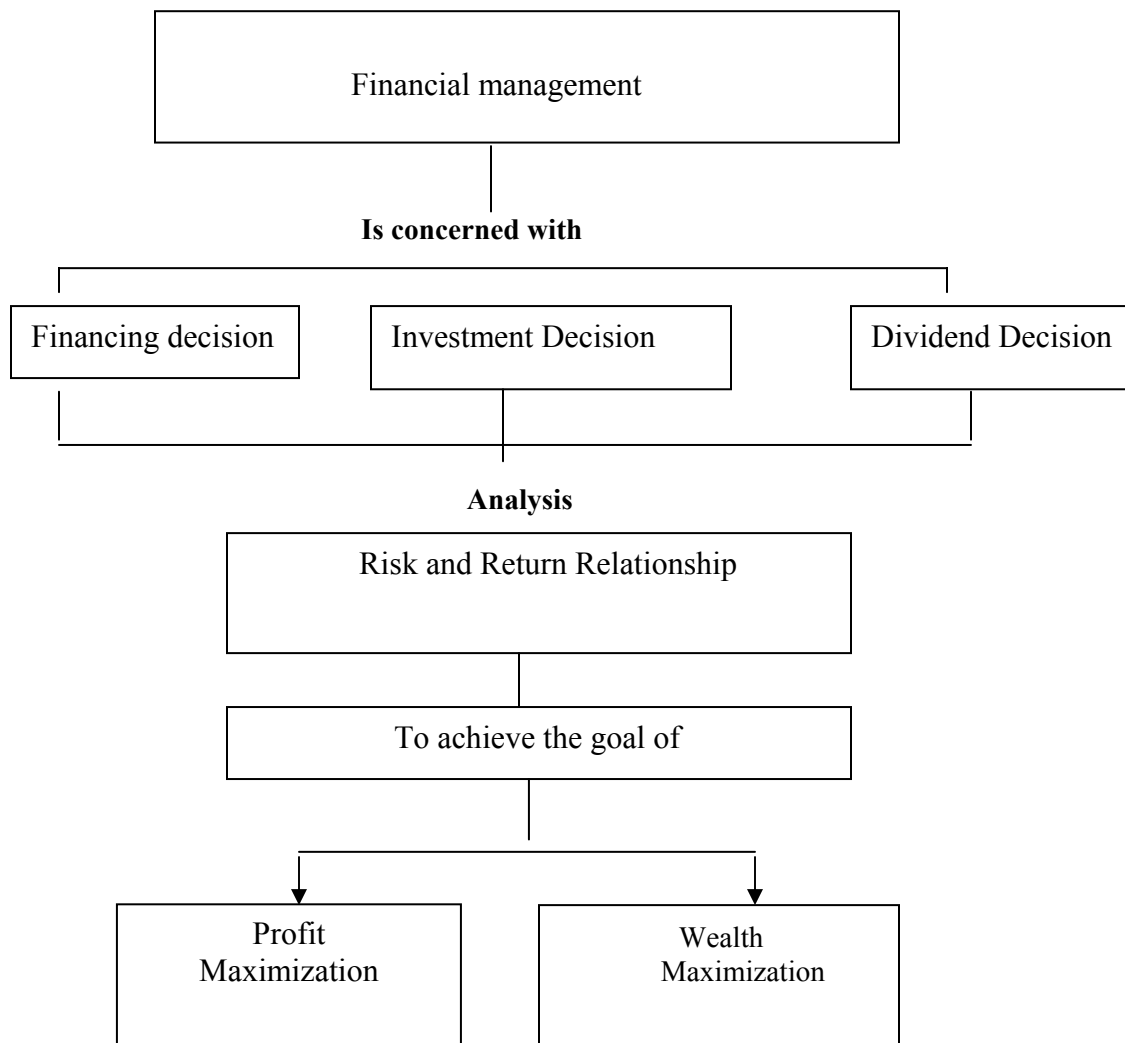


Figure: 1.1 Financial Management Interrelationships

1.1.1 Functions of Financial Management

A financial manager has to concentrate on the following areas of the finance function.

1. **Estimating Financial Requirements:** The first task of the financial manager is to estimate short term and long-term financial requirement of his business. For this purpose, he will prepare a financial plan for present as well as future. The amount required for purchasing fixed assets as well as the needs of funds for working capital has to be

ascertained. The estimation should be based on the sound financial principles so that neither there are inadequate or excess funds with the concern. The inadequacy will affect the working of the concern and excess funds may tempt a management to indulge in extravagant spending.

2. **Deciding Capital Structure:** The capital structure refers to the kind and proportion of the different securities for raising funds. After deciding about the quantum of funds required it should be decided which type of security should be raised. It may be wise to finance fixed securities through long term debts. Long-term funds should be employed to finance working capital also. Decision about various sources of funds should be linked to cost of raising funds. If cost of rising funds is high, then such sources may not be useful. A decision about the kind of the securities to be employed and the proportion in which these should be used is an important decision which influences the short term and the long term planning of the enterprise.
3. **Selecting a Source of Finance:** After preparing a capital structure, an appropriate source of finance is selected. Various sources from which finance may be raised, includes share capital, debentures, financial deposits etc. If finance is needed for short periods then banks, public's deposits, financial institutions may be appropriate. If long-term finance is required the share capital, debentures may be useful.
4. **Selecting a Pattern of Investment:** When fund have been procured then a decision about investment pattern is to be taken. The selection of investment pattern is related to the use of the funds. A decision has to be taken as to which assets are to be purchased? The fund will have to be spent first. Fixed asset and the appropriate portion will be retained for the working capital. The decision making techniques such as capital Budgeting, opportunity cost analysis may be applied in making decision about capital expenditures. While spending in various assets, the principles of safety, profitability, and liquidity should not be ignored.
5. **Proper Cash Management:** Cash management is an important task of financial manager. He has to assess the various cash needs at different times and then make arrangements for arranging cash. Cash may be required to make payments to creditors, purchasing raw material, meet wage bills, and meet day to day expenses. The sources of cash may be Cash sales, Collection of debts, Short-term arrangement with the banks. The cash management should be such that neither there is shortage of it and nor it is idle. Any shortage of cash will damage the creditworthiness of the enterprise. The idle cash with the business mean that it is nit properly used. Through Cash Flow Statement one is able to find out various sources and applications of cash.
6. **Implementing Financial Controls:** An efficient system of financial management necessitates the use of various control devices. Financial control device generally used are;
 - a. Return Investment
 - b. Ratio analysis

- c. Break even analysis
 - d. Cost control
 - e. Cost and internal audit.
7. The **use of various control techniques:** This will help the financial manager in evaluating the performance in various Areas and take corrective measures whenever needed.
 8. **Proper use of Surpluses:** The utilization of profits or surpluses as also an important factor in financial management. A judicious use of surpluses is essential for the expansion and diversification plans and also protecting the interest of the shareholders. The ploughing back of profit is the best policy of further financing. A balance should be struck in using the funds for paying dividends and retaining earnings for financing expansion plans.

1.1.2 Objectives of the Financial Management

The main objective of a business is to maximize the owner's economic welfare. Financial management provides a framework for selecting a proper course of action and deciding a commercial strategy.

The objectives can be achieved by: (i) Profit maximization (ii) Wealth maximization

Profit Maximization: Profit earning is the main aim of every economic activity. A business being an economic institution must earn profit to cover its costs and provide funds for growth. No business can survive without earning profit. Profit is a measure of efficiency of a business enterprise. Profit also serves as a protection against risks which cannot be insured.

Arguments in favor of Profit Maximization

1. When profit earning is the aim of the business then the profit maximization should be the obvious objective.
2. Profitability is the barometer for measuring the efficiency and economic prosperity of a business enterprise, thus profit maximization is justified on the ground of the rationality.
3. Profits are the main source of finance for the growth of the business. So a business should aim at maximization of the profits for enabling its growth and development.
4. Profitability is essential for fulfilling the social goals also. A firm by pursuing the objectives of profits maximization also maximizes the socio economic welfare.
5. A business may be able to survive under unfavorable condition only if it had some past earnings to rely upon.

Arguments against of Profit Maximization

1. It is precisely defined. It means different things for different people. The term 'Profit' is vague and it cannot be precisely defined. It means different things for different people. Should we mean (i) Short term profit or long term profit? (ii) Total profit or earning per

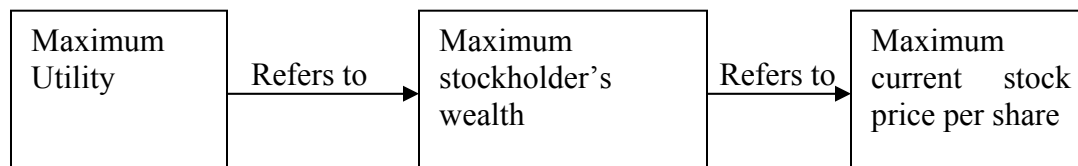
share? (iii) Profit before tax or after tax? (iv) Operating profit or profit available for the shareholders?

2. It ignores the time value of money and does not consider the magnitude and the timing of earnings. It treats all the earnings as equal though they occur in different time periods. It ignores the fact that the cash received today is more important than the same amount if cash received after, say, three years.
3. It does not take into consideration the risk of the prospective earning stream. Some projects are more risky than others. Two firms may have same expected earnings per share, but if the earning stream in one is more risky the market share of its share will be comparatively less.
4. The effect of the dividend policy on the market price of the shares is also not considered in the objective of the profit maximization. In case, earnings per share is the only objective then the enterprise may not think of paying dividends at all because it retains profits in the business or investing them in the market may satisfy this aim.

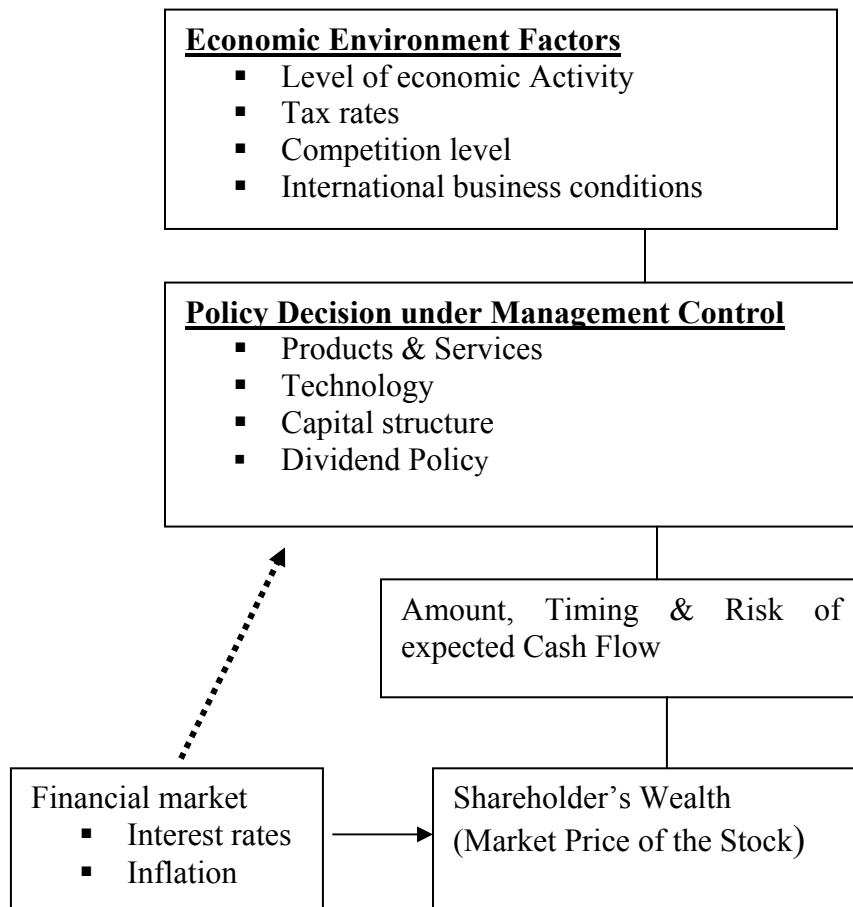
Wealth Maximization: Financial theory asserts that the wealth maximization is the single substitute for a stake holder's utility. When the firm maximizes the shareholder's wealth, the individual stakeholders can use this wealth to maximize his individual utility. It means that by maximizing stakeholder's wealth the firm is operating consistently toward maximizing stakeholder's utility. A stake holder's wealth in the firm is the product of the numbers of the shares owned, multiplied within the current stock price per share.

Stockholder's current wealth in the firm = (No. Of shares owned) * (Current stock price per share)

Higher the stock price per share, the greater will be the shareholder's wealth. Thus a firm should aim at maximizing its current stock price, which helps in increasing the value of shares in the market.



FACTORS AFFECTING THE STOCK PRICES



Implication of the wealth maximization:

1. The Concept of wealth maximization is universally accepted, because it takes care of interest of financial institution, owners, employees and society at large.
2. Wealth maximization guides the management in framing the consistent strong dividend policy to reach maximum returns to the equity holders.
3. Wealth maximization objective not only serves the interest of the shareholder's by increasing the value of their holdings but also ensures the security to the lenders.

Criticism of wealth maximization:

1. It is a prescriptive idea. The objective is not descriptive of what the firm actually does.
2. The objective of wealth maximization is not necessarily socially desirable.
3. There is some controversy as to whether the objective is to maximize the stockholder's wealth or the wealth of the firm, which includes other financial claimholder's such as debenture holders, preference shareholders.

4. The objective of wealth maximization may also face difficulties when ownership and management are separated, as is the case in most of the corporate form of organizations. When managers act as the agents of the real owner, there is the possibility for a conflict of interest between shareholders and the managerial interests.

1.2 FINANCIAL INSTRUMENTS: EQUITY SHARES, PREFERENCE SHARES, RIGHT ISSUE

Why there is a need for Finance: Every business needs funds both for short term and long term. They may need working capital, or, fixed capital. The finance may be obtained from the varied sources and through various instruments. The various sources of finance include shareholders, financial instruments, and financial institutions and so on. The funds can be collected through various instruments such as equity shares, convertible bonds, non- convertible debentures, fixed deposits, loan agreements, and so on. The finance is needed at various stages and for various purposes like promoting a business, smooth conduct of business activities.

Methods of Raising Finance

1. **Public Issue of Shares:** The company can raise a substantial amount of fixed capital by issue of shares- equity and preference. In India, however, equity shares are more popular as compared to preference shares. The issue of shares requires a number of formalities to be completed such as approval of prospectus by S.E.B.I., appointment of underwriters, bankers, and registrars to the issue, filing of the prospectus with the registrar of companies, and so on.
2. **Rights Issue of Shares:** A Right issue is issue of shares to the existing shareholders of the company through a Letter of Offer made in first instance to the existing shareholders on pro rata basis. The shareholders have a choice to forfeit this right partially or fully. The company, then issue this additional capital to public. This is an inexpensive method as underwriting commission, brokerage are very small. Rights issue prevents dilution of control but it may conflict with the broader objective of wider diffusion of share capital.
3. **Private Placement of Shares:** This is a method of raising funds from a group of financial institutions and others who are ready to invest in the company.
4. **Issue of Debentures:** There are companies who collect long term funds by issuing debentures- convertible, or, non convertible. Convertible debentures are very popular in the Indian market.
5. **Long Term Loans:** The company may also obtain long term loans from banks and financial institutions like I.D.B.I., I.C.I.C.I., and so on. The funding of term loans by financial institutions often acts as an inducement for the investors to subscribe for the shares of the company. This is, because, the financial institutions study the project report of the company before sanctioning loans. This creates confidence in the investors, and they too, lend money to the company in form of shares, debentures, fixed deposits, and so on.

6. **Accumulated Earnings (Reserves):** The Company often resorts to ploughing back of profits that, is, retaining a part of profits instead of distributing the entire amount to shareholders by way of dividend. Such accumulated earnings are very useful at the time of replacements, or, purchases of additional fixed assets.

We will discuss rights issue in detail.

Rights Issue: Rights issue is an invitation to the existing shareholders to subscribe for further shares to be issued by a company. A right simply means an option to buy certain securities at a certain privileged price within a certain specified period. The Company Act, 1956 lays down the manner in which further issue of shares, whether equity or preference, is to be made so as to ensure equitable distribution of shares without disturbing the established equilibrium of shareholding in the company. According to Section 81 of the Companies Act, whenever a public limited company proposes to increase its subscribed capital by the allotment of further shares, after the expiry of two years from the formation of the company or the expiry of one year from the first allotment of shares in the company, whichever is earlier, the following conditions or procedure must be followed:

1. Such shares must be offered to holders of equity shares in proportion, as nearly as circumstances admit, to the capital paid-up on those share.
2. The offer must be made by giving a notice specifying the number of shares offered.
3. The offer must be made to accept the shares within a period specified in the notice being not than 15 days.
4. Unless the articles of association of the company provide otherwise, the notice must also state that the shareholder has the right to renounce all or any of the shares offered to him in favor of his nominees.

Shares so offered to existing shareholders are called **Right Shares** as the existing equity shareholders of the public company have a first right of allotment of further shares. The offer of such shares to the existing equity shareholder is known as **Privileged Subscription or Right Issue**. The prior right of the shareholders is also known as **pre-emptive right**. After expiry of the time specified in the notice or on receipt of earlier information from the shareholder declining to accept the shares offered, the Board of Directors may dispose them off in such a manner as they think most beneficial to the company.

Advantages of Rights Issue

1. It ensures that the control of the company is preserved in the hands of the existing shareholders.
2. The expenses to be incurred, otherwise if shares are offered to the public, are avoided
3. There is more certainty of the shares being sold to the existing shareholders.
4. It betters the image of the company and stimulates enthusiastic response from shareholders and the investment market.
5. It ensures that the directors do not misuse the opportunity of issuing new shares to their relatives and friends at lower prices on the one hand and on the other get more controlling rights in the company.

Financial Instruments: The capital of a joint stock company can be divided into “Owned capital” and “Borrowed capital”. Owned capital means the capital of the owners which comprises of shares, both preference and equity and borrowed capital comprises of debentures, fixed deposits and bonds.

Shares: A share can be defined as “A fraction part of the capital of the company which forms the basis of ownership and interest of a subscriber in the company”. Precisely, a share is a small part of the total capital. When the owned capital is divided into a number of equal parts, then, each part is called as a share. A person who contributes for a share is called as a share- holder.

Types of shares: Shares can be broadly divided into equity shares and preference shares

Equity Shares: Shares which enjoy dividend and right to participate in the management of Joint Stock Company are called equity shares, or, ordinary shares. They are the owners and real risk bearers of the company. Equity shares can be defined as per as our Indian Companies Act (1956) as, “Shares which are not preference shares are equity shares, or, ordinary shares”. Equity shareholders are the real owners of the company and, therefore, they are eligible to share the profits of the company. The share given to equity shareholders in profits is called “Dividend”. At the time of winding of company, the capital is paid back last to them after all other claims have been paid in full.

Advantages of Equity Shares:

- a) The company has no immediate liability to pay it.
- b) No fixed dividend obligation.
- c) Increases creditworthiness of business, ceteris paribus.
- d) No charge created on assets of the business.
- e) Shareholders control the company.
- f) Limited liability of the investors.
- g) High dividends.
- h) No collateral security needed.
- i) g. Increases firm credibility.

Disadvantages of Equity Shares:

- a) Equity dividend not tax- deductible.
- b) High cost of equity issue.
- c) Gradual dilution of shareholder’s control over business.
- d) Manipulation by a few shareholders.
- e) Dividend at the discretion of the Directors.
- f) Very risky investment.
- g) Residual claim on investments.

2. Preference Shares: Shares which enjoy preference as regards dividend payment and capital repayment are called “Preference Shares”. They get dividend before equity holders. They get back their capital before equity holders in the event of winding up of the company. The owners

of these shares have a preference for dividend and a first claim for return of capital; when the company is closed down. But, their dividend rate is fixed. Preference share can be of following types:

- a) **Cumulative Preference Shares:** Such shareholders have a right to claim the dividend. If, dividend is not paid to them, then, such dividend gets accumulated, and, therefore, they are called as “Cumulative Preference shares”.
- b) **Non- Cumulative Preference Shares:** They are exactly opposite to cumulative preference shares. Their right to get dividend lapses if, they are not paid dividend and it does not get accumulated. Thus, their right to claim dividend for the past years will lapse and will not be accumulated.
- c) **Participating Preference Shares:** Such shareholders have a right to participate in the excess profits of the company, in addition to their usual dividend. Thus, if, there are excess profits and huge dividends, are declared in the equity shares, the holders of these all shares get a second round of dividend along with equity shareholders; after a dividend at a certain rate has been paid to equity shareholders.
- d) **Non- Participating Preference Shares:** Such shareholders do not have any right to share excess profits. They get only fixed dividend.
- e) **Convertible Preference Shares:** Such shares can be converted into equity shares, at the option of the company.
- f) **Redeemable Preference Shares:** Such shares are to be redeemed, or, paid back in cash to the holders after a period of time.
- g) **Non- Redeemable Preference Shares:** Such shares are not paid in cash during the life of the company.

Merits of Preference Shares

- a) Fixed dividend.
- b) First claim on company assets.
- c) Cost of capital is low.
- d) No dilution over control.
- e) No dividend obligation.
- f) No redemption liability.

Demerits of Preference Shares:

- a) Not a very high dividend rate.
- b) No voting rights.
- c) Dividends paid are not tax- deductible.
- d) Non payment of dividend affects firm.

1.3 DEBTS: DEBENTURES, TYPES OF DEBENTURES

DEBENTURES: When borrowed capital is divided into equal parts, then, each part is called as a debenture. Debenture represents debt. For such debts, company pays interest at regular intervals. It represents borrowed capital and a debenture holder is the creditor of the company.

Debenture holder provides loan to the company and he has nothing to do with the management of the company.

Kinds of Debentures: A company can issue different kinds of debentures.

- a) **Registered and Bearer Debentures:** This classification of debentures is made on the basis of transferability of debentures. Registered debentures are those in respect of which the names, addresses, and particulars of the holdings of debenture holders are entered in a register kept by the company. The transfer of ownership of such debentures is possible through a regular instrument of transfer which is duly signed by the transferee and the transferor. However, the transfers are freely allowed through the execution of a regular Transfer Deed. Only formal approval of the Board is necessary. Interest on such debentures is paid through interest warrants. Bearer debentures are transferable by mere delivery. They are freely negotiable instruments. The company keeps no records of the debenture-holders in the case of bearer debentures. Such debentures are similar to Share Warrants; the interest on them is paid by means of attached coupons which encashed by the holder are as and when cash falls due. On maturity, the principal sum of Bearer Debenture is paid back to the holder.
- b) **Secured and Unsecured Debentures:** This classification is made on the basis of security offered to debenture-holders. Secured debentures are those which are secured by some safe charge on the property of the company. The charge or, mortgage may be “Fixed”, or, “Floating”, and thus, there may be “Fixed Mortgage Debentures”, or, “Floating Mortgage Debentures” depending upon the nature of charge under the category of Secured Debentures. Unsecured, or, Naked Debentures are those that, are secured by any charge on the assets of the company. The holders of such debentures are like ordinary creditors of the company. The general solvency of the company is the only security available to unsecured or, naked debentures.
- c) **Redeemable And Irredeemable Debentures:** This classification is made on the basis of terms of repayment. Redeemable Debentures are for fixed period and they provide for payment of the principal sum on specified date, or, on demand, or, notice. Irredeemable Debentures are not issued for a fixed period. The issuing company does not fix any date by which the principal would be paid back. The holders of such debentures cannot demand payment from the company so long as it is a going concern. Such debentures are perpetual in nature as they are payable after a long time, or, on winding up of the company.
- d) **Convertible And Non- Convertible Debentures:** This classification is made on the convertibility of the debentures. Convertible Debentures are those which are convertible into Equity Shares on maturity as per the terms of issue. Convertible Debentures are those which are convertible into equity shares on maturity as per the terms of issue. Convertible debentures are now popular in our India and many companies issue convertible debentures which are automatically converted into shares after a fixed period, or, date (usually, after three years). The rate of exchange of debentures into shares is also decided at the time of issue of debentures. Interest is paid on such debentures till

conversion. Such debentures are popular with the investing class. Non- Convertible Debentures are not convertible into Equity Shares after some period, or, on maturity. Prior approval of the shareholders is necessary for the issue of convertible debentures. It also requires sanction of the central government. The conversion of debentures into shares particularly of profitable companies is always advantageous to debenture holders as well as to the company.

Demerits of Debentures

- a) Interest obligatory.
- b) High liability.
- c) Charged against assets.
- d) Not meant for weak firms.

Merits of Debentures

- a) Issuing is cheap.
- b) No dilution of control.
- c) Best for depression periods.

1.4 INDIAN FINANCIAL SYSTEM

Savings mobilization and promotion of investment are functions of the stock and capital markets, which are a part of the organized financial system in India. The objective of all economic activity is to promote the well being and standard of living of the people, which depends on the income and distribution of income in terms of real goods and services in the economy. The production of output, which is vital to the growth process in the economy, is a function of the many inputs used in the productive process. These inputs are material inputs (in the form of physical materials, viz., raw materials, plant, machinery, etc.), human inputs (in the form of labor and enterprise) and financial inputs (in the form of capital, cash and credit). The easy availability of financial inputs promotes the growth process through proper coordination between human and material inputs.

The financial inputs emanate from the financial system, while real goods and services are part of the real system. The interaction between the real system (goods and services) and the financial system (money and capital) is necessary for the productive process. Trading in money and monetary assets constitute the activity in the financial markets and are referred to as the financial system.

Financial System: The term “liquidity” is used to refer to cash, money and nearness to cash. Money and monetary assets are traded in the financial system. Thus, provision of liquidity and trading in liquidity are the major functions of the financial system. While cash creation is the function of the RBI, banks do credit creation and financial institutions including the RBI, banks and term-leading institutions, deal in claims on money or monetary assets.

These institutions are all a part of the financial system. Sector-wise, government and business sectors are the major borrowers whose investment is always greater than savings. On the other hand, in India the household and foreign sectors are the net savers, with savings exceeding investment. The financial system provides the intermediation between investors and helps the process of specialization and sophistication in the financial infrastructure, leading to greater financial development that is prerequisite for faster economic development.

1.4.1 Functions of Financial Markets

The primary function of the financial markets is to facilitate the transfer of funds from surplus sectors (lenders) to deficit sectors (borrowers). Normally, households have excess of funds or savings, which they lend to borrowers in the corporate and public sectors whose requirement of funds, exceed their savings. A financial market consists of investors or buyers, 'sellers, dealers and brokers and does not refer to a physical location. Formal trading rules and communication networks for originating and trading financial securities link the participants in the market. The primary market in which public issue of securities is made through a prospectus is a retail market and there is no physical location. The investors are reached by direct mailing. On the other hand, the secondary market or stock exchange where existing securities are traded is an auction market and may have a physical location such as the rotunda of the Bombay Stock Exchange or the trading floor of Delhi, Ahmedabad and other exchanges where the exchange members meet to trade securities face-to-face. In the Over-The-Counter (OTCEI) market and National Stock Exchange, trading in securities is screen-based. The Bombay Stock Exchange (BOLT) now introduces on-line trading, and other exchanges are in the process of introducing the same that is screen-based.

Financial markets trade in money and their price is the rate of return the buyer expects the financial asset to yield. The value of financial assets changes with the investors' expectations on earning or interest rates. Investors seek the highest return for a given level of risk (by paying the lowest price) and users of funds attempt to borrow at the lowest rate possible. The aggressive interaction, of investors and users of funds in a properly functioning capital market ensures the flow of capital to the best user. Investors receive the highest return and the users obtain funds at the lowest cost.

The three important functions of financial markets are:

- a) **Financial Markets Facilitate Price Discovery.** Financial markets help in establishing the prices of financial assets. Well organized financial markets seem to be remarkably in the rate of return and other incentives, funds flow from less efficient in price discovery. That is why financial economists productive to more productive activities. The efficient functioning say: "If you want to know what is the value of a financial asset simply look at its price in the financial market"
- b) **Financial Markets Provide Liquidity to Financial Assets.** Investors can readily sell their financial assets through the mechanism of financial markets. In the absence of financial markets, which provide such liquidity, the motivation of investors to hold financial assets will be considerably diminished. Thanks to negotiability and transferability of securities through the financial markets, it is possible for companies

(and other entities) to raise long-term funds from investors with short-term and medium-term horizons. While one investor is substituted by another when a security is transacted, the company is assured of long-term availability of funds.

- c) **Financial Markets Considerably Reduce the Cost of Transacting.** The two major costs associated with transacting are search costs and information costs. Search costs comprise explicit costs such as the expenses incurred on advertising when one wants to buy or sell an asset and implicit costs such as the effort and time one has to put in to locate a customer. Information costs refer to costs incurred in evaluating the investment merits of financial assets.

1.4.2 Classification of Financial Markets

Financial markets can be classified in various types based on the different characteristics.

- a) One way is to classify financial markets by the type of financial claim. The debt market is the financial market for fixed claims (debt instruments) and the equity market is the financial market for residual claims (equity instruments).
- b) A second way is to classify financial markets by the maturity of claims. The market for short-term financial claims is referred to as the money market and the market for Long-term financial claims is called the capital market traditionally the cut-off between short-term and long-term financial claims has been one year-though this dividing line is arbitrary, it is widely accepted. Since short-term financial claims are almost invariably debt claims, the money market is the market for short-term debt instruments. The capital market is the market for long-term debt instruments and equity instruments.
- c) A third way to classify financial markets is based on whether the claims represent new issues or outstanding issues. The market where issuers sell new claims is referred to as the primary market and the market where investors trade outstanding securities is called the secondary market
- d) A fourth way to classify financial markets is by the timing of delivery. A cash or spot market is one where the delivery occurs immediately and a forward or futures market is one where the delivery occurs at a pre-determined time in future
- e) A fifth way to classify financial markets is by the nature of its organisational structure. An exchange-traded market is characterised by a centralised organisation with standardised procedures. An over-the counter market is a decentralised market with customised procedures.

We will concentrate on classification as per seasoning of claims:

- a) Primary market
- b) Secondary market

Both primary market and secondary market are parts of Capital market. **The capital market** is a financial relationship created by a number of institutions and arrangements that allows suppliers and demanders of long term funds to make transactions. It is a market for long term funds. The backbone of the capital market is formed by various securities exchanges that provide a forum for equity (equity market) transactions.

a) Primary Market / New Issue Market / Initial Public Offering Markets: The primary market deals with the issue of new securities, that is, securities which are not previously available. It provides additional funds to the issuing companies either for starting a new enterprise or for the expansion or diversification of the existing one and, therefore its contribution to company financing is direct. The primary market is not rooted in any particular spot and has no geographical existence. It is recognized only by the services it renders to lenders and borrowers of capital funds at the time of a particular operation.

Functions of primary market

The general function of primary market, namely, channelizing of investible funds into industrial enterprises, can be split into three services, which are as follows:

- a) **Origination:** The term origination refers to the work of investigation and analysis and processing of new proposals. These functions are performed by specialist agencies which act as sponsors of the issue. The preliminary investigation entails careful study of technical, economical, financial, and legal aspects of the issuing companies. This is to ensure that it warrants the backing of the issue houses in the sense of lending their name to the company and, thus, give the issue the stamp of respectability, to satisfy themselves that the company is strongly based, has good market prospects, is well-managed and is worthy of stock exchange quotation. In the process of origination the sponsoring institutions render, as a second function, some service of an advisory nature which goes to improve the quality of capital issues. These services include advice on such aspects of capital issues as: (i) determination of the class of securities to be issued and price of the issues in the light of market conditions" (ii) the timing and magnitude of issues, (iii) methods of flotation, and (iv) technique of selling, and so on market.
- b) **Underwriting:** To ensure success of an issue, the second specialist service underwriting provided by the institutional setup of the NIM takes the form of a guarantee that the issues would be sold by eliminating the risk arising from uncertainty of public response. That adequate institutional arrangement for the provision of underwriting' is of crucial significance both to the issuing companies as well as the investing public cannot be overstressed.
- c) **Distribution:** The sale of securities to the ultimate investors is referred to as distribution; It is a specialist job which can best be performed by brokers and dealers in securities, who maintain regular and direct contact with the ultimate investors.

b) Secondary Market/ Stock exchange / Security Market: The secondary market deals in old securities, which may be defined as securities which have been issued already and listed on a stock exchange. The stock exchanges, therefore, provide regular and continuous market for buying and selling of securities and to that extent, lend liquidity and marketability play an

important part in the process. Their role regarding supply of capital is indirect. The secondary markets can in no circumstance supply additional funds since the company is not involved in the transaction. The stock exchanges have physical existence and located in particular geographical areas.

Functions of secondary markets: Stock exchanges discharge following three vital functions in the orderly growth of capital formation:

- a) **Nexus between savings and investments:** First and foremost, they are the nexus between the savings and the investment of the community. The savings of the community are mobilized and channelled by stock exchanges for investment in to those sectors and units which are favored by the community at large, on the basis of such criteria as good return, appreciation of capital, and so on. It is the preference of investors for individual units as well as industry groups, which is reflected in the share price, that decides the mode of investment. Stock exchanges render this service by arranging for the preliminary distribution of new issues of capital, offered through prospectus, as also offers for sale of existing securities, in an orderly and systematic manner. They themselves administrator the same, by ensuring that the various requisites of listing are duly complied with. Members of stock exchanges also assist in the flotation of new issues by acting (i) as brokers, in which capacity they, *inter alia*, try to procure subscription from investors spread all over the country, and (ii) as underwriters.
- b) **Market Place:** They provide a market place for the purchase and sale of securities, thereby enabling their free transferability through several successive stages from the original subscriber to the never-ending stream of buyers, who may be buying them today to sell them at a later date for a variety of considerations like meeting their own needs of liquidity, shuffling their investment portfolios to gear up for the ever-changing market situations, and so on. Since the point of aggregate sale and purchase is centralised, with a multiplicity of buyers and sellers at any point of time, by and large, a seller has a ready purchaser and a purchaser has a ready seller at a price which can be said to be competitive. This guarantees sales ability to one who has already invested and surety of purchase to the other who desires to invest.
- c) **Continuous Price Formation:** The third major function, discharged by the stock exchanges is the process of continuous price formation. The collective judgment of many people operating simultaneously in the market, resulting in the emergence of a large number of buyers and sellers at any point of time, has the effect of bringing about changes in the levels of security prices in small graduations, thereby evening out wide swings in prices. The ever-changing demand and supply conditions result in a continuous revaluation of assets, with today's prices being yesterday's prices, altered, corrected, and adjusted, and tomorrow's values being again today's values altered, corrected and adjusted. The process is an unending one. Stock exchanges thus act as a barometer of the state of health of the nation's economy, by constantly measuring its progress or otherwise. An investor can always have his eyes turned towards the stock exchanges to know, at any point of time, the value of the investments and plan his personal needs accordingly.

1.4.3 Efficiency of Financial System

The real test of development of financial system is its efficiency in operations and functional roles. The operational efficiency is reflected in the costs of intermediation, quality of service and its width. The improved operational efficiency during the nineties is seen from significant reforms in the capital market and stock markets, lowering of costs of credit and greater flow of bank credit into these markets, lowering of costs raising funds from the capital market through the route of book building and private placement. The strengthening of the institutions evidences the Width of Services Structure and increasing the instruments of mobilizing funds, introduction of technological innovations in the Stock and Capital markets and in the banking system, deregulation, privatization and globalization of markets and freer flow of funds into and outside country etc. The reforms in general and increasing role of technology and competitive forces in particular have improved the quality of service.

Any financial system can be assessed for its functional efficiency through following criteria in general:

1. Quantity of funds raised through saving for investment and pattern of allocation from less to more productive purposes.
2. Its contribution to economic growth and its impact on real economic variables, reflected in market capitalization as a proportion of GDP and the usual ratios, such as Finance ratio - ratio of total issues to national income; Financial interrelations ratio -ratio of total issues to net domestic capital, formation; and financial intermediation ratio -ratio of secondary issues raised by banks and financial institutions to primary issues in the market
3. Information absorption - whether all information a market and economy are fully reflected in the scrip prices.
4. Fundamental valuation efficiency - whether the company valuation are reflected in scrip prices.

1.4.4 Skeleton of the Financial System

A radical restructuring of the economic system consisting of industrial deregulation, liberalization of policies relating to foreign direct investment, public enterprise reforms, reforms of taxation system, trade liberalization and financial sector reforms have been initiated in 1992-93. Financial sector reforms in the area of commercial banking, capital markets and non-banking finance companies have also been undertaken.

The focus of reforms in the financial markets has been on removing the structural weaknesses and developing the markets on sound lines. The money and foreign exchange market reforms have attempted to broaden and deepen them. Reforms in the government securities market sought to smoothen the maturity structure of debt, raising of debt at close-to-market rates and improving the liquidity of government securities by developing an active secondary market. In the capital market the focus of reforms has been on strengthening the disclosure standards, developing the market infrastructure and strengthening the risk management systems at stock exchanges to protect the integrity and safety of the market. Elements of the structural reforms in various market segments are introduction of free pricing of financial assets such as interest rate on government securities, pricing of capital issues and exchange rate, the enlargement of the number of participants and introduction of new instruments.

Improving financial soundness and credibility of banks is a part of banking reforms undertaken by the RBI, a regulatory and supervisory agency over commercial banks under the Banking Companies Regulation Act 1949. The improvement of financial health of banks is sought to be achieved by capital adequacy norms in relation to the risks to which banks are exposed, prudential norms for income recognition and provision of bad debts. The removal of external constraints in norms of pre-emption of funds benefits and prudential regulation and recapitalization and writing down of capital base are reflected in the relatively clean and healthy balance sheets of banks. The reform process has, however, accentuated the inherent weaknesses of public sector dominated banking systems. There is a need to further improve financial soundness and to measure up to the increasing competition that a fast liberalizing and globalizing economy would bring to the Indian banking system.

In the area of capital market, the Securities and Exchange Board of India (SEBI) was set up in 1992 to protect the interests of investors in securities and to promote development and regulation of the securities market. SEBI has issued guidelines for primary markets, stipulating access to capital market to improve the quality of public issues, allotment of shares, private placement, book building, takeover of companies and venture capital. In the area of secondary markets, measures to control volatility and transparency in dealings by modifying the backend system, laying down insider regulations to protect integrity of markets, uniform settlement introduction of screen based online trading, dematerializing shares by setting up depository and trading in derivative securities (stock index futures). There is a sea change in the institutional and regulatory environment in the capital market area.

In regard to Non-Bank Finance Companies (NBFCs), the Reserve Bank of India has issued several measures aimed at encouraging disciplined NBFCs, which run on sound business principles. The measures seek to protect the interests of depositors and provide more effective supervision, particularly over those, which accept public deposits. The regulations stipulate upper limit for public deposits, which NBFCs can accept. This limit is linked to credit rating an approved rating agency. An upper limit is also placed on the rate of interest on deposits order to restrain NBFCs from offering incentives and mobilizing excessive deposits, which they may not be able to service. The heterogeneous nature, number, size, functions (deployment funds) and level of managerial competence of the NBFCs affect their effective regulation.

Since the liberalization of the economy in 1992-93 and the initiation of reform measure the financial system is getting market-oriented. Market efficiency would be reflected in the wide dissemination of information, reduction of transaction costs and allocation of capital the most productive users. Further, freeing the financial system from government interference has been an important element of economic reforms.

Interpreting Bond and Stock Price Quotations: The financial manager needs to stay abreast of the market values of the firm's outstanding bonds and stocks, whether they are traded on an organized exchange, over the counter, or in international markets. Similarly, existing and prospective bondholders and stockholders need to monitor the prices of the securities they own. These prices are important because they represent the current value of their investment. Information on bonds, stocks, and other securities is contained in quotations, which include current price data along with statistics on recent price behavior. Security price quotations are

readily available for actively traded bonds and stocks. The most up-to-date “quotes” can be obtained electronically, via a personal computer. Price information is available from stockbrokers and is widely published in news media-both financial and non financial. Popular sources of daily security price quotations are financial newspapers, such as the Economic Times and the Business Standard, or the business sections of daily general newspapers published in most major cities. Important To update yourself on regular basis read financial newspapers on regular basis.

1.5 TIME VALUE OF MONEY

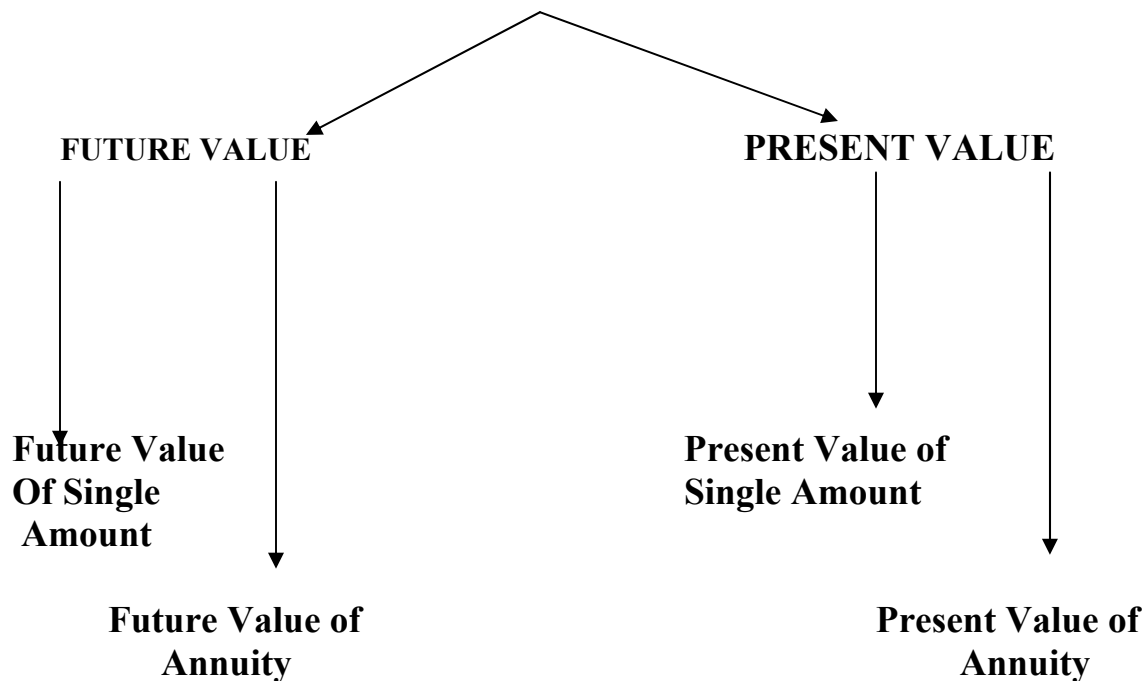
Most financial decisions, such as the purchase of assets or procurement of funds, affect the firm’s cash flows in different time periods. For example, if fixed asset are purchased it will require immediate cash outlays sand will generate cash flows during many future periods. Similarly, if firm borrows funds from the bank it receives cash now and commits an obligation to pay interest and repay principal in future periods. Cash flows become logically comparable when they are appropriately adjusted for their differences in time and risk.

The recognition of the time value of money and risk is extremely vital in financial decision-making. If the timing and risk of cash floes is not considered, the firm may make decision, which may allow too its objectives of maximize the owner’s welfare. The welfare of the owners would be maximized when net worth or net value is created from making a financial decision. What is Net Present Value? It’s a time value concept. Money has time value. A rupee today is more valuable then a rupee a year hence.

Reasons for individual’s Time Preference for Money:

- a) **Uncertainty:** An individual is not certain about future cash receipts, he prefers receiving cash now.
- b) **Preference for Consumption:** Most people have subjective preference for present consumption over future consumption of goods and services either because of the urgency of their present wants or because of the risk of not being in a position to enjoy future consumption that may be caused by illness or death. As money is the means by which individuals acquire most goods and services, they may prefer to money have now.
- c) **Investment Opportunities:** Most individuals prefer present cash to future cash because of the available opportunities to which they can put present cash to earn additional cash. For e.g., an individual who is offered Rs. 100 now or Rs 100 one year from now would prefer Rs100 now if he could earn interest of Rs 5 by putting in the saving account in the bank for one year. His total cash in one year from now will be Rs.105.

DIMENSIONS OF TIME VALUE OF MONEY



Future Value of a Single Amount: Suppose you have Rs. 1000 today and you deposit it with a financial institution, which pays 10% interest compound annually, for a period of 2 years.

		Rs.
Ist Year	Principal at the beginning	1000
	Interest for the year	100
	Principal at the end	1100
IIInd Year	Principal at the beginning	1100
	Interest for the year	110
	Principal at the end	1210

FORMULA:

$$FV_n = PV (1+k)^n$$

Where FV_n = future value n years hence

PV = present value

k = interest rate per year

n = number of year for which compounding is done.

The factor $(1+k)^n$ is referred to as the compounding factor or the **Future Value Interest Factor (FVIF_{k,n})**

Illustration 1: If you deposit Rs. 1000 today in a bank which pays 10% interest compounded annually, how much will the deposit grow to after 8 years and 12 years?

$$\text{Rs. } 1000(1.10)^8 = \text{Rs. } 1000(2.144) \\ = \text{Rs. } 2.144$$

The future value, 12 years hence will be:

$$\text{Rs. } 1000(1.10)^{12} = \text{Rs. } 1000(3.318) \\ = \text{Rs. } 3.318$$

$$\text{FV}_n = \text{PV} \left(1 + \frac{k}{m} \right)^{m \cdot n}$$

Future Value of Annuity: An annuity is a series of periodic cash flows (payments or receipts) of equal amounts. The premium payment of a life insurance policy, for example, is an annuity.

Illustration 2: Suppose you deposit Rs 1000 annually in a bank for 5 year and your deposits earn a compound interest rate of 10%. What will be the value of series of deposits at the end of 5 years?

$$\text{Rs } 1000(1.10)^4 + \text{Rs } 1000(1.10)^3 + \text{Rs } 1000(1.10)^2 + \text{Rs } 1000(1.10) + 1000(1.10) \\ = \text{Rs } 6105$$

$$\text{FVAn} = A \left[\frac{(1+k)^n - 1}{K} \right]$$

Where FVAn = future value of an annuity which has a duration of n Period
 A = Constant periodic flow
 K = Interest rate per period
 N – Duration of the annuity

The term $\frac{(1+k)^n - 1}{K}$ is referred to as the **future value interest factor for an annuity** .

i.e. (FVIFAn)

Present Value of a Single Amount: The present value of a future cash inflows or outflow is the amount of current cash flow that is equivalent desirability, to the decision maker, to a specified amount of cash to be received or paid at the future date. The process of determining the present value of a future payment or a series of future payments is called discounting.

Illustration 3: Suppose someone gives you Rs1000 six year hence. What is the present value of this amount if the interest rate is 10%?

Formula:

$$PV = FV_n \left[\frac{1}{1+k} \right]^n$$

The factor $\left[\frac{1}{1+k} \right]^n$ Is called the **discounting factor or (PVIF_kⁿ)**

The present value is

$$Rs1000 (PVIF_{10\%, 6}) = Rs 1000 (0.5645) = 564.5$$

Illustration 4: Find the present value of Rs1000 receivable 20 years hence if the discount rate is 8%.

$$\begin{aligned} Rs1000 \left(\frac{1}{1.08} \right)^{20} &= Rs1000 \left(\frac{1}{1.08} \right)^{10} \left(\frac{1}{1.08} \right)^{10} \\ &= Rs1000 (PVIF_{8\%, 10}) (PVIF_{8\%, 10}) \\ &= 1000(0.463) (0.463) = Rs214 \end{aligned}$$

Present Value of an Annuity

$$PVAn = A \left(\frac{(1+k)^n - 1}{K(1+k)^n} \right)$$

PVAn = Present value of annuity having duration n periods

A = constant periodic flow

K = Discount Rate

Illustration 5: Present value of a 4 year annuity of Rs10000 discounted at 10%

$$\begin{aligned} PVA_4 &= 10000(PVIFA_{10\%,4}) \\ &= 10000(3.170) \\ &= 31700 \end{aligned}$$

1.6 VALUATION OF BONDS AND SHARES

Introduction: Valuation is the process that links risk and return to determine the worth of an asset. It can be applied to expected benefits from real/physical as well as financial to determine their worth at a given point of time. We will focus on valuation of two financial assets, namely, bonds/debentures and shares. The key inputs to valuation process are i) expected returns in terms of cash flows together with their timing and ii) risk in terms of the required return.

The value of an asset depends on the return (cash flow) it is expected to provide over the holding / ownership period. The cash flow stream can be (1) annual, (2) intermittent and (3) even one-time. In addition to total cash flow estimates, their timing/pattern (e.g. amount year-wise) is also required to identify the return expected from the bond/share. The required return is used in the valuation process to incorporate risk into the analysis. Risk denotes the chance that an expected cash flow would not be realized. The level of risk associated with a expected cash flow/return has a significant bearing on its value, that is, the greater the risk, the lower the value and *vice versa*. Higher risk can be incorporated into the valuation analysis by using a higher capitalization/ discount rate to determine the present value.

Valuation of securities will be discussed in following parts:

1. The basic valuation model
2. Valuation of Bond / Debenture
 - a. Basic bond valuation
 - b. Yield to maturity
 - c. Semi-annual interest and bond value
3. Valuation of preference shares
4. Valuation of ordinary shares
 - a. Zero growth model
 - b. Constant growth model / Gordon model
 - c. Variable growth model

1. The Basic Valuation Model: The value of an security is the present value of all future cash flows associated with it over the specified period. The expected returns are discounted, using the required return matching with the risk of asset as the appropriate discount rate. Symbolically,

$$V = \frac{A_1}{(1+k)^1} + \frac{A_2}{(1+k)^2} + \dots + \frac{A_n}{(1+k)^n}$$

Where V = Value of security at time zero (t = 0)

At = cash flow stream expected at the end of year t

K = appropriate discount rate

Alternatively, where expected cash flows is a mixed stream

$$V = [(A_1 \times PVIF_{k,1}) + (A_2 \times PVIF_{k,2}) + \dots + (A_n \times PVIF_{k,n})$$

Where'

PVIF₁, PVIF₂, PVIF_n = present value interest factor in different period at discount rate k.

If expected cash flow is an Annuity,

$$V = A * PVIFA_{(k,n)}$$

Illustration 6: Assuming a discount rate of 10 percent, and the associated cash flows detailed below. Compute the value of assets X and Y.

Year	Expected cash flow	
	X	Y
1	Rs.10,000	5,000
2	10,000	10,000
3	10,000	15,000

Solution:

$$\text{Value of asset X} = \text{Rs } 10,000 \times PVIFA_{(10,3)} = \text{Rs } 10,000 \times 2.4870 = \text{Rs.}24,870$$

$$\begin{aligned} \text{Value of asset Y:} &= [(Rs.5,000 \times PVIF_{10,1}) + (Rs. 10,000 \times PVIF_{10,2}) + (Rs. 15,000 \times PVIF_{10,3})] \\ &= [(Rs.5,000 \times 0.909) + (Rs. 10,000 \times 0.826) + (Rs. 15,000 \times 0.751)] \\ &= \text{Rs.}4545 + \text{Rs.}8260 + \text{Rs.}11265 = \text{Rs. } 24,070 \end{aligned}$$

Valuation of Bonds / Debentures: A bond / debenture are a long term debt instrument used by the government/ business/ enterprises to raise a large sum of money. Most bonds (i) pay interest half yearly at a stated coupon interest rate, (ii) have a maturity of 10-years and (iii) have a par/face value of Rs 1,000 that must be repaid at maturity. **Par value** is the value on the face of the bond. It represents the amount the entity borrows and promises to repay at the time of maturity. **Coupon** is the specified interest rate. The interest payable to the bondholder is equal to par value x coupon rate. **Maturity period** refers to the number of years after which the par value is payable to the bondholder.

2. A Basic Bond Valuation: The value of bond is the present value of the contractual payments its issuer is obliged to make from the beginning till maturity.. The appropriate discount rate would be the required return matching with risk and the prevailing interest rate. Symbolically,

$$B = I \times (PVIFA_{kdn}) + M \times (PVIF_{kdn})$$

Where,

B = value of the bond at $t = 0$

I = annual interest paid

n = number of years' to maturity (term of the bond)

M = Par/maturity value

Kd = required return on the bond

Illustration 7: A firm has issued 10%, 10 year bond with a Rs, 1000 par value, that pays interest annually, Compute the value of bond.

Solution:

$$\begin{aligned} B_0 &= [\text{Rs } 100 \times (PVIFA_{10, 10}) + \text{Rs } 1,000 (PVIF_{10, 10})] \\ &= (\text{Rs } 100 \times 6.145) + (\text{Rs } 1,000 \times 0.386) \\ &= \text{Rs } 614.5 + \text{Rs } 386 = \text{Rs } 1,000 \end{aligned}$$

Impact of required Return (RR) on Bond Value

- When the required Return (RR) is equal to the coupon rate (CR), the bond value equals the par value.
- When (RR) is more than (CR) , the bond value would be less than its par value, that is, the bond would sell at a **discount equal to (M-B)**
- When (RR) is less than (CR) , the bond value would be more than its par value, that is, the bond would sell at a **premium equals to (B-M)**

Illustration 8: Assuming for the facts in illustration 2, the required return is (i) 12% (ii) 8%, Find the value of the bond.

Solution:

$$\begin{aligned} \text{(i) } B &= [\text{Rs } 100 \times (PVIF_{12,10}) + \text{Rs } 1,000 \times (PVIF_{12,10})] \\ &= [(\text{Rs } 100 \times 5.650) + (\text{Rs } 1,000 \times 0.322)] \\ &= \text{Rs } 565 + \text{Rs } 322 = \text{Rs } 887 \end{aligned}$$

The bond would sell at a discount of Rs 113 (Rs 887 - Rs 1,000)

$$\begin{aligned} \text{(ii) } B &= [\text{Rs } 100 \times (PVIF_{8, 10}) + \text{Rs } 1,000 \times (PVIF_{8, 10})] \\ &= [(\text{Rs } 100 \times 6.710) + (\text{Rs } 1,000 \times 0.463)] \\ &= \text{Rs } 671 + \text{Rs } 463 = \text{Rs } 1,134 \end{aligned}$$

The bond would sell at a premium of Rs 134 (Rs 1,134 - Rs 1,000).

Impact of Maturity on Bond Value: When the required return (RR) is different from rate of interest (CR), the time to maturity would affect value of bonds even though RR remains constant till maturity. The relationship among (i) time to maturity, (ii) the RR and (iii) value are related to (a) constant RR and (b) changing RR.

Constant Required Returns: In such a situation the value of the bond would approach as the passage of time moves the value of the bond closer to maturity.

Changing Required Returns: The shorter the time period until a bond's maturity, the less responsive is its market value to a given change in the required return. In other words, short maturities have less "interest rate risk" than do long maturities when all other features, namely, CR, par value, frequency of interest payment, are the same.

For example taking the same facts as in illustration 2 and 3, each of the three required returns (i.e. 12, 10, and 8) is assumed to remain constant over the 10 years to its maturity. In each case, the value ultimately equals the par value of maturity. At the 12 per cent RR, its discount declines

with the passage of time as its value increases from Rs 887 to Rs 1,000. When the 10 per cent RR equals the CR, its value remains Rs 1,000. Finally, at the 8 per cent RR, its premium will decline as its value drops from Rs 1,000. Thus, the value of a bond approaches Rs 1,000 par/maturity value as the time to maturity declines.

2 b Yield to Maturity: The **YTM** is the rate of return that investors earn if they buy a bond at a specific price and hold it until maturity. It assumes that the issuer of the bond makes all due interest payment and repayments of principal as contracted/promised. The YTM on a bond whose price equals its par/face value (i.e. purchase price = maturity value) would always be equal to its coupon interest rate. In case the bond value differs from the par value the YTM would differ from the CR.

Illustration 9: The bonds of the Premier Company Ltd (PCL) are currently selling at Rs.10, 800. Assuming (i) coupon rate of interest, 10 per cent, (ii) par value, Rs 10,000, (iii) maturity 10 years and (iv) annual interest payment, compute the YTM.

Solution: Substituting the values in following Equation

$$B = I \times (PVIFA_{k_d, n}) + M \times (PVIF_{k_d, n})$$

$$Rs\ 10,800 = [Rs\ 1,000 \times (PVIFA_{k_d, 10}) + Rs\ 10,000 \times (PVIF_{k_d, 10})]$$

If $k_d = 10$ per cent, that is, equal to the coupon rate, the value of the bond would be Rs 10,000. Since the value of the bond is Rs 10,800, the k_d must be less than 10 per cent.

Using 9 per cent discount rate gets

$$\begin{aligned} &= [Rs\ 1,000 \times (PVIFA_{9, 10}) + Rs\ 10,000 \times (PVIF_{9, 10})] \\ &= (Rs\ 1,000 \times 6.418) + (Rs\ 10,000 \times 0.422) = Rs\ 6,418 + Rs\ 4,220 = Rs\ 10,638 \end{aligned}$$

Since the value of the bond (Rs 10,638) at $k_d = 9$ per cent is less than Rs 10,800 (current market price). Try a lower rate of discount (k_d). Using 8 per cent, we get

$$\begin{aligned} &(Rs\ 1,000 \times 6.710) + (Rs\ 10,000 \times 0.463) \\ &= Rs\ 6,710 + Rs\ 4,630 = Rs\ 11,340 \end{aligned}$$

Since the bond value (Rs 11,340) is higher than the current price of Rs 10,800, the k_d (YTM) between 8 and 9 per cent. The exact value can be found by interpolation, which is 8.77%`

2. Semiannual Interest and Bond Values: The procedure to value bonds paying interest semiannually (half-yearly) is similar to that for compounding interest more frequently than annually. However, here we find out the present value. The following steps are involved in computing the value of a bond when interest is paid semiannually.

- Convert annual interest, I , to semiannual interest by dividing it by 2.
- Convert the number of years to maturity, n , to the number of 6-month periods to maturity multiplying n by 2.

- Convert the required stated return for similar-risk bonds that also pay half-yearly interest from an annual rate, K_d , to a semiannual rate by dividing it by 2.

Symbolically,

$$B = \frac{I}{2} \times (PVIFA_{kd/2, 2n}) + M \times (PVIF_{kd/2, 2n})$$

Illustration 10: For facts in illustration4, assume (i) the bonds of the firm pay interest semiannually, (ii) the required stated return is 14 per cent for similar-risk bonds that also pays half-yearly interest. Compute the value of bond.

Solution: Substituting the values in following Equation we get

$$B = \frac{I}{2} \times (PVIFA_{kd/2, 2n}) + M \times (PVIF_{kd/2, 2n})$$

$$B = (Rs\ 1,000 / 2) \times [PVIFA_{14/2 \times 2; 10}] + Rs\ 10,000 \times [PVIF_{14/2 \times 2; 10}]$$

$$= (Rs\ 500 / 2) \times [PVIFA_{7, 20}] + Rs\ 10,000 \times [PVIF_{7, 20}]$$

$$= (Rs\ 500 \times 10.594) + (Rs\ 1,000 \times 0.258)$$

$$= Rs\ 5,297 + Rs\ 2,580 = Rs\ 7,877$$

3. Valuation of Preference Shares: Preference shares like debentures are usually subject to fixed rate of return/dividend. In case of no stated maturity, their valuation is similar to perpetual bonds. Symbolically,

$$V = \frac{D_p}{K_p}$$

The valuation of redeemable preference shares is given by following equation

$$= D_p (PVIFA_{K_p, n}) + MV (PVIF_{p, n})$$

4. Valuation of Ordinary Shares: The ordinary / Equity shareholders buy / hold shares in expectation of periodic cash dividends and increasing share value. They would buy a share' when it is undervalued (i.e. its true value is more than its market price) and sell it when its market price is more than its true value (i.e. it is overvalued). The value of a share is equal to the present value of all future dividends it is expected to provide over an infinite time horizon. Symbolically,

$$P = \frac{D_1}{(1 + K_e)^1} + \frac{D_2}{(1 + K_e)^2} + \dots + \frac{D_\infty}{(1 + K_e)^\infty}$$

Where ,
 P = Value of shares
 Dt = per share dividend expected at the end of year, t
 Ke = required return on share

The equation is designed to compute the value of shares with reference to the expected growth pattern of future dividends and the appropriate discount rate. We illustrate below the computation reference to (i) zero growth, (ii) constant growth and (iii) variable growth.

Zero Growth Model: This approach to dividend valuation assumes a constant non-growing dividend stream. With zero growth in dividends, the value of share would equal the present value of a perpetuity of dividends (D_1) discounted at K_e . Symbolically,

$$P = D_1 (PVIFA_{K_e}^{\infty}) = \frac{D_1}{K_e}$$

Where D_1 = constant dividend per share
 K_e = required return of investors

Illustration 11: The per share dividend of Premier Instruments Ltd (PIL) remains constant indefinitely at Rs 10. Assuming a required rate of return of 16 per cent, compute the value of the PIL's shares.

Solution: $P = \frac{D_1}{K_e} = \frac{Rs. 10}{0.16} = Rs. 62.5$

Constant Growth Model/ Gordon Model: According to this approach, dividends are assumed to grow at a constant rate which is less than the required rate. This model is primarily known as the Gordon Model the value of a share is given by following Equation

$$P = \frac{D_1}{K_e - g}$$

Where P = value of share K_e = required rate g = growth rate in dividend

Illustration 12: The Premier Instruments Ltd (PIL) had paid the following dividends per share.

Year	Dividend per share	year	Dividend per share
6	2.80	3	2.24
5	2.58	2	2.10
4	2.40	1	2.00

Assuming a 16 per cent required return and Rs 3 per share dividend in year 7 (D_1) compute the value of the shares of PIL.

Solution:

$$P = \frac{D_1}{K_e - g} = \frac{Rs. 3}{(0.16 - 0.07)} = Rs.33.3 \text{ per share}$$

Variable Growth Model: As a dividend valuation approach, this model incorporates a change in the dividend growth rate. Assuming g_1 = initial growth rate and g_2 = the subsequent growth rate occurs at the end of year N, the value of the shares can be determined as follows:

Step 1: Compute the value of cash dividends at the end of each year (D_t) during the initial growth period (years 1 - N). Symbolically,

$$D_t = D_0 \times (1 + g_1)^t = D_0 \times \text{PVIF } g_1, t$$

Step 2: Compute the present value of the dividends expected during the initial growth period. Symbolically,

$$= (D_t \times \text{PVIF}_{k_e, t})$$

Step 3: Find the value of the share at the end of the initial growth year, $P_N = (D_{N+1}) / (K_e - g_2)$. This is the present value of all dividends expected from year N + 1 onwards assuming a constant dividend growth rate, g_2 . The present value of P_N would represent the value today of all dividends expected to be received from year N + 1 to infinity. Symbolically,

$$\frac{1}{(1 + K_e)^N} \times \frac{D_{N+1}}{K_e - g_2}$$

Step 4: Add the present value components found in Step 2 and 3 to find the value of share.

1.7 REVIEW QUESTIONS

1. What is financial Management? What major decisions are required to be taken in Financial Management?
2. Explain the objectives of financial management.
3. Distinguish between Shares and Debentures.
4. What are debentures? What are types of debenture issued by a joint stock company? Evaluate debenture as a source of capital.
5. Describe, illustrate, compare and contrast each of the following share valuation models: a) Zero growth b) Constant growth c) Variable growth.
6. Briefly explain and illustrate the concept of Time value of money. What is difference between future value and Present value?
7. Discuss the important functions of financial markets?
8. What are the different ways of classifying financial markets? Explain primary market and secondary market in detail.

FINANCIAL STATEMENTS

Structure

2.1 Comparative Statement

- 2.1.1 Importance of Comparative Statement
- 2.1.2 Limitations of Comparative Statement
- 2.1.3 Construction of Comparative Statement

2.2 Common Size Statement

- 2.2.1 Advantages of Common Size Statement
- 2.2.2 Limitations of Common Size Statement
- 2.2.3 Construction of Common Size Statement

2.3 Trend Analysis

- 2.3.1 Advantages of Trend Percentages Analysis
- 2.3.2 Limitations of Trend Percentages Analysis
- 2.3.3 Method of preparation of Trend percentages
- 2.3.4 Precautions to be taken before preparing trend statements

2.4 Ratio Analysis

- 2.4.1 Importance of Ratio Analysis,
- 2.4.2 Limitations of Ratio Analysis
- 2.4.3 Classification of ratios

2.5 Review Questions

2.1 COMPARATIVE STATEMENT

Financial Analysis: Financial statements presents mass of complex data in absolute monetary terms and reveals little about liquidity, solvency and profitability of the business. In financial analysis, the data given in financial statements is classified into simple groups and a comparison of various groups is made with one another to pin point the strong and weak points of the business. For example, if all the items relating to current assets are placed in one group while the items related to current liabilities are placed in other group, the comparison between the two groups will provide useful information.

The principal techniques of financial analysis are:

1. Comparative Statement
2. Common Size Statement
3. Trend Analysis
4. Ratio Analysis
5. Fund Flow Statement
6. Cash Flow Statement

Comparative Financial Statements: When financial statements figures for two or more years are placed side-by-side to facilitate comparison, these are called 'Comparative Financial Statements.' Such statements not only show the absolute figures of various years but also provide for columns to indicate the increase or decrease in these figures from one year to another. 'In addition, these statements may also show the change from one year to another in percentage form. Because of the utmost usefulness of the comparative statements, the Companies Act, 1956 has provided that the Profit & Loss Account and Balance Sheet of a Company must show the figures of the previous year also with the figures of the current year.

2.1.1 Purpose or Importance of Comparative Statements

1. **To Make the Data Simpler and More Understandable:** When data for a number of years are put side-by-side in a comparative 'form it becomes easier to understand them and the conclusions regarding the profitability and financial position of the concern can be drawn very easily.
2. **To Indicate the Trend:** This helps in indicating the trend of change by putting the figures of production, sales, expenses, profits etc. for number of year's side-by-side.
3. **To Indicate the Strong Points and Weak Points of the Concern:** It may also indicate the strong points and weak points of the firm. Management can then investigate and find out the reasons for the weak areas and can take corrective measures.
4. **To Compare the Firm's Performance with the Average Performance of the Industry:** Comparative financial statements help a business unit to compare its' performance with *the* average performance of the industry.
5. **To Help in Forecasting:** Comparative study of the changes in the key figures over a period helps the management in forecasting the profitability and financial soundness of the business.

2.1.2 Limitations of Comparative Statements

1. These statements do not present the change in various items in relation to total assets, total liabilities or net sales.
2. These statements are not useful in comparing financial statements of two or more business because there is no common base

Constructing Comparative Statements

In practical life any financial statement can be prepared as comparative statement but such analysis is more popular in the case of balance sheet and income statements. Thus most important comparative statements are:

- a) Comparative Balance Sheet
- b) Comparative profit & Loss Account

a) Comparative Balance Sheet: The Comparative Balance Sheet as on two or more different dates can be prepared to increase or decrease in various assets, liabilities and capital. Such a Comparative Sheet is very useful in studying the trends in a business enterprise.

Method of Preparing Comparative Balance Sheet: The form of comparative balance sheet consists of four columns. In the first column the data for previous year is shown and in the second column the data for current year is shown. In the third column the increases or decreases in absolute data is shown in terms of rupee amounts. Fourth column shows the percentage of increase or decrease in absolute data. The preparation of comparative balance sheet has been explained in the following example: •

Illustration 1: From, the following Balance Sheets of Asha Chemicals Ltd. as on 31st December, 2007 and 31st December, 2008 prepare a Comparative Balance Sheet and comment upon the changes:

BALANCE SHEETS
As on 31st December, 2007 and 2008

Liabilities	2007	2008	Assets	2007	2008
Current Liabilities	2,00,000	4,00,000	Fixed Assets	12,00,000	18,00,000
Reserves	3,00,000	2,00,000	Less: Accumulated Depreciation	2,00,000	3,00,000
12% Loan	5,00,000	8,00,000	Current Assets	10,00,000	15,00,000
Share capital	5,00,000	10,00,000		5,00,000	9,00,000
	15,00,000	24,00,000		15,00,000	24,00,000

Solution:

COMPARATIVE BALANCE SHEET OF ASHA CHEMICALS LTD
as on 31st Dec., 2007 and 2008

Particulars	2007	2008	Increase or decrease over 2007	% Increase or Decrease over 2007
Fixed Assets	12,00,000	18,00,000	+6,00,000	+ 50
Less: Accumulated Depreciation	2,00,000	3,00,000	+1,00,000	+50
Net Fixed assets (A)	10,00,000	15,00,000	+5,00,000	+50

Working capital :-				
Current assets (1)	5,00,000	9,00,000	+4,00,000	+80
Current Liabilities (2)	2,00,000	4,00,000	+2,00,000	+100
Working capital ((B) (1-2))	<u>3,00,000</u>	<u>5,00,000</u>	<u>+2,00,000</u>	+66.67
Capital Employed (A+B)	13,00,000	20,00,000	+7,00,000	+53.85
Less:- 12% Loan	5,00,000	8,00,000	+3,00,000	+60
Shareholder's fund	<u>8,00,000</u>	<u>12,00,000</u>	<u>+4,00,000</u>	+50
Represented By:				
Share capital	5,00,000	10,00,000	+5,00,000	+100
+ Reserves	10,00,000	2,00,000	-1,00,000	-33.33
Shareholder's Fund	<u>8,00,000</u>	<u>12,00,000</u>	<u>+4,00,000</u>	+50

Comments: The analysis of the above Comparative Balance Sheets gives the following conclusions:

- Total fixed assets have increased by Rs. 6, 00,000, i.e. 50% increase.
- Purchase of fixed assets was financed partly by the issue of shares for Rs. 5, 00,000 and partly by increase in loan.
- Share Capital has increased by Rs. 5, 00,000, i.e. 100% increase. It has strengthened the financial position of the company.
- Reserves have decreased by Rs. 1, 00,000 i.e. 33.33% decrease, which reflects loss in the business during the current year.
- Current liabilities have increased by Rs. 2, 00,000, i.e. 100% increase, but current assets have also increased by Rs. 4, 00,000, i.e., 80% increase. It has resulted in increase in the working capital of the firm by Rs. 2, 00,000 which has been financed by increase in loan.
- 12% loan has increased by Rs. 3, 00,000 (60%). Out of it Rs. 1, 00,000 has been used for purchase of fixed assets and the balance Rs. 2,00,000 has been used as working capital.

b) Comparative Profit & Loss account or Comparative Income Statement: Profit and Loss account shows the net profit or net loss of a particular year whereas comparative profit and loss account for a number of years provides the following information.

- Rate of increase or decrease in sales.
- Rate of increase or decrease in cost of goods sold.
- Rate of increase or decrease in gross profit
- Rate of increase or decrease in operating profit.
- Rate of increase or decrease in net profit.

Method of Preparing Comparative Profit & Loss account: The form of comparative profit and loss account (income statement) also consists of four columns. In the first column the data for previous year is shown and in the second column the data for current year is shown. In the third column the increase or decrease in absolute data is shown in terms of rupee amounts.

Fourth column shows the increase or decrease in various items in the form of percentages. The preparation of Comparative Income Statement has been explained in the following illustrations:

Illustration 2: From the following Profit & Loss Account of Hindustan Trading Co. for the year ending 31st Dec., 2005 and 2006 you are required to prepare a comparative Profit & Loss Account and give your comments.

PROFIT AND LOSS ACCOUNT

Particulars	2005	2006	Particulars	2005	2006
To Cost of goods sold	420,000	5,60,000	By sales	6,00,000	7,20,000
To administrative expenses	50,000	66,000	By Dividend Received	30,000	90,000
To selling and Distribution expenses	25,000	23,000			
To Interest on Debentures	12,000	12,000			
To loss on sale of plant	6,000	4,000			
To provision for income tax	40,000	48,000			
To net Profit	77,000	97,000			
	6,30,000	8,10,000		6,30,000	8,10,000

Solution:

Comparative Profit & Loss account
For the year ended 31st Dec 2005 and 2006

Particulars	2005(Rs.)	2006 (Rs.)	Absolute Increase/ Decrease(Rs.)	Percentage Increase/ Decrease (%)
Sales	6,00,000	7,20,000	+120,000	+20
Less: Cost of Goods Sold	4,20,000	5,60,000	+140,000	+33.33
Gross Profit(A)	1,80,000	1,60,000	-20,000	-11.11
Less :Operating expenses				
Administrative expenses	50,000	66,000	+16,000	+32
Selling & distribution expenses	25,000	23,000	-2,000	-8
Total Operating expenses (B)	75,000	89,000	+14,000	+18.67
Operating profit (A-B)	105,000	71,000	-34,000	-32.38

Add: Dividend Received	30,000	90,000	+60,000	+200
Total Income (C)	135,000	161,000	+26,000	+19.26
Less: other expenses:				
Interest on debentures	12,000	12,000	-	-
Loss on sale of plant	6,000	4,000	-2,000	-33.33
Total other expenses (D)	18,000	16,000	-2,000	-11.11
Income before tax (C - D)	117,000	145,000	+28,000	+23.93
Less Provision for Tax	40,000	48,000	+8,000	+12
Income After tax	77,000	97,000	+20,000	+25.97

Comments: The analysis of the above comparative Profit & Loss Account gives the following information:

1. In 2006, sales have increased by Rs. 1, 20,000 (20%), but cost of goods sold has also spurted by Rs. 1,40,000 (33.33%), as a result of which the gross profit has declined by Rs. 20,000 (11.11 %). This means that there is a larger increase in cost of sales as compared to sales. This should be a cause of concern and the management should thoroughly **investigate** the causes of increase in cost of sales.
2. Operating expenses have increased by Rs. 14,000 (18.67%). Administrative expenses, included in operating expenses have alone increased 'heavily and this must be a cause of concern. Selling expenses have come down by 8% in spite of increase in sales. This is a favorable sign.
3. Increase in cost of sales and administrative expenses have led to a fall in operating profits by Rs. 34,000 (32.38%).
4. Despite decrease in operating profits, the total income has increased by Rs. 26,000 (19.26%). This is due to Rs. 60,000 (200%) increase in non-operating income (dividend).

2.2 COMMON SIZE STATEMENT

Common size statement that gives only the vertical percentages or ratios for financing data without giving rupee value are known as common size statements. A comparison of two years figures of a concern is easily made under the companies Act. Companies must show in their profit and loss account and balance sheet the corresponding figures for the previous year. Sometimes however the figures do not signify anything as the head of items are regrouped and are incomparable. For a valid comparison, the previous heads should be strictly compared.

2.2.1 Advantages of Common Size Statement

Common size analysis reveals the sources of capital and all other sources of funds and the distribution or application of the total funds in the asset of a business enterprise.

- Comparison of common size statement over a number of years will clearly indicate the changing proportion of the various components of asset, liabilities, costs, net sales and profits.

- Comparison of common size statement of two or more enterprises in the same industry or that of an enterprise with the industry as a whole will assist corporate evaluation and ranking.

2.2.2 Limitations of Common Size Statement

- These statements show percentage of each item to total sum but do not show variations in the individual items from period to period.
- Common size statement is regarded by many as useless as there is no established standard proportion of each item to total.

2.2.3 Constructing Common Size Statement

In common size statements individual figure are converted in to percentage to some common base.

- In balance sheet, the total of assets or liabilities is assumed to be equal to 100 and all the figures are expressed as percentage of this total.
- In profit and loss account, sales figure is taken as 100 and all other figure are expressed as percentage of sales.

Illustration 3: Prepare a common size balance sheet from the following Balance sheet of Aroma Industries and interpret the same.

Balance Sheet
As on 31st December 2007 and 2008

Liabilities	2007(Rs.)	2008(Rs.)	Assets	2007(Rs.)	2008(Rs.)
Equity share capital	6,00,000	6,00,000	Land & Building	8,00,000	7,50,000
General reserve	6,80,000	10,00,000	Plant & Machinery	3,00,000	5,00,000
10% Debenture	3,00,000	3,00,000	Furniture	1,00,000	1,06,250
Bills Payable	84,000	1,40,000	Stock	4,50,000	6,25,000
Creditors	3,28,000	4,50,000	Sundry Debtors	2,55,000	4,10,000
Outstanding Expenses	8,000	10,000	Cash	95,000	1,08,750
	<u>20,00,000</u>	<u>25,00,000</u>		<u>2000,000</u>	<u>2500,000</u>

Solution:

Balance Sheet
as on 31st December 2007 and 2008

Particulars	31st December 2007		31st December 2008	
	Amount (Rs)	%	Amount (Rs)	%
Fixed Assets:				
Land & Building	8,00,000	40	7,50,000	30
Plant & Machinery	3,00,000	15	5,00,000	20

Furniture	1,00,000	5	1,06,250	4.25
Total Fixed Assets (A)	12,00,000	60	13,56,250	54.25
Current Assets				
Stock	4,50,000	22.50	6,25,000	25
Sundry Debtors	2,55,000	12.75	4,10,000	16.40
Cash	95,000	4.75	1,08,750	4.35
Total Current Assets (B)	8,00,000	40	11,43,750	45.75
Total Assets (A+B)	20,00,000	100	25,00,000	100
Liabilities and Capital				
Owner's Equity				
Equity share capital	6,00,000	30	6,00,000	24
General reserve	6,80,000	34	10,00,000	40
Total Owners Equity(C)	12,80,000	64	16,00,000	64
Long Term Borrowings				
10% Debenture	3,00,000	15	3,00,000	12
Current Liabilities				
Bills payable	84,000	4.20	1,40,000	5.60
Creditors	3,28,000	16.40	4,50,000	18
Outstanding expenses	8,000	.40	10,000	.40
Total Current Liabilities (E)	4,20,000	21	6,00,000	24
Total liabilities and Capital (C+D+E)	20,00,000	100	25,00,000	100

Working Notes: All the % will be calculated on basis of total of Balance sheet. Hence in 2007 % will be based on Rs. 20, 00,000 and in 2008 % will be based on 25, 00,000

Interpretation: in 2007, current assets were 40% of Total assets. In 2008, these have increased to 45.75%. Current liabilities have also increased from 21% to 24%. Because of greater increase in current assets than in current liabilities, the position of working capital has improved. The percentage of fixed assets has come down from 60% to 54.25% .owners equity has remained constant.

Illustration 4: Prepare a common size Income Statement from the following Income statement of M/S Toshi Traders and interpret the same.

Particulars	31 st Dec 2000	31 st Dec 2001
Gross Sales	10,30,000	12,42,000
Less: Sales returns	30,000	42,000
Net Sales	10,00,000	12,00,000
Less: Cost of goods sold	6,00,000	6,60,000
Gross profit	4,00,000	5,40,000
Less: Operating expenses		
Administrative expenses	85,000	1,14,000
Selling expenses	2,00,000	1,93,200

Total operating expenses	2,85,000	3,07,200
Income from operations	1,15,000	2,32,800
Add: Non-operating Income	24,000	34,200
Total Income	1,39,000	2,67,000
Less: Non-operating expenses	36,000	53,280
Net Profit	1,03,000	2,13,720

Solution:

COMMON SIZE INCOMEW STATEMENT

Particulars	31 st December 2007		31 st December2008	
	Amount (Rs)	%	Amount (Rs)	%
Gross Sales	10,30,000	103	12,42,000	103.50
Less: Sales returns	30,000	3	42,000	3.50
Net Sales	10,00,000	100	12,00,000	100
Less: Cost of goods sold	6,00,000	60	,60,000	55
Gross profit	4,00,000	40	5,40,000	45
Less: Operating expenses				
Administrative expenses	85,000	8.50	1,14,000	9.50
Selling expenses	2,00,000	20	1,93,200	16.10
Total operating Expenses	2,85,000	28.50	3,07,200	25.60
Income from operations	1,15,000	11.50	2,32,800	19.40
Add: Non-operating Income	24,000	2.40	34,200	2.85
Total Income	1,39,000	13.90	2,67,000	22.25
Less: Non-operating expenses	36,000	3.60	53,280	4.44
Net Profit	1,03,000	10.30	2,13,720	17.81

Working Notes: All the % will be calculated on the basis of net sales

Interpretation: i) Cost of goods sold has reduced by 5% in 2001. This is due to reduction in cost of raw material. As a result of reduction the gross profit has increased from 40% to 45%.

ii) Operating expenses have been decreased by 2.9% due to this reduction and reduction in cost if goods sold; income from operation has increased from 11.50% to 19.40%

2.3 TREND ANALYSIS

Trend percentages analysis moves in one direction-either upward or downward progression or regression. This method involves the calculation of percentages relationship that each statement bears to the same item in the base year. The base year may be any one of the periods involved in the analysis but the earliest period is mostly taken as the base year.

This trend percentage can be represented in various ways. They may be shown in a horizontal or vertical manner. They can be plotted on a chart or on a graph by slotting curves. They are

sometimes calculated using the trend “X” as index.

2.3.1 Methods of Calculation of Trend Percentage

- a) The Statement of any of the years is taken as the base.
- b) Every item in the base year statement is taken as 100
- c) Trend ratios are computed by dividing each figure in the other years statement with the corresponding item in the base year statement and the result is expressed as percentages.

2.3.2 Advantages of trend analysis

- a) Trend percentages indicate the increase in an accounted item along with the magnitude of change in percentage which is more effective than absolute data.
- b) The trend percentage facilitates an efficient comparative study of the financial performance of business enterprises over a period of time.

2.3.3 Limitations of trend analysis

- a) Any one trend by itself is not very analytical and informative.
- b) If interpretation has to be done on percentages and ratio in isolation and not along with the absolute data from which the percentages have been derived, the interferences tend to be absurd and baseless.
- c) Comparability of trend percentages is unfavorably affected when accounts have not been drawn on a consistent basis year after year and when the price level is not constant.
- d) During the inflationary periods the data over a period of time becomes incomparable, unless the absolute rupee data is adjusted.
- e) There is always the danger of selecting the base year which may not be representative, normal and typical.
- f) Trend percentages calculated for items having no logical relationship with one another tend to be meaningless and unscientific.
- f) Though the trend percentages provide significant information, undue importance and emphasis should not be laid down on the percentages when there is a small number in the base year. In such cases, even a slight variation will be magnified by the percentage change.

2.3.4 Precautions to be taken before preparing trend statements

- a) There should be consistency in the principles and practices followed by the organization throughout the period for which analysis is made.
- b) The base year should be normal i.e. representative of the items shown in the statement.
- c) Trend percentages should be calculated only for the items which are having logical relationship with each other.
- d) Trend percentages should be studied after considering the absolute figures on which they are based.
- e) Figures of the current year should be adjusted in the light of price level changes as compared to the base year before calculating trend percentages.

Illustration 5: Calculate the trend percentages from the following data relating to asset side of the Balance sheet of X Ltd. taking year ending 31st March 2006 as the base year:

Assets	As at 31 st March			
	2006	2007	2008	2009
Land & Building	4,00,000	5,00,000	5,00,000	5,00,000
Plant	1,50,000	1,50,000	2,00,000	2,00,000
Furniture	50,000	60,000	60,000	80,000
Stock	1,00,000	1,25,000	1,40,000	1,50,000
Debtors	50,000	60,000	75,000	1,00,000
Cash & Bank	10,000	15,000	25,000	20,000
Other current Assets	40,000	30,000	60,000	50,000
	<u>8,00,000</u>	<u>9,40,000</u>	<u>10,60,000</u>	<u>11,00,000</u>

Solution:

Trend Percentages
31st March 2006 to 2009

Assets	Absolute Amounts(Rs.)				Trend Percentages(Base Year 2006)			
	2006	2007	2008	2009	2006	2007	2008	2009
Fixed Assets:								
Land & Building	4,00,000	5,00,000	5,00,000	5,00,000	100	125	125	125
Plant	1,50,000	1,50,000	2,00,000	2,00,000	100	100	133	133
Furniture	50,000	60,000	60,000	80,000	100	120	120	160
Total Fixed Assets(A)	6,00,000	7,10,000	7,60,000	7,80,000	100	118	127	130
Current Assets:								
Stock	1,00,000	1,25,000	1,40,000	1,50,000	100	125	140	150
Debtors	50,000	60,000	75,000	1,00,000	100	120	150	200
Cash & Bank	10,000	15,000	25,000	20,000	100	150	250	200
Other current Assets	40,000	30,000	60,000	50,000	100	75	150	125
Total current Assets (B)	2,00,000	2,30,000	3,00,000	3,20,000	100	115	150	160
Total Assets (A+B)	8,00,000	9,40,000	10,60,000	11,00,000	100	118	133	138

2.4 RATIO ANALYSIS

Introduction: Absolute figures expressed in monetary terms in financial statements by themselves are meaningless. These figures often do not convey much meaning unless expressed in relation to other figures. The relationship between two figures, expressed in arithmetical term is called a 'ratio'. In the words of R. N. Anthony "A Ratio is simply one number expressed in terms of another. It is found by dividing one number in to other." - Ratio can be expressed in the following three ways:

1. **Pure Ratio or Simple Ratio:** It is expressed by the simple division of one number by another. For example, if the current assets of a business are Rs. 2, 00,000 and its current liabilities are Rs. 1, 00,000, the ratio of 'Current assets to current liabilities' will be 2: 1.
2. **Rate' or 'So Many Times':** It is calculated how many times a figure, is in comparison to another figure. For example, if a firm's credit sales during the year are Rs. 2,00,000 and its debtors at the end of the year are Rs. 40,000, its Debtors Turnover Ratio = $2,00,000 / 40,000 = 5$ times. It shows that the credit sales are 5 times in comparison to debtors.
3. **Percentage:** In this type, the relation between two figures is expressed in hundredth. For example, if a firm's capital is Rs. 10, 00,000 and its profit is Rs. 2, 00,000. The ratio of profit to capital in terms of percentage, is

$$\frac{2,00,000}{10,00,000} \times 100 = 20\%.$$

2.4.1 Objectives and Advantages or Uses of Ratio Analysis

It helps the reader in giving tongue to mute the mute heaps of figures given in financial statements. The figures then speak of liquidity, solvency, profitability etc. of the business enterprise. Some important objects and advantages of accounting ratios are:

- a) **Helpful in Analysis of Financial Statements:** Ratio analysis is an extremely useful device for analyzing the financial statements. It helps the bankers, creditors, investors, shareholders etc. in acquiring enough knowledge about the profitability and financial health of the business.
- b) **Simplification of Accounting Data:** Accounting ratio simplifies and summarizes a long array of accounting data and makes them understandable. It discloses the relationship between two such figures which have a cause and effect relationship with each other.
- c) **Helpful in Comparative Study:** With the help of ratio analysis comparison of profitability and financial soundness can be made between one firm and another in the same industry. Similarly, comparison of current year figures can also be made with those previous years with the help of ratio analysis.

- d) **Helpful in Locating the Weak Spots of the Business:** Current year's ratios are compared with those of the previous years and if some weak spots are located, remedial measures are taken to correct them.
- e) **Helpful in Forecasting:** Accounting ratios are very helpful in forecasting and preparing the plans for the future. For example, if sales of a firm during this year are Rs. 10 Lakhs and the average amount of stock kept during the year was Rs. 2 Lakhs, i.e., 20% of sales and if the firm wishes to increase sales in next year to Rs.15 Lakhs, it must be ready to keep a stock of Rs.3, 00,000, i.e., 20% of 15 Lakhs.
- f) **Estimate About the Trend of the Business:** If accounting ratios are prepared for a number of years, they will reveal the trend of costs, sales, profits and other important facts-
- g) **Fixation of Ideal Standards:** Ratios help us in establishing ideal standards of the different items of the business. By comparing the actual ratios calculated at the end of the year with the ideal ratios, the efficiency of the business can be easily measured.
- h) **Effective Control:** Ratio analysis discloses the liquidity, solvency and profitability of the business enterprise. Such information enables management to assess the changes that have taken place over a period of time in the financial activities of the business. It helps them in discharging their managerial functions, e.g., planning, organizing, directing, communicating and controlling more effectively.
- i) **Study of Financial Soundness.** Ratio analysis discloses the position of business with different view'-points. It discloses the-position of business with the liquidity point of view, solvency point of view, profitability point of view etc. With the help of such a study we can draw conclusions regarding the financial health of the business enterprise.

2.4.2 Limitations of Ratio Analysis

Following limitations should be kept in mind while making use of the ratio analysis:

- a) **False accounting Data Gives False Ratios:** Accounting ratios are calculated on the basis of data given in profit and loss account and balance sheet. Therefore, they will be only as correct as the accounting data on which they are-based. For 'example, if the -closing stock is overvalued, not only the profitability will be overstated but also the financial position will appear to be better.
- b) **Comparison not possible if the different Firms Adopt Different Accounting Policies:** There may be different accounting policies adopted by different firms with regard to providing depreciation, creation of provision for doubtful debts, method of valuation of closing stock etc.
- c) **Ratio Analysis Becomes Less Effective Due to Price Level Changes:** Price' level over the years goes on changing; therefore, the ratios of various years cannot be compared. For

example, one firm sells 1,000 Machines for Rs. 10 Lakhs during 2002, it again sells 1,500 Machines of the same type in 2003 but owing to rising prices the sale price was Rs. 15 Lakhs. On the basis of ratios it will be concluded that the sales have increased by 50%, whereas in actual, sales have not increased at all. Hence, the figures of the past years must be adjusted in the light of price level changes before the ratios for these years are compared.

- d) **Ratios may be Misleading in the Absence of Absolute Data:** For example, X company produces 10 lakh meters of cloth in 2002 and 15 Lakh meters in 2003, the progress is 50%. Y Company raises its production from 10 thousand meters in 2002 to 20 thousand meters in 2003, the progress is 100%. Comparison of these two firms made on the basis of ratio will disclose that the second firm is more active than the first firm. Such conclusion is quite misleading because of the difference in the size of the two firms. It is, therefore, essential to study the ratios along with the absolute data on which they are based.
- e) **Limited Use of a Single Ratio:** The analyst should not merely rely on a single ratio. He should study several connected ratio before reaching a conclusion. For example, the Current Ratio of a firm may be quite satisfactory, whereas the Quick Ratio may be unsatisfactory.
- f) **Window-Dressing:** Some companies in order to cover up their bad financial position resort to window dressing, i.e., showing a better position than the one which really exists.
- g) **Lack of Proper Standards:** Circumstances differ from firm to firm hence no standard ratio can be fixed for all the firms. For ex if a firm has such type of relations with its bankers that it can get necessary credit in case of need, the ideal current ratio for the firm would be less than generally accepted current ideal ratio of 2:1.
- h) **Ratios alone are not adequate for proper conclusions:** They merely indicate the probability of favorable or unfavorable position. The analyst has to use other tools and techniques to further carry out the investigation and to arrive at a correct diagnosis.
- i) **Effect of personal ability and bias of the Analyst:** Different persons draw different meanings of the different terms. For example one analyst may calculate ratios on the basis of profit after interest and tax while another may consider profits before interest and Tax.

2.4.3 Classification of Ratios:

- a) Liquidity Ratios
- b) Leverage Ratios
- c) Turnover or Activity Ratios
- d) Profitability Ratios
- e) Valuation Ratios

To facilitate the discussion of various ratios the financial statements of HORIZON limited, given below will be used.

HORIZON Limited: Profit and loss account for the year ending 31st March 20X1
(Rs. In Million)

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

HORIZON Limited: Balance sheet as on 31st March 20X1
(Rs. In Million)

	20X1	20X0
1.Sources of Funds	262	256
a)Shareholders fund	150	150
Share capital	112	106
Reserves & Surplus		
b)Loan Funds	143	131
(i)Secured loans	108	29
Due after 1 year	35	40
Due within 1 year	69	25
(ii)Unsecured loans	29	10
Due after 1 year	40	15
Due within 1 year	474	412
2.Application of Funds		
a) Fixed Assets	330	322

b) Investments	15	15
Long term investments	12	12
Current investments	3	3
c) Current assets, loans and Advances	234	156
i)Inventories	105	72
(ii)Sundry debtors	114	68
(iii) Cash & bank balance	10	6
(iv)Loans & Advances	5	10
Less: Current liabilities & Provisions	105	81
Net current assets	<u>129</u>	<u>75</u>
	<u>474</u>	<u>412</u>

A. Liquidity Ratios:

Liquidity refers to the ability of a firm to meet its obligations in the short run, usually one year. Liquidity ratio is generally based on the relationship between current assets (the sources for meeting short-term obligation) and current liabilities. The important liquidity ratios are Current ratio, Acid test ratio and cash ratio

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

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

Current Assets include cash, current investments, debtors, inventories, loans and advances, and prepaid expenses. Current liabilities represent liabilities that are expected to mature in next twelve months. These comprise (i) Loans, secured or unsecured, that are due in next twelve months and (ii) current liabilities and Provisions.

Horizon Ltd's Current Ratio for 20X1 is $237/180 = 1.32$

Normally, a high current ratio is considered to be a sign of financial strength. Bankers in India have used a norm of 1.33. Internationally, the norm is 2.0. However, in the decade or so, a number of firms have tried to achieve a zero or even a negative net working capital position by managing their inventories tightly and obtaining longer credit from their suppliers. In interpreting the current ratio, the composition of current assets must not be overlooked-perhaps inventories may be slow-moving and a portion of loan advances may represent dues from associate companies which may be sticky.

A.2 Acid-test Ratio also called the quick ratio; the acid-test ratio is defined as:

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

Quick assets are defined as current assets excluding inventories.

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

This is a fairly stringent measure of liquidity as it excludes inventories, perhaps the least liquid of current assets, from the numerator.

A.3 Cash Ratio Sometimes, financial analysts look at cash ratio, which is defined as:

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

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

This is a very stringent measure of liquidity. Indeed lack of immediate cash may not matter if the firm can stretch its payments or borrow money at short notice.

B. Leverage Ratios

Financial leverage refers to the use of debt finance. While debt capital is a cheaper source of finance, it is also a riskier source of finance. Leverage ratios help in assessing the risk arising from the use of debt capital. Two types of ratios are commonly used to analyze financial leverage: structural ratios and coverage ratios. *Structural ratios* are based on the proportions of debt and equity in the financial structure of the firm. The structural ratios are: debt-equity ratio and debt-assets ratio. *Coverage ratios* show the relationship between debt servicing commitments and the sources for meeting these burdens. The important coverage ratios are: interest coverage ratio, fixed charges coverage ratio, and debt service coverage ratio.

B.1 Debt-equity Ratio The debt-equity ratio is defined as:

$$\frac{\text{Debt}}{\text{Equity}}$$

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

Horizon's debt-equity ratio for the 20X1 year-end is:

$$212 / 262 = 0.809$$

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

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

A Variant of this ratio is **total outside liabilities to tangible net worth ratio**, which is considered very important by commercial banks. Total outside liabilities are equal to debt, as defined above plus deferred tax liability. Tangible net worth is equal to: paid-up capital + Reserves and surplus – miscellaneous expenditure and losses.

B.2 Debt-asset Ratio The debt-asset ratio measures the extent to which borrowed funds support the firm's assets. It is defined as:

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

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

Horizon's debt-asset ratio for 20X1 is:

$$212 / 474 = 0.45$$

B.3 Interest Coverage Ratio Also called the times interest earned, the interest coverage ratio is defined as:

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

Horizon's interest coverage ratio for 20X1 is:

$$89/21 = 4.23$$

Note that profit before interest and taxes are used in the numerator of this ratio because the ability of a firm to pay interest is not affected by tax payment, as interest on debt funds is a tax-deductible expense. A high interest coverage ratio means that the firm can meet its interest burden even if earnings before interest and taxes suffer a considerable decline. A low interest coverage ratio may result in financial embarrassment when earnings before interest and taxes decline. This ratio is widely used by lenders to assess a debt capacity.

B.4 Fixed Charges Coverage Ratio This ratio shows how many times the cash flow before interest and taxes covers all fixed financing charges. It is defined as:

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

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

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

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

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

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

B.5 Debt Service Coverage Ratio Used by financial institutions in India, the debt service ratio is defined as:

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

Financial institutions calculate the average debt service coverage ratio for the period during which the term loan for the project is repayable. Normally, financial institutions regard a debt service coverage ratio of 1.5 to 2.0 as satisfactory.

C. Turnover Ratio

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

C.1 Inventory Turnover The inventory turnover, or stock turnover, measures how fast the inventory is moving through the firm and generating sales. It is defined as:

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

Where Average Inventory = (Opening Stock + Closing Stock) / 2

Horizon's inventory turnover for 20X1 is:

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

The Inventory turnover reflects the efficiency of inventory management. The higher the ratio, the more efficient the management of inventories and *vice versa*. However, a high inventory turnover may be caused by a low level of inventory which may result in frequent stock outs and loss of sales and customer goodwill.

C.2 Debtor Turnover This ratio shows how many times sundry debtors (accounts receivables) turn over during the year. It is defined as:

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

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

Horizon's debtors' turnover for 20X1 is:

$$\frac{701}{(114 + 68)/2} = 7.70$$

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

C.3 Average Collection Period The average collection period represents the number of day's worth of credit sales that is locked in sundry debtors. It is defined as:

$$\frac{365}{\text{Debtors' turnover}}$$

The average collection period may be compared with the firm's credit terms to judge efficiency of credit management. For example, if the credit terms are 2/10, net 45, an average collection period of 85 days means that the collection is slow and an average collection period of 40 days means that the collection is prompt.

C.4 Fixed Assets Turnover This ratio measures sales per rupee of investment in fixed assets. It is defined as:

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

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

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

This ratio is supposed to measure the efficiency with which fixed assets are employed. A high ratio indicates a high degree of efficiency in asset utilization and a low ratio reflects inefficient use of assets.

C.5 Total Assets Turnover the assets turnover is defined as:

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

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

$$701 \div [(474 + 412)/2] = 1.58$$

This ratio measures how efficiently assets are employed, overall.

D. Profitability Ratios

Profitability ratios reflect the final result of business operations. There are two types of profitability ratios: profit margin ratios and rate of return ratios. *Profit margin ratios* show the relationship between profit and sales. Since profit can be measured at different stages, there are several measures of profit margin. The most popular profit margin ratios are: gross profit margin, operating profit margin, and net profit margin. *Rate of return ratios* reflects the relationship between profit and investment. The important rate of return measures are: return on assets, earning power, return on capital employed, and return on equity.

D.1 Gross Profit Margin The gross profit margin ratio is defined as:

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

Gross profit is defined as the difference between net sales and cost of goods sold. Gross profit margin ratio for 20X1 is:

$$149/701 = 0.21 \text{ or } 21 \text{ percent}$$

This ratio shows the margin left after meeting manufacturing costs. It measures the efficiency of production as well as pricing.

D.2 EBITDA Margin The EBITDA margin is defined as:

$$\frac{\text{Earnings before interest, taxes, depreciation, and amortization}}{\text{Net sales}}$$

Horizons' EBITDA margin-for 20X1 is:

$$119/701 = 0.17 \text{ or } 17 \text{ percent}$$

This ratio shows the margin left after meeting manufacturing expenses, selling, general and administration expenses (SG&A). It reflects the operating efficiency of the firm.

D.3 Net Profit Margin The net profit margin ratio is defined as:

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

Horizons' net profit margin ratio for 20X1 is:

$$34/701 = 0.049 \text{ or } 4.9 \text{ percent}$$

This ratio shows the earnings left for shareholders (both-equity and preference) as a percentage of net sales. It measures the overall efficiency of production, administration, selling, financing, pricing and. tax management.

D.4 Return on Assets (ROA) The return on Assets is defined by:

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

Horizons ROA for the year 20X1 is:

$$34 / [(412 + 474) / 2] = 7.7\%$$

ROA is a odd measure because its numerator measures the return to shareholders but its denominator represents the all investors.

D.5 Return on Capital Employed (ROCE) The return on capital employed is defined as:

$$\frac{\text{Profit before interest and tax}(1-\text{tax rate})}{\text{Average Total Assets}}$$

$$89(1-0.5) \div [(412 + 474) / 2] = 0.201 \text{ or } 20.1\%$$

ROCE is the post tax version of earning power. It considers the effect of taxation, but not the capital structure.

D.6 Return on Equity A measure of great interest to equity shareholders, the return on Equity (ROE) is defined as:

$$\frac{\text{Equity Earnings}}{\text{Average Equity}}$$

The numerator of this ratio is equal to profit after tax less preference dividends.. The denominator includes all contributions made by Equity shareholders (paid up capital + reserves and surplus).

Horizons ROE for the year 20X1 is:

$$34 \div [(262 + 256) / 2] = 0.131 \text{ or } 13.1\%$$

The return on equity is most important measure of performance in accounting sense. It is influenced by several factors such as debt- Equity ratio, average cost of debt funds, and tax rate. In judging all the profitability measures it should be born in mind that the historical valuation of assets imparts an upward bias to profitability measures during an inflationary period. This

happens because numerator represents current values and denominator represents historical values.

E. Valuation Ratios

Valuation ratios indicate how the equity stock of the company is assessed in the capital market. Since the market value of the equity reflects the combined influence of risk and return, valuation ratios are most comprehensive measure of a firm's performance. The important valuation ratios are; Price-earning ratio, EV-EBITDA ratio, and market value to book value ratio.

E.1 Price-earning ratio: The price –earning ratio is defined as:

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

The market price per share may be the price prevailing on a certain day. The earning per share is simply: profit after tax less preference dividend divided by number of out standing equity shares. Horizons Price-earning ratio at the end of year 20X1 is:

$$21.0 / 2.27 = 9.25$$

This ratio primarily reflects growth prospects, risk, shareholders orientation, and degree of liquidity.

E.2 EV-EBITDA The EV-EBITDA ratio is defined as:

$$\frac{\text{Enterprises Value (EV)}}{\text{Earnings before interest, taxes, depreciation, and amortization (EBITDA)}}$$

EV is sum of market value of equity and market value of debt.

Horizons EV-EBITDA for the year 20X1 is:

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

EV-EBITDA I supposed to reflect the profitability, growth, risk, liquidity and corporate image

E.3 Market value to Book value Ratio The market value to book value ratio is defined as:

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

Horizons market value to book value ratio for the year 20X1 is:

$$21.00 / 17.47 = 1.20$$

Comparative Analysis: For judging whether the ratios are high or low, one has to make a comparative analysis such as:

- I. Cross section analysis(in which industry average may be used as benchmark)
- II. Time series analysis (in which the ratios of the firm are compared over time.

I. Cross section analysis (in which industry average may be used as benchmark)

Following exhibit shows the ratios of Horizon limited with industry average

Comparison of ratios of Horizon limited with industry average

Ratio	Formula	Horizon ltd.	Industry Average
A. Liquidity			
A.1 Current ratio	$\frac{\text{Current assets}}{\text{Current Liability}}$	1.32	1.26
A.2 Acid test ratio	$\frac{\text{Quick assets}}{\text{Current liabilities}}$.73	.69
B. Leverage			
B.1 Debt-Equity Ratio	$\frac{\text{Debt}}{\text{Equity}}$.81	1.25
B.2 Debt- asset ratio	$\frac{\text{Debt}}{\text{Assets}}$.45	.56
B.3 Interest coverage ratio	$\frac{\text{EBIT}}{\text{Interest}}$	4.23	4.14
C. Turnover			
C.1 Inventory turnover	$\frac{\text{Net sales}}{\text{Average Inventory}}$	6.24	66.43
C.2 Accounts receivable turnover	$\frac{\text{Net credit sales}}{\text{Average Accounts receivables}}$	7.70	7.50
C.3 Fixed assets Turnover	$\frac{\text{Net sales}}{\text{Average net fixed assets}}$	2.15	2.23
C.4 Total assets turnover	$\frac{\text{Net sales}}{\text{Average Total assets}}$	1.582	1.26
D. Profitability			
D.1 gross profit margin	$\frac{\text{Gross profit}}{\text{Net sales}}$	21.0%	18.0%
D.2 Net profit margin	$\frac{\text{Net profit}}{\text{Net sales}}$	4.9%	4.0%
D.3 Return on assets	$\frac{\text{Net profit}}{\text{Average Total assets}}$	7.7%	6.9%
D.4 ROCE	$\frac{\text{PBIT}(1-T)}{\text{Average Total assets}}$	10.1%	8.8%
D.5 ROE	$\frac{\text{Equity Earnings}}{\text{Average net worth}}$	13.1%	11.9%
E. Valuation			

E.1 Price-earning ratio	$\frac{\text{Market price per share}}{\text{Earning per share}}$	9.25	9.26
E.2 Market value to book value ratio	$\frac{\text{Market price per share}}{\text{Book price per share}}$	1.20	1.16

Comments:

1. It has favorable liquidity position. All the liquidity ratios are higher than the industry average.
2. Leverage ratios are shade lower than the industry average.
3. Turnover ratios are more or less comparable with industry average.
4. Profit margin ratios are somewhat higher than the industry average. The rate of return measures of Horizon ltd. are also higher than the industry average.
5. Valuation ratios are also slightly favorable than the industry average.

II. Time series analysis (in which the ratios of the firm are compared over time)

Following table shows the Time series of certain financial ratios for five years

Ratios	1	2	3	4	5
Debt equity Ratio	.91	.98	.65	.61	.81
Total asset turnover ratio	1.51	1.59	1.58	1.53	1.58
Net profit margin (%)	8.8	11.6	9.8	6.6	4.9
Return on Equity (%)	25.4	30.7	24.5	16.7	13.1
Price- earning ratio	18.6	15.3	10.3	7.1	9.3

Comments:

1. The debt equity ratio improved for three years in succession but deteriorated in last year.
2. Total assets turnover ratio remained more or less the same.
3. The net profit margin ratio And ROE improved impressively in the second year but than decline over remaining three year.
4. Price earning ratio deteriorated steadily over time except in the last year.

Illustration 6: The financial statement of Matrix Limited is given below:

Profit and loss account for the year ending 31st march 2001

(Rs. in millions)

	2001	2000
Net sales	1065	950
Cost of goods sold	805	720
Stocks	600	520
Wages and Salaries	120	110
Other manufacturing expenses	85	90
Gross profit	260	230
Operating expenses	90	75

depreciation	50	40
Selling and Administration expenses	40	35
Profit before interest and tax	170	155
Interest	35	30
Profit before tax	135	125
Tax	50	40
Profit after tax	85	80
Dividends	35	30
Retained earnings	50	50

Balance sheet as on 31st march 2001

(Rs. in millions)

	2001	2000
1.Sources of Funds		
a)Shareholders fund	505	455
Share capital	125	125
Reserves & Surplus	380	330
b)Loan Funds	280	260
(i)Secured loans	180	160
Due after 1 year	130	135
Due within 1 year	50	255
(ii)Unsecured loans	100	100
Due after 1 year	60	70
Due within 1 year	40	30
Total	<u>785</u>	<u>715</u>
2.Application of Funds		
a) Fixed Assets	550	495
b) Investments	30	25
Long term investments	20	20
Current investments	10	5
c) Current assets, loans and Advances	355	333
i)Inventories	160	138
(ii)Sundry debtors	120	115
(iii) Cash & bank balance	25	20
(iv)Loans & Advances	50	62
Less: Current liabilities & Provisions	150	13
Net current assets	205	195
Total	<u>785</u>	<u>715</u>

Calculate the following ratios:

- a) Current ratio b) Acid test ratio c)Cash ratio d)Debt-Equity ratio e) Interest coverage Ratio
f)Fixed charges coverage ratio g)Inventory turnover ratio h)Debtors turnover ratio i) Average collection period j) Fixed asset turnover ratio k) Total asset turnover l)gross profit margin
m)net profit margin n)return on asset o)Return on equity

Solution:

a)Current ratio	$\frac{\text{Current assets, loans\&advances+Current investment}}{\text{Current liabilities and provisions + short tern debt}}$	$\frac{355+10}{150+90}$	1.52
b) Acid test ratio	$\frac{\text{Quick assets}}{\text{Current liabilities}}$	$\frac{365-160}{240}$	0.85
c)Cash ratio	$\frac{\text{Cash \& bank balance. + Current investments}}{\text{Current liabilities}}$	$\frac{25+10}{240}$	0.15
d)Debt-Equity ratio	$\frac{\text{Debt}}{\text{Equity}}$	$\frac{280}{505}$	0.55
e) Interest coverage Ratio	$\frac{\text{PBIT}}{\text{Interest}}$	$\frac{170}{35}$	4.9
f)Fixed charges coverage ratio	$\frac{\text{PBIT + Depreciation}}{\text{Interest + Repayment of loan} \times (1 - \text{Tax rate})}$	$\frac{170+50}{35 + 90 \times 1 - 37}$	1.24
g)Inventory turnover ratio	$\frac{\text{Cost of goods sold}}{\text{Average Inventory}}$	$\frac{805}{(160+138)/2}$	5.40
h)Debtors turnover ratio	$\frac{\text{Net credit sales}}{\text{Average debtors}}$	$\frac{1065}{(120+115)/2}$	9.06
i) Average collection period	$\frac{365}{\text{Debtors Turnover}}$	$\frac{365}{9.06}$	40.3days
j) Fixed asset turnover ratio	$\frac{\text{Net sales}}{\text{Average net fixed assets}}$	$\frac{1065}{(550+495)/2}$	2.04
k) Total asset turnover	$\frac{\text{Net sales}}{\text{Average total assets}}$	$\frac{1065}{(785+715)/2}$	1.42
l)Gross profit margin	$\frac{\text{Gross profit}}{\text{Net sales}}$	$\frac{200}{1065}$	24.4%
m)Net profit margin	$\frac{\text{Net profit}}{\text{Net sales}}$	$\frac{85}{1065}$	7.98%
n) Return on asset	$\frac{\text{Net profit}}{\text{Average total assets}}$	$\frac{85}{(785+715)/2}$	11.3%
o)Return on equity	$\frac{\text{Equity earnings}}{\text{Average Equity}}$	$\frac{85}{(505+455)/2}$	17.7%

Problem 1: From the financial statements of Sweety Ltd calculate accounting ratios.

Balance Sheet as on 31.03.94

Assets	Amount(Rs.)	Liabilities	Amount (Rs.)
Cash	65,000	Bills Payable	30,000
Book Debts	45,000	Provision for Dividend	25,000
Inventory	60,000	Bank Overdraft	25,000
Prepaid Expenses	10,000	Equity Capital	275,000
Plant & Machinery	210,000	Share Premium	45,000
Furniture & Fixtures	<u>75,000</u>	Profit & Loss	<u>65,000</u>
	<u>4,65,000</u>		<u>4,65,000</u>

Revenue statement for the year 1993-94

	Amount (Rs.)
Sales	560,000
Cost of Sales:	
Opening stock	66,000
Purchases	310,000
Closing stock	<u>(60,000)</u>
	316,000
Gross Profit	244,000
Operating Expenses	<u>158,400</u>
Net profit	<u>85,600</u>

Problem 2: The following is the summarized profit and loss account of Hindustan Products Ltd. for the year ended 31st December, 1990 and the Balance Sheet of the company as on that date:

**PROFIT AND LOSS ACCOUNT
For the year ended 31st December, 1990**

Particulars	Rs.	Particulars	Rs.
Opening Stock	99,500	Sales	8,50,000
Purchases	5,45,250	Closing Stock	1,49,000
Direct Expenses	14,250		
Gross Profit	<u>3,40,000</u>		
	<u>9,99,000</u>		<u>9,99,000</u>
Administration Exp.	1,50,000	Gross Profit	3,40,000
Selling expenses	30,000	Interest on Investment	3,000
Financial Exp. (Interest on loan)	15,000	Profit on sale of shares	6,000
Loss on sale of Assets	4,000		
Net Profit	1,50,000		
	<u>3,49,000</u>		<u>3,49,000</u>

BALANCE SHEET

Liabilities	Rs.	Assets	Rs.
13,00 Equity shares of Rs. 100 each	1,30,000	Land and Building	1,50,000
Reserve	90,000	Plant	80,000
Profit & Loss Alc	60,000	Stock	1,49,000
Loan from financial institutions	70,000	Debtors	60,000
Bank Overdraft	20,000	B/R	11,000
Sundry Creditors	95,000	Cash and Bank Balance	30,000
Outstanding Expenses	<u>15,000</u>		
	<u>4,80,000</u>		<u>4,80,000</u>

Calculate the following ratios and give your comments:

- Quick Ratio
- Debt Equity Ratio
- Proprietary Ratio
- Stock Turnover Ratio
- Fixed Assets Turnover Ratio
- Net Profit Ratio
- Return on Equity

Problem 3: Following information is given to you:

	Alpha Ltd.	Beta Ltd.
Annual Sales	Rs.15,00,000	10,00,000
Percentage of Gross Profit on Sales	20%	22%
Average Stock	Rs.80,000	65,000
Current Liabilities	Rs.1,00,000	80,000
Current Ratio	3:1	2.6:1
Closing Stock	Rs.82,000	60,000
Receivables at the end	Rs.2,00,000	1,25,000

You are required to calculate:

- Stock Turnover
- Current Ratio
- Acid Test Ratio
- Receivables Turnover
- Average age of Receivables in months

2.5 REVIEW QUESTIONS

1. What is ratio analysis? Explain its objectives and limitations.
2. Explain the important ratios to measure the Liquidity and profitability of a company.
3. Explain the significance and method of calculation of following ratios: (i) Liquid ratio (ii) Debt- Equity ratio (iii) Debtors turnover ratio
4. What do you mean by analysis of financial statements? What are the tools for analysis of financial statements? Explain any two of them.
5. What do you mean by comparative financial statements? How are these prepared? Explain their utility.
6. What do you mean by common size financial statements? How are these prepared? Explain their utility.
7. What do you mean by Trend Percentages? How are these prepared? What are its advantages and limitations?

CASH FLOW

Structure

3.1 Fund Flow Statement

3.1.1 Objectives of Funds Flow Statement

3.1.2 Limitations of Funds Flow Statement

3.1.3 Preparation of Funds Flow Statement,

3.2 Cash Flow Statement

3.2.1 Direct and Indirect methods of cash flow.

3.3 Review Questions

3.1 FUND FLOW STATEMENT

Introduction: Fund flow statement is a statement which explains the change in the items of balance sheet over the period of time. A fund flow statement examines the sources and uses of funds of a firm between two points of time. The term “Funds” has been described in many ways. Many interpret funds as cash only and fund flow statement prepared of this ratio is called a cash flow statement. In this type of statement only inflow and outflow of cash flow obtain into account. This narrow concept of cash flow often leads to omission of such items which do not directly affect cash or working capital. Thus the term funds flow refers to change in working capitals. The sources and the composition of working capital at the end of the period are important factors in evaluating post activities and in judging a company’s ability to prosper in the future.

The funds flow statement is called by different names, viz sources and application of funds, sources and uses of funds, movements of funds statement and where got and where gone statement. This statement is prepared to indicate the increase in cash resources and utilization of such resources of a business during a given period. The usefulness of a balance sheet is limited to analysis and planning purpose. It does not serve the purpose. Fund Flow Statement discloses the result or the policies followed by the financial management in a way which makes it more understandable to observe than the other financial statement.

3.1.1 Objectives / Uses/ Importance of Funds Flow Statement:

The utility of this statement can be measured on the basis of its contribution to the financial management. It generally serves the following purpose:

1. **Analysis of Financial Position:** The basic purpose of preparing the statement is to have a rich insight into where the funds were obtained and used in the past. In analyzing the financial position of the firm the funds flow statement answers to such questions as: Where were the net current assets of the firm down, though the net income was up or vice versa? How was it possible to distribute dividends in absence of or in excess of current

income for the period? How was the expansion in plants and equipment financed? How was the sale proceed of plant and machinery used? How were the debts retired? What became to the proceeds of shares issues or debentures issued? How was the increase in working capital financed? Where did the profits go?

2. **Evaluation of the Financing Capacity:** One important use of the statement is that it evaluates the firms financing capacity. The analysis of sources of funds reveals how the firm had financed its development project in the past, from internal sources or from external sources. It also reveals the rate of growth of the firm.
3. **Instrument for Allocation of Resources:** In modern large scale business, available funds are always short for expansion programs and there is always a problem of allocation of resources. The amount of funds to be available for these projects shall be estimated by the finance manager with the help of funds flow statement. This prevents the business form coming a help less vision of unplanned action.
4. **Tool of communication to outside world:** Funds flow statement helps in gathering the financial states of business. In the present world credit financing it provides useful information to bankers, creditors, financial institution and governments regarding amount of the loan required, its purpose, the terms of repayment and sources for repayment of loan etc. It carries information regarding firms' financial policies to the outside world.
5. **Future guide:** The management can formulate its financial policies based on information gathered from the analysis of such statement. Financial manager can rearrange the firms financing more affectivity on the expected changes in trade payables and the various accruals. In this guide the management in arranging it's financing more effectively. Funds statement supplies valuable information to the management and aid material in planning for expansion in dividend polices and other major programs. If handled properly, it gives information which is not available elsewhere.

3.2.2 Limitations of Fund Flow Statement

1. It ignores certain non-fund transactions (such as issue of shares in consideration of purchase of fixed assets) which have equal bearing on the financial position of the firm just like other fund transactions.
2. It reveals only the changes in working capital and does not show the changes in cash position. It is possible that there is sufficient working capital and yet the firm may be unable to meet its current liabilities due to shortage of cash. It may be due to sizeable piling up of inventories and an increase in debtors. Hence, a cash flow statement has to be prepared.
3. It is historical in nature because it reports what has happened in the past. It is quite difficult to predict the future operations on the basis of past records.
4. Since it is based on opening and closing balance sheets and the profit and loss account, it is not a original statement which can provide an original evidence to the change in financial position.

3.1.3 Preparation of Fund flow Statement

Before preparing a Fund Flow Statement, it is essential to understand the following:

1. Classification of Balance Sheet
2. Meaning of Fund
3. Meaning of Flow

Classification of Balance Sheet:

Liabilities	Amount(Rs.)	Assets	Amount(Rs.)
<p>(A)Non-Current Liabilities:</p> <p>i. Share Capital: Preference Share Capital Equity Share Capital</p> <p>ii. Reserves and Surplus: Capital Reserve Capital Redemption Reserve Share Premium General Reserve Sinking Fund Other Reserves Profit & Loss Alc</p> <p>i. Debentures</p> <p>ii. Long-term loans</p> <p>(B) Current Liabilities: Bills Payable Creditors Short-term Loans Bank overdraft Outstanding Expenses Amount received in advance</p>		<p>(C)Non-Current Assets:</p> <p>i. Fixed Assets : Goodwill Land & Buildings Plant & Machinery Furniture & Fittings Patents, Trade marks, Copy rights Long-term Investments</p> <p>ii. Miscellaneous Expenditure: Preliminary Expenses Discount on Issue of Shares and Debentures Profit & Loss: Loss</p> <p>(D) Current Assets: Bills Receivable Debtors</p> <p>Closing stock Prepaid Expenses Accrued income Marketable Securities Short term investments Cash at Bank Cash in hand</p>	

Items mentioned in the Balance sheet have been explained below:

Non-Current Liabilities: All liabilities payable over a period longer than one year are non-current liabilities. Non-current liabilities also include share capital, share premium, Loss Account (Cr. balance), and all reserves.

Current Liabilities: All liabilities which are payable within one year are known as current liabilities such as B/P, Creditors etc. long-term loans, if maturing within one year, should also be treated as current liabilities, but only if long-term funds are not raised to pay them off. Provision against current assets like provision for doubtful debts is also treated as current liabilities.

Non-Current Assets: The assets which are put to use in the business for a long time are non-current assets. The object is not to resell them.

Current Assets: The assets which are reasonably expected to be realized in cash or sold or consumed within one year are termed as current assets. These assets continue changing.

(2) Meaning of Funds: In a limited sense, the term 'fund' means 'cash'. But this is not the correct meaning of the term 'fund' because there are many transactions in the business which do not result in inflow or outflow of cash but certainly result in the inflow or outflow of funds. For example, a machine is purchased on two months credit. Although cash is not immediately affected by this transaction, it certainly results in an outflow of funds. As such, the term 'fund' stands for 'Working Capital'. Working Capital = Current Assets - Current Liabilities.

(3) Meaning of Flow: The term 'flow' means change or movement. Therefore, the term 'Flow of Funds' means 'change in funds' or 'change in Working Capital'. In other words, 'FLOW of Funds' means increase or decrease in working capital. Every Transaction will have one of the following effects:

- a) If a transaction results in the increase of working capital, it is said to be a source of funds.
- b) If the transaction results in the decrease of working capital, it is said to be an application of funds.
- c) If the transaction does not result in any change in the working capital, it is said that it does not result in the flow of fund.

While preparing Fund Flow Statement Usually,

- a) Schedule of Changes in working capital is prepared and
- b) Fund From Operations is calculated

a) Preparation of Schedule of Changes in working capital: This schedule considers only current assets and current liabilities, at the end of the year and at the beginning of the year. This schedule shows either increase or decrease in working capital. Following rules are followed while preparing a Schedule of Changes in working capital:

- a) An increase in Current Assets..... results in increase in working capital
- b) A decrease in Current Assets results in decrease in working capital
- c) An increase in Current liabilities..... results in decrease in working capital
- d) A decrease in Current Assets results in increase in working capital

Note: Schedule of changes in working capital is prepared only from items given in balance sheets. There will be no effect of the additional information given at the end of the question.

b) Calculation of Funds from Operations: In order to prepare funds flow-statement it is necessary to ascertain the sources-and application of funds. Main source of fund in a business is funds from Operations.

Funds from Operations: The figure of net profit shown by Profit & Loss Account is generally affected by some items which do not affect flow of funds, but which have already been debited or credited. Therefore, the funds from operations can be calculated by adding or deducting these non-fund items from the net profit shown by Profit & Loss Account.

Items to be added back to Net Profit:

1. **Non-Fund Items** There are some items on the debit side of the Profit & Loss Account which affect the net profit but do not result in application of funds In other words, these items do not result in the increase or decrease in the Working Capital. Such items are called as 'Non-Fund items'. These items should be added back to net profit. These items are generally as follows: **Depreciation:** Depreciation is not paid in cash like other expenses, therefore, it does not affect amount of current assets or current liabilities in any way. **Amortization of Fictitious or Intangible Assets:** When these assets are written off, they are debited to profit & loss account. But the writing off of these assets does not involve any cash payment so this does not affect the working Capital in any way. These assets include the following: Goodwill written off, Preliminary Expense, Patent Rights, Trade Marks and Copy Rights, Discount on Issue" of Shares and Debentures. Deferred Revenue Expenditure such as, Advertisement Suspense A/c.
2. **Non-Trading Losses:** There are some items of losses which are debited to profit and loss account, but which are not related to general trading operations of the business. They should also be added back to net profit. These are as follows: **Loss on sale of fixed assets** : such as loss on sale of land, Building, Plant and Machinery, long-term investments is not a trading loss, hence, it should also be added back to net profit.
3. **Appropriation of Profits:** These not trade expenses. Although net profit is reduced by these appropriations, they have no impact on current assets or current liabilities, and hence they should be added back to net profit. These appropriations are as follows: Transfer to General Reserve, Transfer to Sinking Fund, Transfer to Dividend Equalization Fund, Transfer to Debenture Redemption Fund, Transfer to Reserve for Contingencies etc. **Payable or proposed Dividend:** Payable or proposed Dividend to shareholders is not a trading charge. Hence, it must also be added back to net profit. **Provision for Taxation:** This is not a trading charge; therefore, it should be added back to net profit. -

Items to be deducted from Net Profit: There are some incomes which are shown on the credit side of profit & loss account, but they are non-trading incomes. These items should be deducted from net profits to compute funds from operations. Mainly these items are as follows: **Profit on Sale of Fixed Assets:** Total amount of cash received from sale of fix assets is shown separately in the funds flow statement as a source of funds, therefore if such profit is already credited to profit find loss account, it should be deducted from profits. **Receipt of Dividend and Interest on Investments:** It is not a trading income hence it should be deduced from profits. **Increase in the Value of Fixed Assets:** If it appears on the credit side of profit& loss account, it should also be deducted from profits because it is not a business income. **Re-Transfer of Excess Provisions:** When provisions are made in excess business needs, they are again transferred to the credit side of profit & loss-account. These should also be deducted from profits because they are not business income.

Preparation of Fund Flow Statement Involves

1. Sources of Funds
2. Application of Funds

Sources of Funds:

1. **Funds from Operations:** Profits resulting from business operations is most important source of funds. Computation of funds from operations has already been discussed.
2. **Issue of Shares:** When Shares are issued for cash they are source of funds. But when bonus shares are issued or shares are issued for some other consideration like fixed asset than it is not a source of funds.
3. **Issue of Debenture and raising of loan etc:** Issue of debentures or raising loans (long term) results in to flow of funds. The inflow of funds is the actual proceeds from the issue of such debentures or raising of loans, i.e. including the amount of premium or excluding discount, if any. However, loans rose for consideration other than a current asset, such as for purchase of building, will not constitute inflow of funds because in that case the accounts involved are only fixed or non-current.
4. **Sale of Fixed (non-current) Assets and Long-term or Trade investments.** When any fixed asset like land, building, plant and machinery etc. are sold it generates funds. However, it must be remembered that if one fixed asset is exchanged for another fixed asset, it does not constitute an inflow of funds because no current assets are involved.
5. **Non- Trading Receipts.** Any non-trading receipt like dividend received, refund of tax, rent received, etc. also increases funds and is treated as a sources of funds because such an income is not included in the funds from operations.
6. **Decrease in Working Capital.** If the working capital decreases during the current period as compared to the previous period, it means that there has been a release of funds from working capital and it constitutes a source of funds. .

Application or Uses of Funds

1. **Funds lost in operations.** Sometimes the result of trading in a certain year is a loss and some funds are lost during that period in trading operations. Such loss of funds in trading amounts to an outflow of funds and is treated as an application of funds.
2. **Redemption of preference share capital.** If during the year any preference shares are redeemed, it will result in the outflow of funds and is taken as an application of funds. When the shares are redeemed at premium or discount, it is the net amount paid. (Including premium or excluding discount, as the case may be). However, if shares are redeemed in exchanges of some other type of shares or debentures, it does not constitute an outflow of funds as no current account is involved in that case.
3. **Repayment of loans or redemption of debentures, etc.** In the same way as redemption of preference share capital, redemption of debentures or repayment of loans also constitutes an application of funds.
4. **Purchase of any non-current or fixed asset:** When any fixed or non-current asset like land, building, plant and machinery, furniture, long-term investments, etc. are purchased, funds outflow from the business. However, if fixed assets are purchased for a consideration of issue of shares or debentures or if some fixed asset is exchanged for another, it does not involve any funds and hence not an application of funds.
5. **Payments of dividends and tax.** Payments of dividends and tax are also applications of funds. It is the actual payment of dividend (may be interim dividend) and tax which should be taken as an outflow of funds and not the mere declaration of dividend or creating of a provision for taxation.
6. **Any other non-trading payment.** Any payment or expense not related to the trading operations of the business amounts to outflow of funds and is taken as an application of funds. The examples could be drawings in case of sole trader or partnership firms, loss of cash, etc.

Some Typical Items Which Require Particular Care

1. **Identifying hidden information:** While preparing fund flow statement, one has to analyze the given balance sheets. Items relating to current account i.e. current assets and current liabilities are shown in Schedule of change in Working capital. But the non-current assets and non-current liabilities have to be further analyzed to find out hidden information regarding sale or purchase of fixed assets, issue or redemption of share capital or debentures, rising or repayments of long term loans, transfers to reserves and provisions. The hidden information can be found out by preparing concerned accounts of non-current assets and non-current liabilities.
2. **Investments:** The treatment of investments while preparing funds flow statement depends upon their nature, *i.e.*, whether they are current assets or fixed (long-term) or non-current

assets. If the investments represent surplus funds temporarily invested in marketable or short-term securities, they are to be treated as current assets. But if investments are long-term, permanent or trade investments, these should be treated as fixed assets. **Temporary Investments.** When the surplus funds are temporarily invested in marketable securities, they are treated as current assets and hence shown in the schedule of changes in Working Capital. Temporary investments do not require any further treatment while preparing funds flow statement like all other current assets. **Long-term, Permanent or Non-Current Investments.** If the investments are of non-current nature, these should not be shown in the schedule of changes in working capital. However, in this case, an investment account should be prepared to find out the cost of investments purchased or sold during the year and the profit or loss on sale of such investments, if any. If there is a loss on sale of such investments and it has been debited to P/L A/c, it should be added back while finding funds from operations and if profit on sale of such investments has been credited to profit and loss account, it should be deducted while finding funds from operations. The purchase of non-current or trade investments is an application of funds while the proceeds from the sale of such investments are a source of funds.

3. **Provision for Taxation :** There are two ways of dealing with provision for taxation : (i) **As a current liability :** provision for taxation will appear in the schedule of changes in working and no further treatment is required while preparing the funds flow statement. In this case, there is no need to prepare the provision for Taxation Account and the payment of tax made during the year shall not be shown as an application of funds because both the accounts involved for the payment of tax shall be current accounts and hence no movement of funds is involved. (ii) **As an appropriation of profits:** Provision for Taxation made during the year will be added back while finding funds from operation being a non-fund item., and Taxes paid during the year shall be application of funds.
4. **Proposed Dividends: There are two alternatives to deal with this item:** (i) **As a current liability.** When proposed dividend is treated as a current liability it represents an obligation of the company which is payable in a short period. Hence, it is shown in the schedule of changes in working capital as a current liability. (ii) **As an appropriation of profits.** In this case dividends proposed during the year are added while finding funds from operations. Thus, dividends paid during the year represent an application of funds and have to be shown on the application side of funds flow statement. In the absence of any information, proposed dividend for the previous year may be assumed to be paid during the year and taken as an application of funds while the proposed dividend of the current year may be added while finding funds from operations.
5. **Interim Dividend:** Interim dividend denotes a dividend paid to the members of the company during a financial year, before the finalization of annual accounts. The dividend paid or declared in between the two Annual General Meetings, i.e., interim dividend, should be added back while calculating funds from operations. However, if the figure of profit is taken prior to the debit of interim dividend this adjustment is not required. The interim dividend is also an application of funds and has to appear on the application side of funds flow statement.

6. **Provision against current Assets:** Provision against current assets, such as, provision for bad and doubtful debts, provision for loss on stock, etc. may be treated by any of the following methods: (i) The opening and closing balance of provision against current assets should be deducted from the respective opening and closing balance of the concerned asset. The net amount of the current assets should then be shown in the schedule of changes in working capital. (ii) The amount of the opening and closing balance of the current assets may be taken as gross in the schedule of changes in working capital, i.e., without deducting the amount of provision. But, then, the opening and closing balance of the provision against current assets shall have to be taken as a current liability in the schedule of changes in working capital. (iii) If excess provision has been created, it may be treated as an appropriation of profits and should be added while calculating funds from operations. The amount of the excess provision will not be shown in the schedule of changes in working capital.

Depreciation as a Source of Funds: Depreciation may be regarded as the capital cost of assets allocated over the life of the asset. In simple language, it means the gradual decrease in the value of an asset due to wear and tear, use and passage of time. In real sense, depreciation is simply a book entry having the effect of reducing the book value of the asset and the profits of the current year for the same amount. It does not affect current- assets or current liabilities and does not result in the flow of funds or to say more precisely it is a non-fund item. Hence, although depreciation is an operating cost there is no actual outflow of cash and so the amount of the depreciation charged during the year is added back to profits while finding funds from operations. But, then, is depreciation a source of funds? There can not be a definite 'yes' or 'no' to this question as there are differences of opinion on this important point. But it can be said with certainty that depreciation, directly at least does not amount to a source of funds. However, under certain circumstances, depreciation helps a business concern to affect savings in payment of tax and dividends and amounts to withholding a part of the funds generated through normal trading operations. It is in this sense that depreciation can be regarded as an indirect source of funds. However, it is not even an indirect source of funds under all circumstances. Say; for example, a company is running into losses and there are no profits, then any amount of depreciation charged to profit and loss account will neither affect tax liability nor any payment of dividends, as there are no profits. In this case, depreciation does not amount to withholding of funds and hence is not a source of funds at all. To conclude, it may be said that to the extent depreciation helps in effecting savings in the payment of tax and dividends, it may be regarded as source of funds.

Illustration 1: From the following Balance Sheets of the Company for the ending 31st December 2006 and 31st December 2007, prepare schedule of changes in working - capital and a statement showing sources and application of funds.

Liabilities	2006(Rs.)	2007(Rs.)	Assets	2006(Rs.)	2007(Rs.)
Share Capital	3,00,000	4,00,000	Plant &	50,000	60,000
Sundry creditors	1,00,000	70,000	Machinery &	10,000	15,000
P&L A/c	15,000	30,000	Furniture &	85,000	1,05,000
			Fixtures	1,60,000	1,50,000
			Stock in Trade	1,10,000	1,70,000
			Debtors		
	4,15,000	5,00,000	cash	4,15,000	5,00,000

Solution:

Schedule of Changes in Working Capital

Particulars	2006(Rs.)	2007(Rs.)	Effect on working capital	
			Increase(Rs.)	Decrease(Rs.)
Current Assets				
Cash	1,10,000	1,70,000	60,000	–
Debtors	1,60,000	1,50,000	–	10,000
Stock-in-trade	85,000	1,05,000	20,000	–
	3,55,000	4,25,000		
Current Liabilities				
Sundry Creditors	1,00,000	70,000	30,000	
	1,00,000	70,000		
Working Capital	2,55,000	3,55,000		
Net Increase in Working Capital	1,00,000			1,00,000
	3,55,000	3,55,000	1,10,000	1,10,000

Statement of Source and Application of Funds For the year ended 31-12-2007

Sources	Rs.	Application	Rs.
Issue of Share Capital	1,00,000	Purchase of Plant & Machinery (60,000 - 50,000)	10,000
Funds from Operations	15,000	Purchase of Furniture & Fixtures (15,000 - 10,000)	5,000
		Net Increase in Working Capital	1,00,000
	1,15,000		1,15,000

Working Notes:

Calculation of Fund from Operation:

Balance of P&L A/c at the end of year	30,000
Less Balance of P&L A/c in the beginning	15,000
Funds from operation	<u>15,000</u>

Illustration 2: The following are the Balance Sheets of Eastern Corporation Ltd. as on 31st December 2006 and 2007

Balance sheet of Eastern Corporation Ltd.					
Liabilities	2006(Rs.)	2007(Rs.)	Assets	2006(Rs.)	2007(Rs.)
11 % Cumulative Preference Shares	-	30,000	Land and Buildings	60,000	50,000
Equity Shares	1,10,000	1,20,000	Plant & Machinery	30,000	50,000
General Reserves	4,000	4,000	Sundry debtors	40,000	48,000
Profit and Loss Alc	2,000	2,400	Stock	60,000	70,000
9% Debentures	12,000	14,000	Bank	2,400	7,000
Provision for Taxation	6,000	8,400	Cash	600	1,000
Proposed Dividend	10,000	11,600			
Current Liabilities	49,000	35,600			
	<u>1,93,000</u>	<u>2,26,000</u>		<u>1,93,000</u>	<u>2,26,000</u>

You are required to prepare a schedule of change in Working Capital and statement of Flow of Funds.

Solution:

Schedule of Changes in Working Capital				
	2006 Rs.	2007 Rs.	Increase in W.C. Rs.	Decrease in W.C. Rs.
<i>Current Assets:</i>				
Sundry Debtors	40,000	48,000	8,000	
Stock	60,000	70,000	10,000	
Bank	2,400	7,000	4,600	
Cash	600	1,000	400	
	1,03,000	1,26,000		
<i>Current Liabilities:</i>				

Current Liabilities	49,000	35,600	13,400	
	49,000	35,600		
Working Capital (CA - CL)	54,000	90,400		
Net Increase in Working Capital	36,400			36,400
	90,400	90,400	36,400	36,400
Funds Flow Statement				
Sources	Rs.	Applications		Rs.
Issue of preference shares	30,000	Purchase of Plant and Machinery		20,000
Issue of Equity Shares	10,000	Provision for taxation (for 2006 assumed to be paid)		6,000
Issue of Debentures	2,000	Proposed Dividend (for 2006 assumed to be paid)		10,000
Sale of Land & Buildings	10,000	Net Increase in working Capital		36,400
Funds from Operations	20,400			
	<u>72,400</u>			<u>72,400</u>

Working Notes:

As current liabilities are separately given, provision for taxation and proposed dividend have not been taken as current liabilities.

1.	As current liabilities are separately given, provision for taxation and proposed dividend have not been taken as current liabilities	
2.	<i>Calculation of Issue of Preference Shares:</i> Preference Share Capital in the beginning of 2007 Preference Share Capital at the end of 2007 Preference Share Capital raised during the year	Rs Nil <u>30,000</u> <u>30,000</u>
3.	<i>Calculation of Issue of Equity Shares:</i> Equity Share Capital in the beginning of 2007 Equity Share Capital at the end of 2007 Equity Share Capital raised during the year	1,10,000 <u>1,20,000</u> <u>10,000</u>
4.	<i>Issue of Debentures :</i> 9% Debentures in the beginning of 2007 9% Debentures at the end of 2007 Debentures Issued during the year	12,000 <u>14,000</u> <u>2,000</u>
5.	Provision for taxation and proposed dividend for 2006 have been presumed to be paid in 2007	
6.	<i>Calculation of Sale of Land and Buildings</i> Opening Balance of Land and Buildings in 2007 Closing Balance of Land and Buildings in 2007	60,000 <u>50,000</u>

	Land & Buildings sold during the year	<u>10,000</u>
7.	<i>Purchase of Plant and Machinery:</i> Opening Balance in 2007 Closing Balance in 2007 Purchased during the year	30,000 <u>50,000</u> <u>20,000</u>
8.	<i>Calculation of funds from Operations:</i> Closing Balance of P & L Account in 2007 <i>Add:</i> Non-fund and Non-operating items debited to P/L A/c: Provision for taxation Proposed Dividend <i>Less:</i> Opening Balance of P/L A/c Funds from Operations	2,400 8,400 <u>11,600</u> <u>22,400</u> <u>2,000</u> <u>20,400</u>

Illustration 3: From the following Balance Sheets of S.M. Industries Prepare a Funds Flow Statement showing your workings clearly:

Liabilities	2007(Rs.)	2008(Rs.)	Assets	2007(Rs.)	2008(Rs.)
Share capital	60,000	65,000	Goodwill	30,000	25,000
P&L A/C	34,000	26,000	Plant & Machinery	60,000	50,000
Current Liabilities	12,000	3,000	Current Assets	16,000	19,000
	<u>1,06,000</u>	<u>94,000</u>		<u>1,06,000</u>	<u>94,000</u>

Additional Information:

1. Depreciation of Rs.20, 000 on plant and machinery was charged to Profit and Loss Account.
2. Dividends of Rs. 12,000 were paid during the year.

Solution:

Schedule of changes in Working Capital

	2007(Rs.)	2008(Rs.)	Increase in W.C (Rs.)	Decrease in W.C (Rs.)
Current Assets	16,000	19,000	3,000	
Current Liabilities	12,000	3,000	9,000	
Working Capital (C.A-C.L)	4,000	16,000		
Net Increase in W.C	12,000			12,000
	<u>16,000</u>	<u>16,000</u>	<u>12,000</u>	<u>12,000</u>

Funds Flow statement

Sources	Rs.	Application	Rs.
Issue of shares	5,000	Purchase of Plant & Machinery	10,000
Funds from operation	29,000	Payment of dividend	12,000
		Net increase in W.C	12,000
	<u>34,000</u>		<u>34,000</u>

Working notes:

1) Share capital A/C

	Rs.		Rs.
To Balance c/d	65,000	By balance b/d	60,000
		By cash-issue (Balancing figure)	5,000
	<u>65,000</u>		<u>65,000</u>

2) Plant & Machinery A/C

	Rs.		Rs.
To Balance b/d	60,000	By balance b/d	20,000
To cash-purchase(Balancing figure)	10,000		50,000
	<u>70,000</u>		<u>70,000</u>

3) Goodwill A/c

	Rs.		Rs.
To Balance b/d	30,000	By balance c/d	25,000
		By Adjusted P&L a/c (Balancing Figure)	5,000
	<u>30,000</u>		<u>30,000</u>

4) Adjusted Profit & Loss A/C

	Rs.		Rs.
To depreciation	20,000	By Balance b/d	34,000
To goodwill	5,000	By Funds from Operations (Balancing figure)	29,000
To dividend	12,000		
To Balance c/d	26,000		
	<u>64,000</u>		<u>64,000</u>

Illustration 4: From the following Balance Sheets of Shri Hari Synthetics Ltd. prepare a statement of sources and application of funds and as schedule of changes in working capital for 2007.

Liabilities	2006(Rs.)	2007(Rs.)	Assets	2006(Rs.)	2007(Rs.)
Share capital	2,00,000	2,50,000	Land& Building	2,00,000	1,90,000
General Reserve	50,000	60,000	Plant	1,50,000	1,74,000
P & L A/C	30,500	30,600	Stock	1,00,000	74,000
Bank loan(short term)	70,000	-	Debtors	80,000	64,200
Creditors	1,50,000	1,35,200	Cash	500	600
Provision for Taxation	30,000	35,000	Bank	-	8,000
	<u>5,30,500</u>	<u>5,10,800</u>		<u>5,30,500</u>	<u>5,10,800</u>

Additional information:

- Depreciation was written off plant Rs. 14,000 in 2007
- Dividend of Rs. 20,000 was paid during 2007.
- Income Tax provision made during the year was Rs. 25,000
- A piece of land has been sold during the year at cost.

Solution:

Schedule of changes in Working Capital

	2006(Rs.)	2007(Rs.)	Increase in W.C (Rs.)	Decrease in W.C (Rs.)
<i>Current Assets:</i>				
Stock	1,00,000	74,000		26,000
Debtors	80,000	64,200		15,800
Cash	5,00	6,00	100	
Bank		8,000	8,000	
	<u>1,80,500</u>	<u>1,46,800</u>		
<i>Current Liabilities:</i>				
Bank loan	70,000	-	70,000	
Creditors	1,50,000	1,35,200	14,800	
	<u>2,20,000</u>	<u>1,35,200</u>		
Working Capital (C.A-C.L)	(-)39,500	11,600		
Net Increase in W.C	51,100			51,100
	<u>11,600</u>	<u>11,600</u>	<u>92,900</u>	<u>92,900</u>

Funds Flow statement
For the year ended 31st Dec, 2007

Sources	Rs.	Application	Rs.
Issue of capital	50,000	Purchase of Plant	38,000
Sales of Land & Building	10,000	Income Tax paid during 2007	20,000
Funds from operation	69,100	Payment of dividend	20,000
		Net increase in W.C	51,100
	<u>1,29,100</u>		<u>1,29,100</u>

Working notes:

1) Plant I A/C

	Rs.		Rs.
To Balance b/d	1,50,000	By Depreciation	14,000
To cash-purchases(Balancing. figure)	38,000	By balance c/d	1,74,000
	<u>1,88,000</u>		<u>1,88,000</u>

2) Provision for Taxation A/C

	Rs.		Rs.
To cash(Tax paid) balancing figure	20,000	By Balance b/d	30,000
To balance c/d	35,000	By Adjusted P&L a/c	25,000
	<u>55,000</u>		<u>55,000</u>

3) Adjusted Profit & Loss A/C

	Rs.		Rs.
To Depreciation	14,000	By Balance b/d	30,500
To transfer to General reserve	10,000	By Funds from Operations (Balancing figure)	69,100
To provision for taxation	25,000		
To dividend	20,000		
To Balance c/d	30,600		
	<u>64,000</u>		<u>64,000</u>

Illustration 5: The following are the summarized balance sheets of X ltd., on 31st Dec.,2006 and 31st Dec.,2007

<i>Liabilities</i>	<i>2006</i> <i>Rs.</i>	<i>2007</i> <i>Rs.</i>	<i>Assets</i>	<i>2006</i> <i>Rs.</i>	<i>2007</i> <i>Rs.</i>
Share Capital	6,00,000	8,00,000	Plant & Machinery (at cost)	4,00,000	6,45,000
Debentures	2,00,000	3,00,000	Land & Building (at cost)	3,00,000	4,00,000
Profit and Loss A/c	1,25,000	2,50,000	Stock	3,00,000	3,50,000
Creditors	1,15,000	90,000	Bank	20,000	40,000
Provision for bad and doubtful debts	6,000	3,000	Preliminary Expenses	7,000	6,000
Provision for Depreciation			Debtors	69,000	61,000
-On Land & Building	20,000	24,000			
On Plant & Machinery	30,000	35,000			
	<u>10,96,000</u>	<u>15,02,000</u>		<u>10,96,000</u>	<u>15,02,000</u>

Additional Information :

- (i) During the year a part of machinery costing Rs. 70,000 (accumulated depreciation thereon Rs. 2,000) was sold for Rs. 6,000.
- (ii) Dividends of Rs. 50,000 were paid during the year.
- You are required to ascertain :
- (a) Changes in Working Capital for 2007.
- (b) Funds Flow Statement.

Solution :

Statement of Changes in Working Capital				
	<i>2006</i> <i>Rs.</i>	<i>2007</i> <i>Rs.</i>	<i>Increase in W.C.</i> <i>Rs.</i>	<i>Decrease in W.C.</i> <i>Rs.</i>
<i>Current Assets :</i>				
Stock	3,00,000	3,50,000	50,000	
Bank	20,000	40,000	20,000	
Debtors	69,000	61,000		8,000
	<u>3,89,000</u>	<u>4,51,000</u>		
<i>Current Liabilities :</i>				
Creditors	1,15,000	90,000	25,000	
Provision for bad and doubtful debts	6,000	3,000	3,000	
	<u>1,21,000</u>	<u>93,000</u>		
Working Capital	2,68,000	3,58,000		
Net Increase in W.C.	90,000			90,000
	<u>3,58,000</u>	<u>3,58,000</u>	98,000	98,000
Funds Flow Statement				
<i>Sources</i>	<i>Rs.</i>	<i>Applications</i>	<i>Rs.</i>	
Issue of share capital	2,00,000	Purchase of plant & machinery	3,15,000	
Issue of debentures	1,00,000	Purchase of land & building	1,00,000	
Sale of machinery	6,000	Dividends Paid	50,000	
Funds from operations	2,49,000	Net increase in Working Capital	90,000	
	<u>5,55,000</u>		<u>5,55,000</u>	

Provision for Depreciation on Plant & Machinery A/c			
	<i>Rs.</i>		<i>Rs.</i>
To Plant & Machinery A/c (Dep. on machinery sold)	2,000	By Balance b/d	30,000
To Balance c/d	35,000	By Adjusted P/L A/c (Dep. provided)	7,000
	<u>37,000</u>	(balancing figure)	
			<u>37,000</u>
Provision for Depreciation on Land & Building A/c			
	<i>Rs.</i>		<i>Rs.</i>
To Balance c/d	24,000	By Balance b/d	20,000
	<u>24,000</u>	By Adjusted P/L A/c (balancing figure)	4,000
			<u>24,000</u>
Plant & Machinery A/c			
	<i>Rs.</i>		<i>Rs.</i>
To Balance b/d	4,00,000	By Cash (sale)	6,000
To Cash-Purchases (balancing figure)	3,15,000	By Provision for Dep.	2,000
		By Adjusted P/L A/c (Loss on sale)	62,000
	<u>7,15,000</u>	By Balance c/d	6,45,000
			<u>7,15,000</u>
Land and Buildings A/c			
	<i>Rs.</i>		<i>Rs.</i>
To Balance b/d	3,00,000	By Balance c/d	4,00,000
To Cash-Purchases	1,00,000		
	<u>4,00,000</u>		<u>4,00,000</u>
Adjusted Profit and Loss Account			
	<i>Rs.</i>		<i>Rs.</i>
To Provision for depreciation :		By Balance b/d	1,25,000
Plant & machinery	7,000	By Funds from operations	2,49,000
Land and building	4,000		
To Preliminary Expenses written off	1,000		
To Dividend	50,000		
To Loss on sale of machinery	62,000		
To Balance c/d	2,50,000		
	<u>3,74,000</u>		<u>3,74,000</u>

Problem1. Prepare a fund flow statement from the following Balance sheet:

(figures in thousands)

Liabilities	2007(Rs.)	2008(Rs.)	Assets	2007(Rs.)	2008(Rs.)
Share capital	1,400	1,740	Land	960	800
Reserves & Surplus	600	780	Plant	600	680
Debentures	880	880	Patents	40	36
Discount on Debentures	(80)	(72)	Closing Stock	600	688
Creditors	1,200	1,280	Debtors	400	740
Provision for Depreciation	200	112	Cash	1,600	1,776
	<u>4,200</u>	<u>4,720</u>		<u>4,200</u>	<u>4,720</u>

Additional information:

- a) Net profit for the year Rs.4, 00,000.
- b) Depreciation charged for the year Rs.4, 00,000.
- c) Dividend Paid Rs. 80,000.
- d) Shares issued for cash Rs.2, 00,000 and for bonus Rs. 1, 40,000.
- e) A building was sold for Rs. 56,000 its cost and book-value being Rs. 1, 60,000 and Rs. 40,000.

Problem 2. From the following balance sheet of X Ltd. as on 31st Dec 1995 and 1996, you are required to prepare

Liabilities	1995(Rs.)	1996(Rs.)	Assets	1995(Rs.)	1996(Rs.)
Share Capital	1,00,000	1,00,000	Goodwill	12,000	12,000
General Reserve	14,000	18,000	Building	40,000	36,000
P&L A/c	16,000	13,000	Plant	37,000	36,000
Creditors	8,000	5,400	Investments	10,000	11,000
Bills Payable	1,200	800	Stock	30,000	23,000
Provision for Taxation	16,000	18,000	Bills Receivable	2,000	3,000
Provision for doubtful	400	600	Debtors	18,000	19,000
			Cash at Bank	66,000	15,200
	<u>1,55,600</u>	<u>1,55,800</u>		<u>1,55,600</u>	<u>1,55,800</u>

Additional Information

1. Depreciation charged on plant was Rs.4, 000 and on Building Rs. 4,000.
2. Provision for Tax of Rs.19, 000 was made during the year 1996.
3. Interim dividend of Rs. 8,000 was paid during the year 1996

Problem 3. From the following Balance Sheet of A Ltd., as on 31st March 1996 and 1997 prepare a Statement showing changes in working capital and Sources and Applications of funds.

Balance Sheet
As on 31st march

Liabilities	1996(Rs.)	1997(Rs.)	Assets	1996(Rs.)	1997(Rs.)
Share Capital	900,000	900,000	Fixed Assets	800,000	640,000
General Reserve	600,000	620,000	Investments	100,000	120,000
P&L A/c	112,000	136,000	Stock	480,000	420,000
Mortgage Loan	-	540,000	Debtors	420,000	910,000
Creditors	336,000	268,000	Cash & bank	298,000	394,000
Provision for Taxation	150,000	20,000			
	<u>2,098,000</u>	<u>2,484,000</u>		<u>2,098,000</u>	<u>2,484,000</u>

Additional information:

- a) The net profit for the year was Rs. 1, 24,000 after charging depreciation of fixed assets Rs. 1,40,000 and provision for tax Rs. 20,000.
- b) During the year part of fixed assets costing Rs. 20,000 was disposed off for Rs. 24,000 and the profit is included in the above profit.
- c) Dividend paid during the year amounted to Rs. 80,000
- d) Investment costing Rs. 16,000 were sold for Rs. 17,000 and further investment were acquired for Rs. 36,000

Problem 4. The following are the summarized balance sheets of PQR Ltd., as at 31st December 1996 and 31st December 1997

Balance Sheet

Liabilities	1996	1997	Assets	1996	1997
Share Capital	500,000	500,000	Land/Bldg	200,000	250,000
Profit and loss a/c	150,000	252,000	P & M at cost	350,000	360,000
Debentures	200,000	200,000	S. Debtors	147,000	138,000
Prov for D. Debts	5,000	4,000	Stock	250,000	274,000
Prov for Dep			Cash	83,000	101,000
L & B	30,000	34,000	Preliminary Exp	5,000	4,000
P & M	30,000	32,000			
S. Creditors	120,000	105,000			
	<u>1,035,000</u>	<u>1,127,000</u>		<u>1,035,000</u>	<u>1,127,000</u>

Additional information.

- 1) The net profit for the year ending 31st December 1997 was Rs.2,52,000 and is arrived at after charging loss on sale of machinery and writing off preliminary expenses and adjusting provision for doubtful debts
- 2) During the year a part of machinery costing Rs. 7000 accumulated depreciation thereon being Rs. 1,000 was sold for Rs. 5,000
- 3) Dividend of Rs. 50,000 was paid during the year ended 31st December 1997.

Prepare statement showing changes in working capital and fund flow statement for 1997.

3.2 CASH FLOW STATEMENT

The Institute of Chartered Accountants of India has issued an accounting standard 3, “Cash Flow Statement”. It clearly spells out all the requirements in relation to cash flow statement. According to Accounting Standard 3, “Cash Flow Statement” there is two methods: (a) Direct Method and (b) Indirect Method

3.2.1 Direct and Indirect method of cash flow

Appendix: The appendix is illustrative only and does not form part of the accounting standard. The purpose of this appendix is to illustrate the application of the accounting standard.

1. The example shows only current period amounts.
2. Information from the statement of profit and loss and balance sheet is provided to show how the statements of cash flows under the direct method and the indirect method have

been derived. Neither the statement of profit and loss nor the balance sheet is presented in conformity with the disclosure and presentation requirements of applicable laws and accounting standards. The working notes given towards the end of this appendix are intended to assist in understanding the manner in which the various figures appearing in the cash flow statement have been derived. These working notes do not form part of the cash flow statement and, accordingly, need not be published.

- The following additional information is also relevant for the preparation of the statement of cash flows (figures are inRs.'000). An amount of 250 was raised from the issue of share capital and a further 250 was raised from long term borrowings. Interest expense was 400 of which 170 was paid during the period. 100 relating to interest expense of the prior period was also paid during the period. Dividends paid were 1,200. Tax deducted at source on dividends received (included in the tax expense of 300 for the year) amounted to 40. During the period, the enterprise acquired fixed assets for 350. The payment was made in cash. Plant with original cost of 80 and accumulated depreciation of 60 was sold for 20. Foreign exchange loss of 40 represents the reduction in the carrying amount of a short-term investment in foreign-currency designated bonds arising out of a change in exchange rate between the date of acquisition of the investment and the balance sheet date. Sundry debtors and sundry creditors include amounts relating to credit sales and credit purchases only.

Balance Sheet as at 31.12.1996

	1996	(Rs. '000) 1995
Assets		
Cash on hand and balances with banks	200	25
Short-term investments	670	135
Sundry debtors	1,700	1,200
Interest receivable	100	-
Inventories	900	1,950
Long-term investments	2,500	2,500
Fixed assets at cost	2,180	1,910
Accumulated depreciation	(1,450)	(1,060)
Fixed assets (net)	730	850
Total assets	6,800	6,660
Liabilities		
Sundry creditors	150	1,890
Interest payable	230	100
Income taxes payable	400	1,000
Long-term debt	1,110	1,040
Total liabilities	1,890	4,030
Shareholders' Funds		
Share capital	1,500	1,250
Reserves	3,410	1,380
Total shareholders' funds	4,910	2,630
Total liabilities and shareholders' funds	6,800	6,660

Statement of Profit and Loss for the period ended 31.12.1996	(Rs. '000)
Sales	30,650
Cost of sales	(26,000)
Gross profit	4,650
Depreciation	(450)
Dividend income	200
Foreign exchange loss	(40)
<i>Net profit before taxation and extraordinary item</i>	3,350
Extraordinary item - Insurance proceeds from Earthquake disaster settlement	180
<i>Net profit after extraordinary item</i>	3,530
Income-tax	(300)
Net profit	3,230

Solution:

Direct Method Cash Flow Statement [Paragraph 18(a)]	(Rs. '000)
1996	
<i>Cash flows from operating activities</i>	
Cash receipts from customers	30,150
Cash paid to suppliers and employees	(27,600)
Cash generated from operations	2,550
Income taxes paid	(860)
Cash flow before extraordinary item	1,690
Proceeds from earthquake disaster settlement	180
Net cash from operating activities	1,870
<i>Cash flows from investing activities</i>	
Purchase of fixed assets	(350)
Proceeds from sale of equipment	20
Interest received	200
Dividends received	160
Net cash from investing activities	30
<i>Cash flows from financing activities</i>	
Proceeds from issuance of share capital	250
Proceeds from long-term borrowings	250
Repayment of long-term borrowings	(180)
Interest paid	(270)
Dividends paid	(1,200)
Net cash used in financing activities	(1,150)
Net increase in cash and cash equivalents	750
Cash and cash equivalents at beginning of period (see Note 1)	160
Cash and cash equivalents at end of period (see Note 1)	910

Indirect Method Cash Flow Statement [Paragraph 18(b)]

(Rs. '000)

1996

Cash flows from operating activities	
<i>Net profit before taxation, and extraordinary item</i>	3,350
Adjustments for:	
Depreciation	450
Foreign exchange loss	40
Interest income	(300)
Dividend income	(200)
Interest expense	400
<i>Operating profit before working capital changes</i>	3,740
Increase in sundry debtors	(500)
Decrease in inventories	1,050
Decrease in sundry creditors	(1,740)
Cash generated from operations	2,550
Income taxes paid	(860)
<i>Cash flow before extraordinary item</i>	1,690
Proceeds from earthquake disaster settlement	180
Net cash from operating activities	1,870
<i>Cash flows from investing activities</i>	
Purchase of fixed assets	(350)
Proceeds from sale of equipment	20
Interest received	200
Dividends received	160
Net cash from investing activities	30
<i>Cash flows from financing activities</i>	
Proceeds from issuance of share capital	250
Proceeds from long-term borrowings	250
Repayment of long-term borrowings	(180)
Interest paid	(270)
Dividends paid	(1,200)
Net cash used in financing activities	(1,150)
Net increase in cash and cash equivalents	750
Cash and cash equivalents at beginning of period(see Note 1)	160
Cash and cash equivalents at end of period (see Note 1)	910

Notes to the cash flow statement (direct method and indirect method)*1. Cash and Cash Equivalents*

Cash and cash equivalents consist of cash on hand and balance with banks, and investments in money-market instruments. Cash and cash equivalents included in the cash flow statement comprise the following balance sheet amounts:

1996 1995

Cash on hand and balances with banks	200	25
Short-term investments	670	135
Cash and cash equivalents	870	160
Effect of exchange rate changes	40	-
Cash and cash equivalents as restated	910	160

Cash and cash equivalents at the end of the period include deposits with banks of 100 held by a branch which are not freely remissible to the company because of currency exchange restrictions. The company has indrawn borrowing facilities of 2,000 of which 700 may be used only for future expansion.

2. *Total tax paid during the year* (including tax deducted at source on dividends received) amounted to 900.

Alternative Presentation (indirect method)

As an alternative, in an indirect method cash flow statement, operating profit before working capital changes is sometimes presented as follows:

Revenues excluding investment income	30,650
Operating expense excluding depreciation	(26,910)
Operating profit before working capital changes	3,740

Working Notes

The working notes given below do not form part of the cash flow statement and, accordingly, need not be published. The purpose of these working notes is merely to assist in understanding the manner in which various figures in the cash flow statement have been derived. (Figures are in Rs. '000.)

1. Cash receipts from customers	
Sales	30,650
Add: Sundry debtors at the beginning of the year	<u>1,200</u>
	31,850
Less: Sundry debtors at the end of the year	<u>1,700</u>
	<u>30,150</u>
2. Cash paid to suppliers and employees	
Cost of sales	26,000
Administrative and selling expenses	<u>910</u>
	26,910
Add: Sundry creditors at the beginning of the year	1,890
Inventories at the end of the year	<u>900</u>
	29,700
Less: Sundry creditors at the end of the year	150
Inventories at the beginning of the year	<u>1,950</u>
	<u>27,600</u>
3. Income taxes paid (including tax deducted at source from dividends received)	

Income tax expense for the year (including tax deducted at source from dividends Received)	300
Add: Income tax liability at the beginning of the year	<u>1,000</u>
	<u>1,300</u>

Out of 900, tax deducted at source on dividends received (amounting to 40) is included in cash flows from investing activities and the balance of 860 is included in cash flows from operating activities (see paragraph 34).

4. Repayment of long-term borrowings	
Long-term debt at the beginning of the year	1040
Add: Long-term borrowings made during the year	<u>250</u>
	1290
Less: Long-term borrowings at the end of the year	<u>1,110</u>
	<u>180</u>
5. Interest paid	
Interest expense for the year	400
Add: Interest payable at the beginning of the year	<u>100</u>
	500
Less: Interest payable at the end of the year	<u>230</u>
	<u>270</u>

Appendix II

Cash Flow Statement for a Financial Enterprise

The appendix is illustrative only and does not form part of the accounting standard. The purpose of this appendix is to illustrate the application of the accounting standard.

1. The example shows only current period amounts.
2. The example is presented using the direct method.

(Rs. '000)

1996

Cash flows from operating activities

Interest and commission receipts	28,447
Interest payments	(23,463)
Recoveries on loans previously written off	237
Cash payments to employees and suppliers	(997)
Operating profit before changes in operating assets	4,224
<i>(Increase) decrease in operating assets:</i>	
Short-term funds	(650)
Deposits held for regulatory or monetary control purposes	234
Funds advanced to customers	(288)
Net increase in credit card receivables	(360)
Other short-term securities	(120)
<i>Increase (decrease) in operating liabilities:</i>	
Deposits from customers	600
Certificates of deposit	(200)
Net cash from operating activities before income tax	3,440
Income taxes paid	(100)
Net cash from operating activities	3,340

Cash flows from investing activities	
Dividends received	250
	(Rs. '000)
1996	
Cash flows from operating activities	
Interest and commission receipts	28,447
Interest payments	(23,463)
Recoveries on loans previously written off	237
Cash payments to employees and suppliers	(997)
Operating profit before changes in operating assets	4,224
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Increase (decrease) in operating liabilities:	
Deposits from customers	600
Certificates of deposit	(200)
Net cash from operating activities before income tax	3,440
Income taxes paid	<u>(100)</u>
Net cash from operating activities	3,340
Cash flows from investing activities	
Dividends received	250
Interest received	300
Proceeds from sales of permanent investments	1,200
Purchase of permanent investments	(600)
Purchase of fixed assets	<u>(500)</u>
Net cash from investing activities	<u>650</u>
Cash flows from financing activities	
Issue of shares	1,800
Repayment of long-term borrowings	(200)
Net decrease in other borrowings	(1,000)
Dividends paid	<u>(400)</u>
Net cash from financing activities	<u>200</u>
Net increase in cash and cash equivalents	4,190
Cash and cash equivalents at beginning of period	4,650
Cash and cash equivalents at end of period	8,840

3.3 REVIEW QUESTIONS

1. What is fund flow statement? Explain its importance and limitations.
2. Distinguish between (i) Fund flow statement and schedule of changes in working capital (ii) Net profit and fund from operation.
3. Distinguish between (i) Fund flow statement and cash flow statement. (ii) Cash flow statement and cash budget

FIXED CAPITAL ANALYSIS

Structure

- 4.1 Capital Budgeting
 - 4.1.1 Features of Capital Budgeting
 - 4.1.2 Importance of Capital Budgeting

- 4.2 Evaluations Techniques of Projects:
 - 4.2.1 Traditional Techniques - Pay Back Period, ARR,
 - 4.2.2 Time adjusted techniques NPV, IRR, PI
 - 4.2.3 Risk and uncertainty in capital budgeting

- 4.3 Review Questions

4.1 CAPITAL BUDGETING:

Introduction: Capital Budgeting is the process of making investment decision in capital expenditure. It involves the planning and control of capital expenditure. It is the process of deciding whether or not to commit resources to particular long-term projects whose benefits are to be realized over a period of time.

According To Charles T Horngreen: “Capital Budgeting is the long term planning for making and financing proposed capital outlays”

According To Lynch: “Capital Budgeting consists in planning development of available capital for the purpose of maximizing the long term profitability of the concern”

From the above definition, it may be concluded that it is the process by which the companies allocate funds to various investment projects designs to ensure profitability and growth.

4.1.1 Features of Capital Budgeting

1. Exchange of funds for future benefits:
2. The future benefits are expected to be realized over a period of time.
3. The funds are invested vested in long-term activities.
4. They have a long term and significant effect on the profitability of the concern,
5. They involve huge funds.

4.1.2 Importance of Capital Budgeting

1. **Large Investment:** Capital budgeting decision involves large investment of funds. But the funds available with the firm are always limited and the demand for funds far exceeds the resources. Hence it is very important for a firm to plan and control its capital expenditure.

2. **Long Term Commitment of Funds:** capital expenditures involves not only large amount of funds but also funds for long term or permanent basis. The long term commitments of funds increases, the financial risk involved in the investment decision. Greater the risk involved, greater is need for careful planning of capital expenditure i.e. Capital Budgeting.
3. **Irreversible Nature:** The Capital expenditure decision is of irreversible nature. Once the decision for acquiring a permanent asset is taken, it becomes very difficult to dispose of these assets without incurring heavy losses.
4. **Long term Effect on profitability:** Capital budgeting decisions have a long term and significant effect on the profitability of a concern. Not only the present earnings of the firm are effected by the investments in capital asserts but also the future growth and profitability of the firm depends upon the investment decision taken today. An unwise decision may prove disastrous and fatal to the very existence of the concern.
5. **Difficulties of investment Decisions:** The long term investment decision are difficult to be taken because decision extends to a series of years beyond the current accounting period, uncertainties of future, higher degree of risk.
6. **National Importance:** Investment decision though taken by individual concern is of national importance because it determines employment, economic activities and growth.

4.2 EVALUATIONS TECHNIQUES OF PROJECTS

The commonly used methods are following:

1. **Traditional Method**
 - a. Pay backs period method or pay out or pay off method
 - b. Rate of return Method or Accounting Method
2. **Time adjusted Method or discounted method**
 - a. Net present value method
 - b. Internal rate of return method
 - c. Profitability Index

4.2.1 Traditional Method

Pay Back Period Method: It represents the period in which the total investments in permanent assts pay backs itself. This method is based on the principal that every capital expenditures pays itself back within a certain period out of the additional earnings generated from the capital assets thus it measures the period of time for the original cost of a project to be recovered from the additional earnings of the project itself.

In case of evaluation of a single project, it is adopted if it pays back itself within a period specified by the management and if the project does not pay back itself within the period specified by the management than it is rejected.

The payback period can be ascertained in the following manner: Calculate annual net earning (profit) before depreciation and after taxes; these are called the annual cash flows.

Where the annual cash inflows are equal, Divide the initial outlay (cost) of the project by annual cash flows, where the project generates constant annual cash inflows.

Where the annual cash inflows are unequal, the pay back period can be found by adding up the cash inflows until the total is equal to the initial cash outlay of project or original cost of the asset.

$$\text{Payback period} = \frac{\text{Cash outlay of the project or original cost of the asset}}{\text{Annual cash Inflows}}$$

Illustration 1. A project costs Rs1, 00,000 and yields annual cash inflow of Rs. 20,000 for 8 years. Calculate its pay back period.

Solution:

$$\begin{aligned} \text{Pay back period} &= \frac{\text{Cash outlay of the project or original cost of the asset}}{\text{Annual cash Inflows}} \\ &= \frac{1,00,000}{20,000} = 5 \text{ years} \end{aligned}$$

Advantages of Pay Back Period

1. It is simple to understand and easy to calculate.
2. It saves in cost; it requires lesser time and labor as compared to other methods of capital budgeting.
3. This method is particularly suited to firm, which has shortage of cash or whose liquidity position is not particularly good.

Disadvantages of Pay Back Period

1. It does not take into account the cash inflows earned after the pay back period and hence the true profitability of the project cannot be correctly assessed.
2. It ignores the time value of money and does not consider the magnitude and timing of cash inflows. it treats all cash flows as equal though they occur in different time periods.
3. It does not take into consideration the cost of capital, which is very important; factor in making sound investment decision.
4. It treats each asset individually in isolation with other asset, which is not feasible in real practice.
5. It does not measure the true profitability of the project, as the period considered under this method is limited to a short period only and not the full life of the asset.

Rate of Return Method: This method take into account the earnings expected from the investment over their whole life. It is known as accounting rate of Return method for the reasons

that under this method, the accounting Concept of profit is used rather than cash inflows. According to this method, various projects are ranked in order of the rate of earnings or rate of return. The project with the higher rate of return is selected as compared to the one with the lower rate of return. This method can be used to make decisions as to accepting or rejecting a proposal. The expected return is determined and the project with a higher rate of return than the minimum rate specified by the firm called cut-off rate, is accepted and the one which gives a lower expected rate of return than the minimum rate is rejected.

The return in investment can be used in several ways as follows:

Average rate of return method (ARR): Under this method average profit after tax and depreciation is calculated and then it is divided by the total capital outlay or total investment in the project.

$$\frac{\text{Total Profits (after dep. \& taxes)}}{\text{Net Investment in project x No. Of years of profits}} \times 100$$

Or

$$\frac{\text{Average annual profit}}{\text{Net investment in the Project}} \times 100$$

Illustration 2. A project requires an investment of Rs.5, 00,000 and has a scrap value of Rs.20, 000 After 5 years. It is expected to yield profits after depreciation and taxes during the 5 years amounting to Rs. 40,000, Rs. 60,000, Rs. 70,000, Rs. 50,000 and Rs.20, 000. Calculate the average rate of return on the investment.

Solution:

Total profits = Rs. 40,000+60,000+70,000+50,000+20,000 = Rs. 2, 40,000

Average Profit = $\frac{\text{Rs. 2, 40,000}}{5}$ = Rs.48, 000

Net Investment in the project = Rs. 5, 00,000 – 20,000(scrap value)
= Rs 4, 80,000

$$\frac{\text{Average annual profit}}{\text{Net investment in the Project}} \times 100$$

$$\frac{48,000}{4, 80,000} \times 100 = 10\%$$

Return per unit of investment method: This method is small variation of the average rate of return method. In this method, the total profit after tax and depreciation is divided by the total investment i.e.

$$\text{Return per Unit of Investment} = \frac{\text{Total profit (after depreciation and tax)}}{\text{Net investment in the project}} \times 100$$

Illustration 3. Continuing above illustration, the return per unit of investment shall be:

$$\frac{2,40,000}{4,80,000} \times 100 = 50\%$$

Return on average Investment method: In this method the return on average investment is calculated. Using of average investment for the purpose of return in investment is referred because the original investment is recovered over the life of the asset on account of depreciation charges.

$$\text{Return on Average Investment} = \frac{\text{Total profit (after depreciation and tax)}}{\text{Total Net investment}/2} \times 100$$

Advantages of Rate of Return Method

1. It is very simple to understand and easy to operate.
2. This method is based upon the accounting concept of profits; it can be readily calculated from the financial data.
3. It uses the entire earnings of the projects in calculating rate of return.

Dis Advantages of Rate of Return Method

1. It does not take into consideration the cash flows, which are more important than the accounting profits.
2. It ignores the time value of money as the profits earned at different points of time are given the equal weighs.

4.2.2 Time Adjusted or Discounted Cash Flows Methods

The traditional methods of capital budgeting suffer from serious limitations that give the equal weights to present and future flow of income. These do not take into accounts the time value of money. Following are the discounted cash flow methods:

Net Present Value Method: This method is the modern method of evaluating the investment proposals. This method takes into consideration the time value of money and attempts to calculate the return in investments by introducing the factor of time element. It recognizes the fact that a rupee earned today is more valuable earned tomorrow. The net present value of all inflows and outflows of cash occurring during the entire life of the project is determined separately for each year by discounting these flows by the firm's cost of capital.

Following are the necessary steps for adopting the net present value method of evaluating investment proposals.

1. Determine appropriate rate of interest that should be selected as the minimum required rate of return called discount rate.
2. Compute the present value of total investment outlay.

3. Compute the present value of total investment proceeds.
4. Calculate the net present value of each project by subtracting the present value of cash inflows from the present value of cash outflows for each project.
5. If the net present value is positive or zero, the proposal may be accepted otherwise rejected.

Advantages of Net Present Value

1. It recognizes the time value of money and is suitable to be applied in situations with uniform cash outflows and cash flows at different periods of time.
2. It takes into account the earnings over the entire life of the projects and the true profitability of the investment proposal can be evaluated.
3. It takes into consideration the objective of maximum profitability.

Disadvantages of Net Present Value

1. This method is more difficult to understand and operate.
2. It is not easy to determine an appropriate discount rate.
3. It may not give good results while comparing projects with unequal lives and investment of funds.

Internal Rate of Return Method: It is a modern technique of capital budgeting that takes into account the time value of money. It is also known as “time adjusted rate of return discounted cash flows” “yield method” “trial and error yield method”

Under this method, the cash flows of the project are discounted at a suitable rate by hit and trial method, which equates the net present value so calculated to the amount of the investment. Under this method, since the discount rate is determined internally, this method is called as the internal rate of return method. It can be defined as the rate of discount at which the present value of cash inflows is equal to the present value of cash outflows.

Steps required for calculating the internal rate of return.

1. Determine the future net cash flows during the entire economic life of the project. The cash inflows are estimated for future profits before depreciation and after taxes.
2. Determine the rate of discount at which the value of cash inflows is equal to the present value of cash outflows.
3. Accept the proposal if the internal rate of return is higher than or equal to the minimum required rate of return.
4. In case of alternative proposals select the proposals with the highest rate of return as long as the rates are higher than the cost of capital.

Determination of Internal Rate of Return:

1. **When the annual net cash flows are equal over the life of the assets.**

$$\text{Present value Factor} = \frac{\text{Initial Outlay}}{\text{Annual cash Flows}}$$

2. When the annual net cash flows are Unequal over the life of the assets.

Following are the steps

- i. Prepare the cash flow table using an arbitrary assumed discount rate to discount the net cash flows to the present value.
- ii. Find out the net present value by deducting from the present value of total cash flows calculated in above the initial cost of the investment
- iii. If the NPV is positive, apply higher rate of discount.
- iv. If the higher discount rate still gives a positive NPV, increase the discount rate further the NPV becomes negative.
- v. If the NPV is negative at this higher rate, the internal rate of return must be between these two rates.

Advantages of Internal Rate of Return Method

1. It takes into account the time value of money and can be usefully applied in situations with even as well as uneven cash flows at different periods of time.
2. It considers the profitability of the project for its entire economic life.
3. It provides for uniform ranking of various proposals due to the % rate of return.

Disadvantages of Internal Rate of Return Method

1. It is difficult to understand.
2. This method is based upon the assumption that the earnings are reinvested at the internal rate of return for the remaining life of the project, which is not a justified assumption particularly when the rate of return earned by the firm is not close to the internal rate of return.
3. The result of NPV and IRR method may differ when the project under evaluation differ their size.

Profitability Index or PI: This is also known as benefit cost ratio. This is similar to NPV method. The major drawback of NPV method that not does not give satisfactory results while evaluating the projects requiring different initial investments. PI method provides solution to this. PI is calculated as:

$$PI = \frac{\text{Present value of cash Inflows}}{\text{Present value of cash outflows}}$$

If $PI > 1$ project will be accepted, if $PI < 1$ then project is rejected and if $PI = 1$ then decision is based on non-financial consideration.

Advantages of PI method

1. It considers Time value of money
2. It considers all cash flow during life time of project.

3. More reliable than NPV method when evaluating the projects requiring different initial investments.

Disadvantages of PI method

1. This method is difficult to understand.
2. Calculations under this method are complex.

4.2.3 Risk and Uncertainty in Capital Budgeting

All the techniques of capital budgeting require the estimation of future cash inflows and cash outflows. But due to uncertainties about the future, the estimates of demand, production, sales cannot be exact. All these elements of uncertainty have to be taken into account in the form of forcible risk while taking a decision on investment proposals. The following two methods are suggested for accounting for risk in capital budgeting.

1. Risk adjusted cut off rate or method of varying discount rate.
2. Certainty equivalent method.

Risk adjusted cut off rate or method of varying discount rate: The simplest method for accounting for risk in capital budgeting is to increase the cut-off rate or the discount factor by certain % on account of risk. The projects which are more risky and which have greater variability in expected returns should be discounted at a higher rate as compared to the projects which are less risky and are expected to have lesser variability in returns.

The greater drawback of this method is that it is not possible to determine the risk premium rate appropriately and moreover it is the future cash flow, which is uncertain and requires the adjustment and not the discount rate.

Illustration 4. The Beta Company is considering the purchase of new investment. Two alternative investments are available (A and B) Rs. 1,00,000. Cash flows are expected to be as follows:

YEAR	CASH FLOWS	
	INVESTMENT A (Rs)	INVESTMENT B (Rs)
1	40,000	50,000
2	35,000	40,000
3	25,000	30,000
4	20,000	30,000

The company has a target return on capital at 10%. Risk premium rates are 2% and 8%. For investments A and B, which investment should be preferred?

Solution:

The profitability of the investments can be compared on the basis of net present values of cash inflows adjusted for risk premium rates as follows:

Year		Investment A			Investment B	
	Discount Factor@ 10%+2% = 12%	Cash Inflows Rs.	Present Value Rs.	Discount Factor@ 10%+8% = 18%	Cash Inflows Rs.	Present Value Rs.
1	.893	40,000	35,720	.847	50,000	42,350
2	.797	35,000	27,895	.718	40,000	28,720
3	.712	25,000	17,800	.609	30,000	18,270
4	.635	20,000	12,700	.516	30,000	15,480
			94,115			1,04,820
		Investment A Rs 94,115-1,00,000			Investment B Rs. 1,04,820-	
1,00,000		= Rs(-) 5,885				= Rs. 4,820
Net Present Value						

As even at a higher discount rate investment B gives a higher present value, investment B should be preferred.

Certainty Equivalent Method: Another simple method of accounting for risk in capital budgeting is to reduce the expected cash flows by certain amounts. It can be employed by multiplying the expected cash flows by certainty equivalent co-efficient as to convert the cash flow to certain cash flows.

Illustration 5. There are two projects X and Y. each involves an investment of Rs40,000. The expected cash flows and the certainty co-efficient are as under:

Year	Cash Inflows	Project X		Project Y	
		Cash Inflows	Certainty Coefficient	Cash Inflows	Certainty Coefficient
1	25,000		.8	20,000	.9
2	20,000		.7	30,000	.8
3	20,000		.9	20,000	.7

Risk free cut off rate is 10%. Suggest which of the two projects should be preferred?

Solution:

Calculation of cash inflows with certainty						
Yea flow	Cash Inflows	Project X		Project Y		
		Certainty Coefficient	Certain Cash Inflow	Cash Inflows	Certainty Coefficient	Certain Cash
1	25,000	.8	20,000	20,000	.9	18,000
2	20,000	.7	14,000	30,000	.8	24,000
3	20,000	.9	18,000	20,000	.7	14,000

Calculations of Present Values of cash Inflows

Year	Project X			Project Y	
	Discount Factor @10%	Cash inflows Rs.	Present Values Rs.	Cash inflows Rs.	Present Value Rs.
1	.909	20,000	18,180	18,000	16,362
2	.826	14,000	11,564	24,000	19,824
3	.751	18,000	13,518	14,000	10,514
					46,700
			Project X		Project Y
			Rs 43,262-40,000		Rs 46,700-40,000
		Net Present Value	Rs. 3262		Rs.6700

As the Net present value of project Y is more than that of Project X, Project Y should be preferred.

Illustration 6.A Company is considering a new project for which the investment data are as follows:

Capital outlay Rs.2, 00,000

Depreciation 20% per annum

Forecasted annual income before charging depreciation, but after all other charges as follows:

Year	Rs.
1	100,000
2	100,000
3	80,000
4	80,000
5	<u>40,000</u>
	<u>400,000</u>

On the basis of available data, set out calculations, illustrating and comparing the following methods of evaluating the return of capital employed a. Pay back method b. Rate of return of original investment. State clearly any assumption you make. Ignore taxation.

Solution:

Annual income before depreciation and after all other charges is equivalent to CFAT.

PB period is 2 years. Capital outlay of Rs.2, 00,000 is recovered in first two years:

[(Rs 1, 00,000 (year 1) + Rs 1, 00,000 (year 2))

Rate of return on original investment

Year	CFAT (Rs)	Depreciation (Rs)	Net Income (Rs)
1	1, 00,000	40,000	60,000
2	1, 00,000	40,000	60,000
3	80,000	40,000	40,000
4	80,000	40,000	40,000
5	40,000	40,000	---
			<u>2, 00,000</u>

$$\text{Rate of return} = \frac{\text{Average income}}{\text{Original investment}} \times 100$$

$$\text{Where, Average Income} = \frac{\text{Rs } 2, 00,000}{5} = \text{Rs. } 40,000$$

$$\text{Rate of return} = \frac{40,000}{2, 00,000} \times 100 = 20\%$$

Illustration 7: A project of Rs. 20, 00,000 yielded annually a profit of Rs. 3, 00,000 after depreciation @12.5% and is subject to income tax @ 50%. Calculate pay-back period

Solution: Calculation of Annual Cash Flow

	Rs.
Profit after Depreciation but before tax	3, 00,000
Less: - Tax @ 50%	1, 50,000
Profit after Tax	1, 50,000
Add: - Depreciation	2, 50,000
Cash Flow	4, 00,000

$$\begin{aligned} \text{Pay back period} &= \text{Initial outlay/ Annual Cash Flow} \\ &= 20, 00,000/4, 00,000 = 5 \text{ Years} \end{aligned}$$

Illustration 8 The Alpha company ltd is considering the purchase of a new machine. Two alternatives machines (A and B) have been suggested each costing Rs. 4, 00,000. Earnings after taxation are expected to be as follows:

Year	Cash Flow (Rs.)	
	Machine A	Machine B
1	40,000	1, 20,000
2	1, 20,000	1, 60,000
3	1, 60,000	2, 00,000
4	2, 40,000	1, 20,000
5	1, 60,000	80,000

You are require to suggest which machine should be preferred based on

- a) NPV Method and b) Profitability Index

Note: The present value of Rs. 1 @ 10 %

Due in 1 Year = 0.91

Due in 2 Years = 0.83

Due in 3 years = 0.75

Due in 4 years = 0.68

Due in 5 years = 0.62

Solution:

a) Computation of net present value

Year	PVIF	Machine A	Machine B		
		cash inflow	present value	cash inflow	present value
1	0.91	40000	36400	120000	109200
2	0.83	120000	99600	160000	132800
3	0.75	160000	120000	200000	150000
4	0.68	240000	163200	120000	81600
5	0.62	160000	99200	80000	49600
Total Present value of Cash inflow			518400		5, 23,200
Less: Cash Outflow			4, 00,000		4, 00,000
Net present Value			<u>118400</u>		<u>1, 23,200</u>

b) Computation of Profitability Index

Present value of cash inflow	<u>5, 18,400</u>	<u>5, 23,200</u>
Present value of cash outflow	4, 00,000	4, 00,000
Profitability index	1.3	1.31

Since net present value and profitability index of Machine B is higher. Machine B is therefore recommended.

Illustration9.One of the two machines A and B is to be purchased. Form the following information find out which of the two will be more profitable? The average rate of tax may be taken at 50%.

	Machine A (Rs.)	Machine B (Rs.)
Cost of machine	50000	80000
Machine Life	4 years	6 years
Earnings Before Tax		
1st year	10000	8000
2nd year	15000	14000
3rd year	20000	25000
4th year	15000	30000
5th year		18000
6th year		13000

Solution:**Machine A**

year	EBT	Tax@ 50%	EAT	Cash flows	Cumulative cash flows
1	10000	5000	5000	17500	17500
2	15000	7500	7500	20000	37500
3	20000	10000	10000	22500	60000
4	15000	7500	7500	20000	80000

a) Pay back period:

Investment = 50000

Recovery up to 2nd year is 37,500

Balance 12500 in 3rd year = $12500/22500 = 0.55$ years i.e. 2.55 years

b) Average rate of returns:

(on original investment basis)

= Average earnings/net investment x 100

= $30000 \times 4 / 50000 \times 100 = 15\%$

Machine B

year	EBT	Tax@ 50%	EAT	Cash flows	Cumulative cash flows
1	8000	4000	4000	17333	17333
2	14000	7000	7000	20333	37666
3	25000	12500	12500	25833	63499
4	30000	15000	15000	28333	91832
5	18000	9000	9000	22333	141165
6	13000	6500	6500	19833	133498

(a) Pay back period

Investment = Rs. 80,000

Cumulative Cash Flows shows that the recovery up to 3rd year = 63499

therefore for the balance of Rs. 16501 will be recovered in 4th year.

i.e. $16501/28333 = 0.58$ year

therefore payback period is 3.58 years

b) Average rate of return (based on original investment)

= Average Profits/net investment x 100

= $54000/6 \times 100$

= 11.25%

Machine A is profitable in both the cases

Note: - It has been assumed that Earnings Before tax in the problem is after considering depreciation on straight line basis.

Illustration 10. No Project is acceptable unless the yield is 10%. Cash inflows of a certain project along with cash outflows are given below:

Year	Outflow (Rs.)	Inflow(Rs.)
0	150000	-
1	30000	20000
2	-	30000
3	-	60000
4	-	80000
5	-	70000

Calculate net present value

Solution:

Calculation of Net Present Value

Year	PVIF	Outflows		Inflows	
		Amount (rs.)	Present Value (Rs.)	Amount (Rs.)	Present Value(Rs.)
0	1.000	150000	150000		
1	0.909	30000	27270	20000	18180
2	0.826			30000	24780
3	0.751			60000	45060
4	0.683			80000	54640

5	0.621			70000	43470
			<u>177270</u>		<u>186130</u>

Net present value = Present value of Inflows - Present value of Inflows
= Rs.186130 – Rs. 177270
=Rs 8860

Problem1: 1 A Company whose cost of capital is 12% is considering two Machines A and B. The following data are available:-

	Machine A (Rs.)	Machine B (Rs.)
Cost of machine	1,40,000	1,40,000
Cash inflows		
1st year	20,000	1,00,000
2nd year	40,000	80,000
3rd year	60,000	40,000
4th year	1,00,000	20,000
5th year	1,10,000	20,000
	3,30,000	2,60,000

Recommended in which machine company should invest by using the following methods

- Pay back method
- Net present value
- Profitability index

Problem2: X ltd is considering the purchase of a new machine. Two alternatives are available having a cost price Rs. 200000 each. The following inflows are expected during the five years life of both the machines are 5 years.

Year	Machine A	Machine B
1	15,000	5,000
2	20,000	15,000
3	25,000	20,000
4	15,000	30,000
5	10,000	20,000

The company is expecting 10 % returns on its capital.

The net present value of Rs. 1 @ 10 % are given as follows

1st year 0.909
2nd year 0.826
3rd year 0.751
4th year 0.683
5th year 0.620

You are required to appraise the proposals on the basis of

- Pay back period method

1. Average rate of return method
2. Net present value method

Problem 4. Consider the following proposal investment with the indicated cash inflows

Investment	Initial outlay	Year end cash Inflows		
		Year1	Year2	Year3
A	200	200	Nil	Nil
B	200	100	100	100
C	200	20	100	300
D	200	200	20	20
E	200	140	60	100
F	200	160	160	80

Rank the investment using net present value (NPV) using a discount rate of 10% and state your views.

Problem 5. After considering a survey that cost Rs. 300000 X Ltd., decided to undertake a project putting a new product in the market. The company's cut off rate is 12%. It was estimated that the project would have a life of 5 years. The project would cost Rs 60, 00,000 in p& M in addition to working capital of Rs. 15, 00,000. The machine has no scrap value at the end of 5 years. After providing depreciation on straight line basis, profits after tax were estimated as follows:

Year	Amount (Rs.)
1	600000
2	1000000
3	2600000
4	1000000
5	800000

The present value factors @ 12% per annum are given below

1st year	0.8729
2nd year	0.7972
3rd year	0.7118
4th year	0.6355
5th year	0.5674

Ascertain the net present value of the project.

4.3 REVIEW QUESTIONS

1. What is capital budgeting? What are the features and importance of capital budgeting decisions?
2. What is capital budgeting? Explain briefly any two method of capital budgeting.
3. Give a comparative description of various methods of ranking investment proposals.

CAPITAL STRUCTURE AND DIVIDEND POLICY

Structure

5.1 Leverage Analysis

- 5.1.1 Operating Leverage
- 5.1.2 Financial Leverage
- 5.1.3 Combined Leverage

5.2 Capital Structure

- 5.2.1 Factors determining the capital structure
- 5.2.2 Theories of Capital Structure

5.3 Cost of Capital

- 5.3.1 Significance of Cost of Capital
- 5.3.2 Computation of cost of capital
- 5.3.3 EPS, EBIT Analysis

5.4 Dividend Policy

- 5.4.1 Dividend decision and valuation of firm
- 5.4.2 Determinants of Dividend Policy
- 5.4.3 Types of Dividends
- 5.4.4 Forms of dividend
- 5.4.5 Bonus Issue

5.5 Review Questions

5.1 LEVERAGE ANALYSIS

The term leverage refers to a relationship between two interrelated variables. With reference to a business firm, these variables may be costs, output, sales, revenue, EBIT, Earning per share etc. In financial analysis, the leverage reflects the responsiveness or influence of one variable over some other financial variables. It helps in understanding the relationship between any two variables. In the leverage analysis, the emphasis is on the measurement of the relationship of two variables rather than on measuring these variables.

The leverage may be defined as the % change in one variable divided by the % change in some other variable. Impliedly, the numerator is the dependent variable say X and the Y is the independent variable. The leverage analysis reflects as to how responsiveness is the dependent variable to a change in the independent variable.

Algebraically,

$$\text{Leverage} = \frac{\% \text{ Change in the dependent variable}}{\% \text{ Change in Independent variable}}$$

Illustration 1: A firm increased its sales promotion expenses from Rs 5,000 to Rs. 6,000 i.e. an increase of 20%. This resulted in the increase in no. Of unit sold from 200 to 300 i.e. an increase of 50%. The leverage may be defined as

$$\begin{aligned} \text{Leverage} &= \frac{\% \text{ Change in the dependent variable}}{\% \text{ Change in Independent variable}} \\ &= \frac{.50}{.20} \\ &= 2.5 \end{aligned}$$

This means that % increase in number of unit sold is 2.5 times that of % increase in sales promotion expenses. The operating profit of a firm is a direct consequence of the sales revenue of the firm and in turn operating profit determines the profit available to the equity shareholders. The functional relationship between the sales revenue and the EPS can be established through operating profit (EBIT) as follow:

<p>Sales Revenue -Variable costs</p> <hr style="border: 0.5px solid black;"/> <p>Contribution -Fixed Costs</p> <hr style="border: 0.5px solid black;"/> <p>EBIT</p> <hr style="border: 0.5px solid black;"/>	<p>EBIT - Interest</p> <hr style="border: 0.5px solid black;"/> <p>Profit before tax - Tax</p> <hr style="border: 0.5px solid black;"/> <p>Profit after Tax (EPS)</p> <hr style="border: 0.5px solid black;"/>
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The left hand side shows that the level of EBIT depends upon the level of sales revenue and the right hand side shows that the level of profit after tax or EPS depends upon the level of EBIT. The relationship between Sales revenue and EBIT is defined as operating leverage and the relationship between EBIT and EPS is defined as financial leverage. The direct relationship between sales revenue and EPS can also be established by combining the operating leverage and financial leverage and is defined as the Composite leverage.

5.1.1 Operating Leverage

When the sale increases or decreases, the EBIT also changes. The operating leverage measures the relationship between the sales revenue and the EBIT or in other words, it measures the effect of change in sales revenue on the level of EBIT. The operating leverage is calculated by:-

$$\text{Operating Leverage} = \frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales Revenue}}$$

Illustration 2. ABC Ltd. Sells 1000 unit @ Rs. 10 per unit. The cost of production is Rs. 7 per unit and is of variable nature. The profit of the firm is $1000 \times (\text{Rs } 10 - 7) = 3000$. Suppose the firm is able to increase the sales level by 40% resulting in total sales of 1400 unit. The profit of the firm would now be $1400 \times (\text{Rs } 10 - \text{Rs } 7) = \text{Rs } 4200$. The operating leverage of the firm is

$$\begin{aligned} \text{Operating Leverage} &= \frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales Revenue}} \\ &= \frac{\text{Increase in EBIT} / \text{EBIT}}{\text{Increase in Sales} / \text{Sales}} \\ &= \frac{\text{Rs. } 1200 / \text{Rs } 3000}{\text{Rs. } 4000 / \text{Rs. } 10,000} \\ &= 1 \end{aligned}$$

The operating leverage of 1 denotes that the EBIT level increase or decreases in direct proportion to the increase or decrease in sales level. This is due to the fact that there is not any fixed cost and total cost is variable in nature. Thus, impliedly, the profit level i.e. the EBIT varies in direct proportion to the sales level. So EBIT varies in direct proportion to sales level.

Illustration 3. Suppose the firm has a fixed cost of Rs. 1000 in addition to the variable costs of Rs 7 per unit.

	Present	Expected
Sales @ Rs. 10 per unit	10,000	14,000
- Variable costs @ Rs. 7 per unit	<u>7000</u>	<u>9800</u>
Contribution	3000	4200
- Fixed Cost	<u>1000</u>	<u>1000</u>
EBIT	<u>2000</u>	<u>3200</u>

$$\begin{aligned} \text{Operating Leverage} &= \frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales Revenue}} \\ &= \frac{\text{Increase in EBIT} / \text{EBIT}}{\text{Increase in Sales} / \text{Sales}} \\ &= \frac{\text{Rs. } 1200 / \text{Rs } 2000}{\text{Rs. } 4000 / \text{Rs. } 10,000} \\ &= 1.5 \end{aligned}$$

The OL of 1.5 means that the % increase in the level of EBIT is 1.5 times that of % increase in sales level. In this case, the % increase in EBIT is 60% and % increase in sales is 40%. It means that for every increase of 1% in sales level, the % increase in EBIT would be 1.5%. The above

figures of 1 time and 1.5 times are known as degree of operating leverage. Whenever the % change in EBIT resulting from given % change in sales is greater than % change in sales, the OL exists and the relationship is known as Degree of Operating leverage.

$$\text{Degree of operating leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

Illustration 4. Sales level is 1000 units and 1400 units. The per unit cost is Rs. 10. Variable cost is Rs. 7 per unit. Fixed cost is Rs. 1000. Calculate DOL.

Sales Level	1000 units	1400 units
Sales @ Rs.10 per unit	10,000	14,000
- Variable Cost@ Rs.7 per unit	<u>7000</u>	<u>9800</u>
Contribution	3000	4200
-Fixed cost	<u>1000</u>	<u>1000</u>
EBIT	<u>2000</u>	<u>3200</u>
DOL	3000/2000	4200/3200
	= 1.5	1.31

So this is clear that:

- The OL is % change in EBIT as a result of 1% change in sales.
- A positive DOL means that the firm is operating at a level higher than the break-even level and both the EBIT and sales will vary in the same direction.
- A negative DOL means that the firm is operating at a level lower than the break even level.

Significance of Operating Leverage: Analysis of operating leverage of a firm is very useful to the financial manager. It tells the impact of changes in sales on operating income. A firm having higher D.O.L. (Degree of operating Leverage) can experience a magnified effect on E.B.I.T for even a small change in sales level. Higher D.O.L can dramatically increase the operating profits. But if there is decline in sales level, E.B.I.T. may be wiped-out and a loss may be operated. As explained earlier, the operating leverage depends on fixed costs. If the fixed costs are higher, the higher would be firm's operating leverage and its operating risks. If operating leverage is high, it automatically means that the break-even point would also be reached at a high level of sales. Also, in the case of higher operating leverage, the margin of safety would be low. Therefore, it is preferred to operate sufficiently above break-even point to avoid the danger of fluctuations in sales and profits.

5.1.2 Financial Leverage

The financial leverage measures the relationship between the EBIT and the EPS and it reflects the effect of change in EBIT on the level of EPS. The FL measures the responsiveness of the EPS to a change in EBIT and is defined as % change in EPS divided by the % change in EBIT.

$$\text{Financial leverage} = \frac{\% \text{ Change in EPS}}{\% \text{ Change in EBIT}}$$

$$\text{Financial leverage} = \frac{\text{EBIT}}{\text{EBT (EBIT - I)}}$$

Illustration 5. XYZ Company has currently and equity share capital of s 40 lakhs consisting of 40,000 equity shares of Rs. 100 each. The management is planning to raise another Rs. 30 lakhs to finance a major programme of expansion through one of the four possible financing plans. The options are:

- Entirely through equity shares
- Rs. 15 lakhs in equity shares of Rs. 100 each and the balance in 8% debentures.
- Rs. 10 lakhs in equity shares of Rs. 100 each and the balance through long-term borrowings at 9% interest p.a.
- Rs. 15 lakhs in equity shares of Rs. 100 each and the balance through preference shares with 5% dividend.

The company's EBIT will be Rs. 15 lakhs. Assuming corporate tax of 50%. Determine the EPS and financial leverage.

	Financial Plan I	Financial Plan II	Financial Plan III	Financial Plan IV
EBIT	Rs. 15,00,000	Rs. 15,00,000	Rs. 15,00,000	Rs. 15,00,000
- Interest on debentures	-	1,20,000	-	-
- Interest on long term borrowings	-	-	1,80,000	-
EBT	Rs 15,00,000	13,80,000	13,20,000	15,00,000
- Tax @ 50%	7,50,000	6,90,000	6,60,000	7,50,000
EAT	7,50,000	6,90,000	6,60,000	7,50,000
- Pref Dividend	-	-	-	75,000
Earning for Equity	7,50,000	6,90,000	6,60,000	6,75,000

No. of Equity Shares	70,000	55,000	50,000	55,000
EPS	Rs. 10.71	12.55	13.20	12.27
DFL	1.00	1.087	1.136	1.00
$\left(\frac{\text{EBIT}}{\text{EBIT} - I} \right)$				

Significance of Financial Leverage

Planning of capital structure: the capital structure is concerned with the raising of long term funds both from the shareholders and long term creditors. A financial manager has to decide about the ratio between fixed cost funds and equity share capital. The effects of borrowing on cost of capital and financial risk have to be discussed before selecting a final capital structure.

Profit planning: the EPS is affected by the degree of financial leverage. If the profitability of the concern is increasing then the fixed cost funds will help in increasing the availability of profits for equity shareholders. Financial leverage is important for profit planning.

Composite Leverage: Both the financial and operating leverage magnify the revenue of the firm. Operating leverage reflects the income which is the result of the production. On the other hand, the financial leverage is the result of financial decisions. The composite leverage focuses the attention on the earnings income of the concern. The risk factor should be properly assessed by the management before using the composite leverage. The high financial leverage may be offset against low operating leverage vice versa.

$$\text{The degree of composite leverage} = \frac{\% \text{ Change in EPS}}{\% \text{ Change in sales}}$$

$$\text{Composite Leverage} = \text{Operating leverage} \times \text{Financial leverage}$$

Illustration6. a company has sales of Rs. 5,00,000, Variable cost of Rs. 3,00,000, fixed cost of Rs. 1,00,000 and long term loans of Rs. 4,00,000 at 10% rate of interest. Calculate composite leverage.

Solution:

$$\begin{aligned}\text{Operating leverage} &= \frac{\text{Contribution}}{\text{EBIT}} \\ &= \frac{\text{Rs } 2,00,000}{\text{Rs } 1,00,000} \\ &= 2 \\ \text{Financial leverage} &= \frac{\text{EBIT}}{\text{EBT}} \\ &= \frac{1,00,000}{60,000} \\ &= \frac{5}{3} \\ \text{Composite leverage} &= \text{Operating leverage} \times \text{financial leverage} \\ &= 2 \times \frac{5}{3} \\ &= \frac{10}{3}\end{aligned}$$

5.2 CAPITAL STRUCTURE

In order to run and manage the company, funds are needed. Right from the promotional stage up to end, finances play an important role in the company's life. If funds are inadequate, the business suffers and if the funds are not properly managed. The entire organization suffers. It is therefore; necessary that correct estimate of the current and future needs of the capital to be made to have an optimum capital structure.

The capital structure is made up of debt and equity securities and refers to permanent financing of a firm. It is composed of long-term debt, preference share capital and shareholder's funds.

According to Gestenberg: "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, reserves, shares and bonds"

Forms of capital structure

- a) Equity shares only
- b) Equity and preference Shares
- c) Equity Shares and Debentures
- d) Equity, preference and Debentures.

5.2.1 Factors Determining the Capital Structure

1. **Financial Leverage:** The use of long term fixed interest bearing debt and preference share capital along with equity share capital is called financial leverage. The use of long-term debt magnifies the earning per share if the firm yields a return higher than the cost

of debt. The earning per share also increases with use of preference share capital but due to the fact that interest is allowed to be deducted while computing tax, the leverage impact of debt is more.

2. **Growth and Stability of Sales:** The capital structure of a firm is highly influenced by the growth and stability of its sales. If the sales are expected to remain fairly stable, it can raise a higher level of debt. Stability of sales ensures that the firm will not face any difficulty in meeting its fixed commitments of interest payment and repayments of debts. If sales are highly fluctuating, it should not employ debt financing in its capitals structure.
3. **Cost of Capital:** Cost of capital refers to the minimum rate of return expected by its suppliers. The capital structure should also provide for the minimum cost of capital. Usually, debt is cheaper source of finance compared to preference and equity. Preference capital is cheaper then equity because of lesser risk involved.
4. **Cash flow Ability to Service the Debt:** A firm which shall be able to generate larger and stable cash inflows can employ more debt in its capital structure as compared to the one which has unstable and lesser ability to generate cash inflows. Whenever a firm wants to raise additional funds, it should estimate, project its cash inflows to ensure the coverage of fixed charges.
5. **Nature and Size of Firm:** Nature and size of firm also influences the capital structure. A public utility concern has different capital structure as compared to manufacturing concern. Public utility concern may employ more of debt because of stability and regularity of their earnings. Small companies have to depend upon owned capital, as it is very difficult for them to raise ling term loans on reasonable terms.
6. **Control:** whenever additional funds are required, the management of the firm wants to raise the funds without any loss of control over the firm. In case funds are raised through the issue of equity shares, the control of existing shares are diluted. Preference shareholders and debenture holders de not have the voting right. From the point of view of control, debt financing is recommended.
7. **Flexibility:** Capital structure of the firm should be flexible. I.e. it should be capable of the being adjusted according top the needs of changing conditions. A firm should arrange its capital structure in such a way that it can substitute one form of financing by other. Redeemable preference share capital and convertible debentures may be preferred on account of flexibility.
8. **Requirement of Investors:** It is necessary to meet the requirement of both institutional as well as private investors when debt financing is used. Investors who are over cautious prefer safety of investment, so debentures would satisfy such investors. Investors, who are less cautious in approach, will prefer preference share capital.
9. **Capital Market Conditions:** The choice of securities is also influenced by the market conditions. If share market is depressed the company should not issue equity share capital

as investors would prefer safety. In case of boom period, it would be advisable to issue equity share capital.

10. **Assets structure:** If fixed assets constitute a major portion of the total assets of the company, it may be possible for the company to raise more of long term debts.
11. **Period of Financial:** If finance is required for the limited period, 7 years, debentures should be preferred. If funds are needed for permanent basis, equity share capital is more appropriate.
12. **Purpose of financing:** If funds are required for the productive purpose, debt financing is suitable as interest can be paid out of profits generated from the investment.
13. **Costs of floatation:** The cost of financing a debt is generally less than the cost of floating equity and hence it may persuade the management to raise debt financing.
14. **Personal Consideration:** Management, which is experienced and very enterprising, does not hesitate to use more of debts in their financing as compared to less experienced and conservative management.
15. **Corporate Tax Rule:** High rate of corporate taxes on profits compels the companies' to prefer debt financing, because interest is allowed to deduct while computing taxable profits.

5.2.1 Theories of Capital Structure

Different kinds of theories have been propounded by different authors to explain the relationship between Capital structure and cost of capital and value of the firm. The important theories are:

1. Net income approach
2. Net Operating Income approach
3. The Traditional approach
4. Modigliani and Miller approach

Assumptions: In discussing the theories of capital structure, the following assumptions have been used:

1. There are only two sources of finance i.e. equity and debt
2. There would be no change in the investment decision.
3. That the firm has a policy of distributing the entire profits among the shareholders implying that there is no retained earnings.
4. The operating profits of the firm are given and nor expected to grow.
5. The business risk complexion of the firm is given and is not affected by the financing mix.
6. There is no corporate and personal tax.

In discussing the theories of capital structure, the following definitions and notations have been used:

E	=	Total market value of the Equity
D	=	Total market value of the Debt
V	=	Total market value of the firm i.e., D + E
I	=	Total Interest Payment
NOP	=	Net operating profit i.e. EBIT
NP	=	Net Profit or profit after Tax
Do	=	Dividend paid by the company at Time o
D1	=	Expected Dividend at the end of the year 1
Po	=	Current market price of the Share
P1	=	Expected Market Price of the share after 1 year.
Kd	=	After Tax Cost of Debt i.e. I/D
Ke	=	Cost of Equity i.e. D/Po
Ko	=	Overall Cost of Capital i.e. WACC

$$\frac{D}{D+E} + \frac{E}{D+E}$$

$$= \frac{NOP}{V} = \frac{EBIT}{V}$$

1. Net Income Approach: According to Durand, this theory states that there is a relationship between Capital structure and the value of the Firm and therefore the firm Can affects its value by increasing or decreasing the Debt proportion in the overall financing mix. This approach is based on the following assumptions.

1. The total Capital requirement of the firm is given and remains constant.
2. The cost of debt is less than cost of Equity.
3. Both Kd and Ke remain constant and increase in financial leverage i.e. use of more and debt financing in the capital structure does not affect the risk perception of the investors.

The line of argument in favor of Net Income approach is that as the proportion of Debt financing in capital structure increases, the proportion of an expensive source of fund increases. This results in the decrease in overall cost of capital leading to an increase in the value of the firm. The reason for assuming Kd less than Ke are that interest rates are usually lower than the dividend rates due to the element of risk and the benefit of tax as the interest is a deductible expense. The total market value of the firm on the basis of Net Income approach can be ascertained as below:

$$V = E + D$$

Where V = Total market value of the firm
 E = Total market value of the Equity
 = Earnings available to equity shareholder (NP)

Equity Capitalization rate (Ke)
 D = Total market value of the Debt.

Overall cost of Capital can be calculated as below:

$$K_o = \frac{EBIT}{V}$$

Illustration 7: The expected EBIT of a firm is Rs. 80,000. It has Rs. 2, 00,000 8% debentures. The equity capitalization rate of the company is 10%. Calculate the value of the firm and overall Capitalization rate according to Net Income Approach.

Solution:

EBIT	Rs.80, 000
Less: Interest (8% on 2, 00,000)	16,000
Net profit	64,000
Ke	10%
Value of Equity (E) (64,000/.10)	6, 40,000
Market Value of Debentures (D)	2, 00,000
Value of the Firm (V=E+D)	8, 40,000

$$\begin{aligned}
 \text{Overall Cost of Capital, } K_o &= \frac{EBIT}{V} \\
 &= \frac{80,000}{8, 40,000} * 100 \\
 &= 9.52\%
 \end{aligned}$$

a) Calculation of the Value of Firm if Debentures is raised to Rs. 3, 00,000

Solution:

EBIT	Rs.80, 000
Less: Interest (8% on 300,000)	24,000
Net profit	56,000
Ke	10%
Value of Equity (E) (56,000/. 10)	5, 60,000
Market Value of Debentures (D)	3, 00,000
Value of the Firm (V=E +D)	8, 60,000

$$\begin{aligned}
\text{Overall Cost of Capital, } K_o &= \frac{\text{EBIT}}{V} \\
&= \frac{80,000}{8,60,000} * 100 \\
&= 9.30\%
\end{aligned}$$

Thus it is evident that with the increase in debt financing, the value of the firm has increased and the overall cost of capital has decreased.

2. Net Operating Income Approach: The NOI approach is opposite to the NI approach. According to NOI approach, the market value of the firm depends upon the net operating profit or EBIT and the overall cost of Capital. The financing mix or the capital structure is irrelevant and does not affect the value of the firm. The NOI approach makes the following assumptions:

1. The K_d is taken as constant.
2. The K_o of the firm is also taken as constant.
3. The firm capitalizes the total earnings of the firm to find the value of the firm as a whole.
4. The use of more and more debt in capital structure increase the risk of the shareholders and thus results in the increase in cost of equity capital i.e. K_e . The increase in K_e is such as to completely offset the benefits of employing cheaper debts.

The value of a firm on the basis of NOI approach can be determined as below:

$$V = \frac{\text{EBIT}}{K_o}$$

Where, V = Value of the firm
 EBIT = Earning before interest and tax
 K_o = Overall cost of Capital

The market value of equity is residual value, calculated as

$$E = V - D$$

And the Cost of Equity is, $K_e = \frac{\text{EBIT} - \text{Interest}}{V - D}$

Thus financing Mix is irrelevant and does not affects the value of the firm.. The value of the firm remains for all types of debt – equity mix. Since there will be change in the risk of the shareholders as a result of change in Debt-Equity mix, therefore the K_e will be changing linearly with change in debt proportion.

Illustration 8: A firm has an EBIT of Rs. 2, 00,000 and belongs to a risk class of 10%. What is the value of equity capital if it employs 6% debt to the extent of 30%, 40%, 50% of the total capital fund of Rs. 10, 00,000.

Solution:

The effect of changing debt proportion on the cost of equity capital can be analyzed as follows:

	30% Debt	40% Debt	50% Debt
EBIT	Rs. 2, 00,000	2, 00,000	2, 00,000
Ko	10%	10%	10%
Value of the firm, V	Rs 20, 00,000	20, 00,000	20, 00,000
Value of 6% Debt, D	Rs. 3, 00,000	4, 00,000	5, 00,000
Value of Equity (E=V-D)	Rs. 17, 00,000	16, 00,000	15, 00,000
Net Profit(EBIT – Interest)	Rs. 1,82,000	1,76,000	1,70,000
Ke (NP/E)	10.7%	11%	11.33%

The Ke of 10.7%, 11% and 11.33% can be verified for different proportion of debt by calculating Ko as follows:

$$\begin{aligned}
 \text{For 30\% debt, Ko} &= \frac{\text{EBIT}}{V} \\
 &= \frac{2,00,000}{20,00,000} * 100 \\
 &= 10\%
 \end{aligned}$$

$$\begin{aligned}
 \text{For 40\% debt, Ko} &= \frac{\text{EBIT}}{V} \\
 &= \frac{2,00,000}{20,00,000} * 100 \\
 &= 10\%
 \end{aligned}$$

$$\begin{aligned}
 \text{For 50\% debt, Ko} &= \frac{\text{EBIT}}{V} \\
 &= \frac{2,00,000}{20,00,000} * 100 \\
 &= 10\%
 \end{aligned}$$

These calculations of cost of capital testify that the benefit of employment of more and more debt in capital structure is off set by the increase in equity capitalization rate.

3. Traditional Approach: The traditional approach also known as Intermediate approach is a compromise between the two extremes of Net income approach and Net operating income approach. According to this theory, the value of the firm can be increased initially or the cost of capital can be decreased by using more debt as the debt is the cheaper source if finance then

equity. Thus the optimum capital structure can be reached by a proper Debt Equity mix. Beyond a particular point, the cost of equity increases because increased debt increases the financial risk of the equity shareholders. The advantage of cheaper debt at this point of capital structure is offset by increased cost of equity. After this there comes a stage, when the increased cost of equity cannot be offset by the advantage of low cost debt. Thus the overall cost of debt decrease up to a certain point, remains more or less unchanged for \moderate increase in debt thereafter and increases or rises beyond a certain point.

Thus as per the traditional approach, a firm can be benefited from a moderate level of leverage when then advantages of using debt outweighed the disadvantages of increasing K_e . The overall cost of capital is a function of financial leverage. The value of the firm can be affected, by the judicious use of debt and equity in capital structure.

Illustration 9: Compute the market value of the firm, value of shares and average cost of capital from the following information:

Net operating income	2,00,000
Total Investment	10,00,000
Equity Capitalization rate	
• If firm uses no Debt	10%
• If firm uses Rs.4,00,000 Debentures	11%
• If firm uses Rs. 6,00,000 Debentures	13%

Assume that Rs.4, 00,000 debentures can be raised at 5% rate of interest whereas Rs. 6, 00,000 Debentures can be raised at 6% rate of interest.

Solution:

Computation of market value of firm, value of shares & the average cost of capital.

	No Debt	Rs. 4,00,000 5% Debentures	Rs.6,00,000 6% Debentures
Net Operating Income Less: Interest i.e. Cost of Debt	Rs.2,00,000	Rs.2,00,000 20,000	Rs.2,00,000 36,000
Earnings available to equity shareholders	Rs.2,00,000	Rs.1,80,000	Rs1,64,000
Cost of Equity, Ke	10%	11%	13%
Market value of shares, E	Rs20,00,000	Rs. 16,36,363	Rs. 12,61,538
Market value of Debentures, D	-	4,00,000	6,00,000
Market value of the firm (V = E+D)	Rs20,00,000	20,36,363	18,61,538
Cost of Capital ($K_o = \frac{EBIT}{V}$)	10%	9.8%	10.7%

It is clear from the above that if Debt of Rs. 4,00,000 is used the value of the firm increases and the overall cost of capital decreases, but if more debt is used to finance in place of equity i.e. Rs 6,00,000 debentures, the value of the firm decreases and the overall cost of capital increases.

4. Modigliani and Miller Approach: M&M Model, which was presented in 1958 on the relationship between the leverage, cost of capital and the value of the firm. The model emphasizes that under a given set of assumptions the capital structure and its composition has no effect on the value of the firm. There is nothing which may be called the optimal capital structure, the model is based on the following assumptions:

1. The capital markets are perfect and the complete information is available to all the investors free of cost.
2. The securities are infinitely divisible.
3. Investors are rational and well informed about the risk return of all the securities.
4. The personal leverage and the corporate leverage are perfect substitutes.

On the basis of the above assumptions, **the M&M Model derived that:**

1. The total value of the firm is equal to the capitalized value of the operating earnings of the firm.
2. The total value of the firm is independent of the financial mix.
3. The cut off rate of the investment decision of the firm depends upon the risk class to which the firm belongs, and thus is not affected by the financing pattern of this investment.

The M&M model argues that if two firms are alike in all respects except that they differ in respect of their financing pattern and their market value, then the investors will develop a tendency to sell the shares of the overvalued firm and to buy the shares of the undervalued firm. This, buying and selling pressure will continue till the two firms have same market value. Suppose there are two firms, LEV & Co. and ULE & Co.. These are alike and identical in all respect except that the LEV & Co. is a leveraged firm and has 10% debt of Rs. 30, 00,000 in its capital structure. On the other hand, the ULE & Co. is an unleveled firm and has raised funds only by the issue of the equity share capital. Both these firms have an EBIT of Rs. 10, 00,000 and the equity capitalization rate, K_e of 20%. The total value and WACC of both the firms may be ascertained as follows:

	LEV & Co.	ULE & Co.
EBIT	Rs 10, 00,000	Rs 10, 00,000
- Interest	3, 00,000	-
Net Profit	7, 00,000	10, 00,000
Equity Capitalization rate, K_e	20%	20%
Value of equity	35, 00,000	50, 00,000
Value of debt	30, 00,000	-
Total value, V	65, 00,000	50, 00,000
WACC, $K_o = EBIT/V$	15.38%	20%

Though both the firm has same EBIT still the Levered firm has a lower K_o and higher value as against the Unleveled firm. MM argues that this position cannot exist for a long and there will be equality in the value of the two firms through the Arbitrage process.

The Arbitrage Process: The arbitrage process refers to undertaking by a person of two related actions or steps simultaneously in order to derive the some benefits. E.g. buying by a speculator in one market and selling the same at the same time in some other market. The benefit from the arbitrage process may be in any form: increased income from the same level of investment or same income from lesser investment.

For e.g. suppose an investor is an holder of 10% equity share capital of LEV & Co. the value of his ownership right is Rs 3,50,000 i.e. 10% of Rs. 35,00,000. Further that out of the total net profits of Rs. 7,00,000 of LEV & Co., he is entitled to 10% i.e. Rs 70,000 per annum and getting a return of 20%. In order to avail the opportunity of making a profit, he now decides to convert his holdings from LEV & Co. to ULE & Co. he disposes off his holding in LEV & Co.

for Rs. 3,50,000, but in order to buy 10% holding of ULE & Co., he requires total funds of Rs. 5,00,000 whereas his proceeds are only Rs. 3,50,000. So he takes a loan @ 10 % of an amount equal to Rs. 3,00,000 and now he is having total funds of Rs. 6,50,000.

Out of the total funds of Rs. 6, 50,000 he invests Rs 5, 00,000 to buy 10% shares of ULE & Co. still he has funds of Rs. 1, 50,000 available with him. Assuming that the ULE & Co. continues to earn the same EBIT of Rs. 10, 00,000, the net returns available to the investors from the ULE & Co. are:

Profits available from ULE & Co.	Rs. 10, 00,000
(Being 10% of net profits)	
- Interest payable @ 10% on Rs 3, 00,000 Loan	<u>30,000</u>
Net Return	<u>70,000</u>

So the investor is able to get the same return of Rs. 70,000 from ULE & Co. also, which he was receiving as an investor of LEV & Co., but he has funds of Rs. 1,50,000 left over for investment elsewhere. Thus, his total income may now be more than Rs. 70,000. Moreover his risk is same as before. Though his new outlet i.e. ULE & Co. is an unleveled firm but the position of the investor is levered because he has created a homemade leverage by borrowing Rs. 3, 00,000 from the market. In fact, he has replaces the corporate leverage of LEV & C. by his personal leverage.

The above example shows that the investor, who originally owns a part of the levered firm and enters into the arbitrage process as above, will be better off selling the holding in levered firm and buying the holding in unleveled firm using his home made leverage.

MM Model argues that this opportunity to earn the extra income through arbitrage process will attract so many investors. The gradual increase in the sales of the shares of the levered firm, LEV & Co. will push its price down and the tendency to purchase the shares of the unleveled firm, ULE & Co. will drive its price up. The selling and purchasing pressures will continue until the market value of the two firms is equal. At this stage, the value of the levered and the unleveled firm and their cost of capital are same and thus the overall coat of capital is independent of the financial leverage.

5.3 COST OF CAPITAL

The cost of capital of a firm is the minimum rate of return expected by its investors. It is the weighted average cost of various sources of finance used by the firm. The capital used by the firm may be in the form of debt, preference capital, retained earnings and equity shares. The concept of cost of capital is very important in the financial management. Cost of capital for a firm may be defined as the cost of obtaining funds i.e., the average rate of return that the investors in a firm would expect for supplying funds to the firm.

According to Solomin Ezra: “Cost of capital is the minimum required rate of earning or the cut-off rate of capital expenditure.”

According to Jhon J: “The rate of return the firm requires from investment in order to increase the value of the firm in then market place.”

Features of Cost of capital

1. Cost of capital is not a cost as such. In fact, it is the rate of return that a firm requires earning from its projects.
2. It is the minimum rate of return. Cost of Capital of a firm is that minimum rate of return, which will at least maintain the market value of the firm.
3. It comprises of three elements.

$$K = r + b + f + o$$

Where,

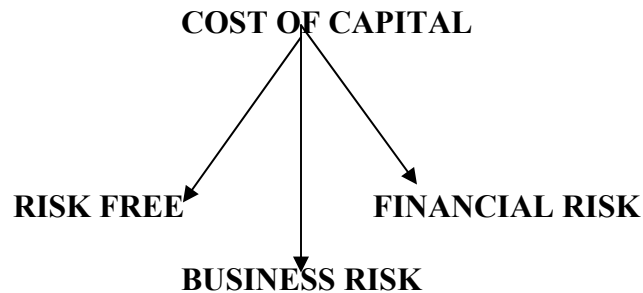
K= cost of capital

r = The expected normal rate of return at zero risk level

b= premium for business risk

f = premium for finance risk

o = other risk



5.3.1 Significance of Cost of Capital

1. **As Acceptance Criteria in Capital Budgeting:** The concept of cost of capital has assumed growing importance largely because of the needs to devise a rational mechanism for making the investment decision of the firm. Considering the cost of capital can make capital budgeting decisions. According to the present value method of capital budgeting, if the present value of expected returns from investment is greater than or equal to the cost of investment, the project may be accepted, otherwise it may be rejected.
2. **As a Determinant of Capital Mix in Capital Structure Decisions:** Financing the firm asset is the very crucial problem in every business and as a general rule there should be a proper mix of debt and equity capital in financing the firm's assets. While designing the optimal capital structure, the management has to keep in mind the objective of maximizing the value of the firm and minimizing the cost of capital.
3. **As a Basis for Evaluating the Financial Performance:** The concept of cost of capital can be used to evaluate the financial performance of the top management. The actual profitability of the project is compared the projected overall cost of capital and the actual cost of capital of funds raised to finance the project if the actual profitability of the project is more than the projected.

4. **As the Basis for taking other Financial decisions:** The cost of capital is also used in making other financial decisions such as dividend policy, capitalization of profits, making the right issue and working capital.

5.3.2 Computation of Cost of Capital

Computation of overall cost of capital of a firm involves:

Computation of cost of Specific source of finance

1. Cost of Debt
2. Cost of Preference Capital
3. Cost of Equity Capital
4. Cost of Retained earnings
5. Weighted average cost of capital

Computation of cost of Specific source of finance

Cost of Debt: The cost of debt is the rate of interest payable on debt.

Cost of perpetual / Irredeemable Debt
Before tax cost of debt

$$K_{db} = \frac{I}{P}$$

Where, K_{db} = before tax cost of debt
I = Interest
P = Principal

In case if debt is raised at premium or discount, P would be considered as the amount of net proceeds received from the issue and not the face value of the securities. The formula may be changed to

$$K_{db} = \frac{I}{NP}$$

Where NP = Net proceeds

After Tax Cost of Debt

$$K_{da} = K_{db} (1-t)$$

Where, K_{da} = after tax cost of debt
t = Rate of tax

Cost of Redeemable Debt: Usually the debt is issued to be redeemed after a certain period during the lifetime of the firm. Such a debt issue is known as Redeemable Debt. The cost of Redeemable debt may be computed as:

Before Tax Cost of Debt

$$K_{db} = \frac{I + \frac{1}{N} (RV-NP)}{\frac{I}{2} (RVP + NP)}$$

Where, I = Interest
 N = Number of years in which debt is to be redeemed
 RV = Redeemable value of debt
 NP = Net Proceeds

After Tax cost of debt, $K_{da} = K_{db} (1-t)$

$$K_{da} = \frac{I + \frac{1}{N} (RV-NP)}{\frac{I}{2} (RV + NP)} (1 - t)$$

Where T = Tax rate

Illustration 10: X Ltd. issues Rs. 50,000 8% debenture. The tax rate applicable is 50%. Compute the cost of debt capital, if debentures are issued (i) at par (ii) at Premium of 10% (iii) at discount of 10%

Solution:

$$\begin{aligned} K_{da} &= \frac{I}{NP} (1 - t) \\ &= \frac{4,000}{50,000} (1 - .50) = 4\% \\ &= \frac{4,000}{55,000} (1 - .50) = 3.6\% \\ &= \frac{4,000}{45,000} (1 - .50) = 4.4\% \end{aligned}$$

Illustration 11: A company issues Rs. 10,00,000; 10% debentures at a discount of 5%. The cost of floatation amounts to Rs. 30,000. The debentures are redeemable after 5 years. Calculate before tax and after tax cost of debt assuming a tax rate of 50%.

Solution:

Before tax Cost of Redeemable debt

$$\begin{aligned}
 K_{db} &= \frac{I + \frac{1}{N} (RV-NP)}{\frac{I}{2} (RVP + NP)} \\
 &= \frac{1,00,000 + \frac{1}{5} (10,00,000 - 9,20,000)}{\frac{1}{2} (10,00,000 + 9,20,000)} \\
 &= 12.08\%
 \end{aligned}$$

[NP = Rs. 10,00,000 – 50,000(discount) – 30,000(cost of floatation) = 9,20,000]

After tax Cost of Redeemable debt

$$\begin{aligned}
 K_{da} &= K_{db} (1-t) \\
 &= 12.08\% (1-.50) \\
 &= 6.875\%
 \end{aligned}$$

Illustration 12: A 5-year Rs.100 debenture of a firm can be sold for a net price of Rs. 96.50. The coupon rate of interest is 14% per annum, and the debenture will be redeemed at 5% premium on maturity. The firm's tax rate is 40%. Compute the after tax cost of debenture.

Solution:

$$\begin{aligned}
 K_{da} &= \frac{I + \frac{1}{N} (RV-NP)}{\frac{I}{2} (RVP + NP)} (1-t) \\
 &= \frac{14 + \frac{1}{5} (105-96.50)}{\frac{1}{2} (105 + 96.50)} (1 - .40) \\
 &= 10.025\%
 \end{aligned}$$

Cost of Preference Capital: A fixed rate of dividend is payable on preference shares. Though dividend is payable at the discretion of the Board of Directors and there is no legal binding to pay dividends yet it does not mean that preference capital is cost free. The cost of preference capital is the function of the dividend expected by its investors.

Formula:

$$K_p = \frac{I}{P \text{ or } NP}$$

Where, K_p = Cost of preference Capital
D = Dividend
P = Preference Share Capital
NP = Net Proceedings

Cost of Redeemable Preference Capital:

Sometimes redeemable preference Capital Shares is issued which can be redeemed or cancelled on maturity date. The cost of such capital can be computed as follows;-

$$K_{db} = \frac{D + \frac{1}{N} (MV - NP)}{\frac{I}{2} (MV + NP)}$$

Where, K_{pr} = Cost of redeemable Preference Capital
D = Annual Preference Dividend
MV = Maturity value of preference shares
NP = Net proceeds Preference shares

Illustration13. A company issues 1,000 7% preference shares of Rs. 100 each at a premium of 10% redeemable after 5years at par. Compute the cost of preference Capital.

Solution:

$$\begin{aligned} K_{db} &= \frac{D + \frac{1}{N} (MV - NP)}{\frac{I}{2} (MV + NP)} \\ &= \frac{7,000 + \frac{1}{5}(1,00,000 - 1,10,000)}{\frac{1}{2}(1,00,000 + 1,10,000)} \\ &= 4.76\% \end{aligned}$$

Cost of Equity Share Capital: The cost of the equity is the “maximum rate of return that the company must earn on equity financed portion of its investments in order to leave unchanged the market price of its stock.” The cost of equity capital is a function of the expected return by its investors. The cost of equity can be computed in the following ways:

Dividend Yield method or Dividend / Price Ratio method: According to this method the cost of equity capital is the discount rate that equates the present value of expected future dividend per share with the net proceeds of a share.

$$K_e = \frac{D}{NP}$$

OR

$$K_e = \frac{D}{NP}$$

Where, K_e = Cost of Equity Capital
 D = Expected Dividend per share
 NP = Net Proceeds per share
 MP = Market Price per share

Dividend Yield plus growth in dividend method: When the dividends of the firm are expected to grow at constant rate and the dividend pay out ratio is constant this method may be used to compute the cost of equity capital.

$$K_e = \frac{D_1}{NP} + G = \frac{D_0 (1+g)}{NP} + G$$

Where: K_e = Cost of Equity Capital
 D_1 = Expected Dividend Per Share at the end of the year
 NP = Net Proceeds per share
 G = Rate of Growth in dividends
 D_0 = previous year's dividend

Earning Yield Method:

According to this method, the cost of equity capital is the discount rate that equates the present values of expected future earnings per share with the net proceeds of share.

$$K_e = \frac{EPS}{NP \text{ or } MP}$$

Illustration 14: The shares of a company are selling at Rs. 40 per share and it had paid a dividend of Rs. 4 per share last year. The investor's market expects a growth rate of 5% per year.

- a) Compute the company's equity cost of capital;
- b) If the anticipated growth rate is 7% per annum, calculate the indicated market price per share.

Solution: (a)

$$\begin{aligned} K_e &= \frac{D_0 (1+g)}{MP} + g \\ &= \frac{4(1.05)}{40} + 5\% \\ &= 15.5\% \end{aligned}$$

(b)

$$K_e = \frac{D_1}{MP} + g$$

$$15.5\% = \frac{4(1.07)}{MP} + 7\%$$

$$15.55 - 7\% = \frac{4.28}{MP}$$

$$MP = \text{Rs. } 50.35$$

Cost of Retained Earnings: The cost of retained earnings may be considered as the rate of return which the existing shareholders can obtain by investing the after tax dividends in alternatives opportunity of equal qualities. It is thus the opportunity cost of dividends foregone by the shareholders.

$$K_r = \left[\frac{D}{NP} + G \right] (1 - t) (1 - b)$$

Where, $K_r = K_e (1-t) (1-b)$

D = Expected Dividends

G = Growth Rate

NP = Net Proceeds of equity issue

t = Tax rate

b = Cost of purchasing new securities

K_e = Rate of return available to shareholders.

Computation of Weighted Average Cost of Capital: Weighted average cost of capital is the average cost of various sources of financing. It is also known as Composite Cost of Capital, Overall Cost of capital, average accost of capital. Once the cost of specific source of capital is determined, weighted average cost of capital can be computed by putting weights to the specific costs of capital in proportion of the various sources of funds to the total. The CIMA defines the weighted average cost of capital “ as the average cost of company’s finance (equity, debentures, bank loans) weighted according to the proportion each elements bears to the total pool of capital, weighting is usually based on market valuation current yields and costs after tax.”

Weights can be given in the following way:

A. Historical or existing weights

i. Book value weights

ii. Market value weights

B. Marginal weights

Historical or existing weights: Historical or existing weights are the weights based on the actual or existing proportions of different sources in the overall capital structure. Such weighing system is based on the actual proportions at the time when the W ACC is being calculated. In other words, the weighing system is the proportions in which the funds have already been raised by the firm.

The use of historical weights is based on two important assumptions namely

- a) That the firm would raise the additional resources required for financing the investment proposals, in the same proportions in which they are appearing at present in the capital structure, and
- b) That the present capital structure is optimal and therefore the firm wants to continue with the same pattern in future also. However, there may be some problems in applying the historical weights. The firm may not be able to raise additional finance in the same proportion as existing one because of prevailing economic and capital market conditions, legal constraints or other factors.

Book Value Weights: The weights are said to be book value weights if the proportions of different sources are ascertained on the basis of the face values i.e., the accounting values. The book value weights can be easily calculated by taking the relevant information from the capital structure as given in the balance sheet of the firm.

The book value weights are considered as a sound weighing system as it is operational in nature and a firm may design its capital structure in terms of as it appears in the balance sheet. However, the book value weights system does not truly reflect the economic values. In fact, the weighing system should be market determined. The book value weights system is not consistent with the definition of the overall cost of capital, which is defined as the minimum rate of return needed to maintain the firm's market value. The book value weights ignore the market values.

Market Value Weights: The weights may also be calculated on the basis of the market value of different sources i.e., the proportion of each source at its market value. In order to calculate the market value weights, the firm has to find out the current market price of the securities in each category. However, a problem may arise if there is no market value available for a particular type of security.

The advantages of using the market value weights may be

1. The market value weights are consistent with the concept of maintaining market value in the definition of the overall cost of capital. The market value weights provide current estimate of the investor's required rate of return.
2. The market Value weights yield good estimate of the cost of capital that would be incurred should the firm require additional funds from the market.

However, the market values weights suffer from some limitations, as follows:

1. Not only that the market values of all types of securities issue have to be obtained but also that the market value of equity share is to be segregated into capital and retained earnings.
2. The market values are subject to change from time to time and so the concept of optimal capital structure in terms of market values does not remain relevant any longer. External

factors, which affect the market value, will affect the cost of capital also and therefore, the investment decision process will be influenced by the external factors.

The WACC based on market value will generally be greater than the WACC based on book values. The reason being that the equity capital having higher specific cost of capital usually has market value above the book value. However, this is not the rule.

Marginal Weights: The other system of assigning weights is the marginal weights system. The marginal weights refer to the proportions in which the firm wants or intends to raise funds from different sources. In other words, the proportions in which additional funds required to finance the investment proposals will be raised are known as marginal weights. So, in case of marginal weights, the firm in fact, calculates the actual WACC of the incremental funds. Theoretically, the system of marginal weights seems to be good enough as the return from investment will be compared with the actual cost of funds. Moreover, if a particular source which has been used in the past but is not being used now to raise additional funds, or cannot be used now for one or the other reason then why should it be allowed to enter the decision process even through the weighing system.

However, there are some shortcomings of the marginal weights system. In particular, the capital budgeting decision process requires the long-term perspective whereas the marginal weights ignore this. In the short run, the firm may be tempted to raise funds only from cheaper sources and thereby accepting more & more proposals. However, later on when other sources will have to be resorted to, some projects, which should have been accepted otherwise, will be rejected because of higher cost of capital.

FORMULA

$$K_w = \frac{\sum XW}{W}$$

Where, K_w = weighted average cost of capital
 X = Cost of specific source of finance
 W = Weight, proportion of specific source of finance

Illustration 15: A firm has the following capital structure and after tax cost for the different sources of funds used:

Source of funds	Amount(Rs.)	Proportion (%)	After tax cost (%)
Debt	15,00,000	25	5
Preference capital	12,00,000	20	10
Equity Capital	18,00,000	30	12
Retained Earnings	15,00,000	25	11
Total	60,00,000	100	

You are required to compute the weighted average cost of capital.

Solution:

Computation of weighted average cost of capital (WACC)			
Source of funds	Proportion (%) (W)	After tax cost (%) (X)	Weighted cost % (XW)%
Debt	25	5	1.25
Preference capital	20	10	2.00
Equity Capital	30	12	3.60
Retained Earnings	25	11	<u>2.75</u>
Weighted Average Cost of Capital			<u>9.60</u>

Illustration 16.: A company has the following capital structure and after tax costs of different sources of Capital used:

Type of Capital	Book Value	Proportion (%)	After-tax cost (%)
Debt	Rs. 4, 50,000	30	7
Preference	3, 75,000	25	10
Equity	<u>6, 75,000</u>	<u>45</u>	15
	15, 00,000	100	

a) Determine the weighted average cost of capital using book Value weights

b) The firm wishes to raise further Rs. 6, 00,000 for the expansion of the project as below:

Debt	Rs. 3, 00,000
Preference Capital	Rs. 1, 50,000
Equity Capital	Rs. 1, 50,000

Assuming that specific costs do not change, compute the weighted marginal cost of capital.

Solution:

(a) Computation of weighted average cost of capital (WACC)			
Source of funds	Proportion (%) (W)	After tax cost (%) (X)	Weighted cost % (XW)%
Debt	30	7	2.10
Preference capital	25	10	2.50
Equity Capital	45	15	6.75
WACC			11.35%

(b) Computation of weighted Marginal cost of capital (WMCC)			
Source of funds	Proportion (%) (W)	After tax cost (%) (X)	Weighted cost % (XW)%
Debt	50	7	3.50
Preference capital	25	10	2.50
Equity Capital	25	15	3.75
WACC			9.75%

5.3.3 EBIT-EPS Analysis

It can be explained with the help of following example. In this case the financial plan under option 4 seems to be the best as it is giving the highest EPS of RS 38. In this plan, the firm has applied maximum financial leverage and the results are evident. The firm is expecting to earn an EBIT of Rs. 1, 50,000 on the total investment of Rs. 5,00,000 resulting in 30% return .on an after tax basis , this return comes to 15% i.e. $30\% \times (1 - .5)$. However the after tax cost of 10% debentures is 5% i.e. $10\% (1 - .5)$ and the after tax cost of preference shares is only 12% only. In the option 4, the firm has employed 50% debt,25% preference shares and 25 % equity share capital , and the benefits of employing 50% debt (which has after tax cost of 5% only) and 25% preference shares (having cost of 12% only) are extended to the equity shareholders. Therefore the firm is expecting an EPS of Rs 38.

In case, the company opts for all equity financing only, the EPS is Rs 15 which is just equal to the after tax return on investment. However in option 2, where 50% funds are obtained by an issue of 12% preference shares , the 3% extra is available to the equity shareholders resulting in increase in of EPS fro m Rs 15 to Rs 18 and then to rs 21.50 . This gradual increase in EPS is different plans from Rs 15 to Rs 18 and then to Rs 21.5 and ultimately to Rs 38 is not without reasons. The company is expecting this increase in EPS when more and more preference shares and debt financing is availed because the after tax cost of preference shares and debenture are less than the after tax return on total investment. What happens if the return on investment (EBIT as a% of funds employed) is reduced from 30% to 18%? The results are shown in the following table.

Option 1	Option 2	Option 3	Option 4	
EBIT	Rs 90,000	Rs 90,000	Rs 90,000	Rs 90,000
-interest	---	-----	12,500	25,000
Profit before tax	90,000	90,000	77,500	65,000
-tax @50%	45,000	45,000	38,750	32,500
Profit after tax	45,000	45,000	38,750	32,500
-Preference dividend	---	30,000	15,000	15,000
Profit for equity share	45,000	15,000	23,750	17,500
No. of equity shares (of Rs. 100 each)	5,000	2500	2500	1250
EPS	9	6	9.5	14

In this case the EPS is under option 1 is Rs 9 and this is just equal to the after tax return on investment of 9%.. This is because the firm is an all equity firm. However if the company opts for 50% financing from preference shares, the EPS reduces to Rs 6.

The above example shows that the behavior of the EPS as result of change in financing pattern depends upon the ROI of the firm. Whenever the ROI of the firm is more than the cost of debt, the financial leverage is said to be favorable. Higher the degree of financial leverage factor, the larger will be the earnings available to equity shareholders.

Varying EBIT with Different Patterns: The assumption of constant EBIT is unrealistic and imaginary. In practice, a firm may not be able to correctly estimate the EBIT level whatsoever thorough analysis might have been made in this respect. The EBIT level may vary and the actual EBIT may come out to be different than the expected one. Therefore the effect of financial leverage on the EPS should be analyzed under the assumption of varying EBIT also. The following example will illustrate this point.

Suppose, there are three firms X & co., Y & co. and Z & co. these firms are alike in all respects except the leverage. The financial position of three firms is presented as follows:

Capital structure	X & Co.	Y & Co.	Z & Co.
Share capital (of RS. 100 Each)	2, 00,000	1, 00,000	50,000
6% debenture	----	1, 00,000	1, 50, 000
Total	2, 00,000	2, 00,000	2, 00,000

These firms are expected to earn a ROI at different levels depending upon the economic conditions. In normal conditions, the ROI is expected to be 8% which may fluctuate by 3% on either side on the occurrence of bad economic conditions or good economic conditions.

	poor eco. Cond.	Normal eco. Cond	Good eco. cond
Total assets	Rs 2,00,000	Rs. 2,00,000	Rs. 2,00,000
ROI	5%	8%	11%
EBIT	Rs. 10,000	Rs. 16,000	Rs. 22,000

X & co.(no financial leverage)

EBIT	10,000	16,000	22,000
-Interest	-----	-----	-----
Profit before tax	10,000	16,000	22,000
-Tax @ 50%	5,000	8,000	11,000
Profit after tax	5,000	8,000	11,000
Number of shares	2,000	2,000	2,000
EPS (Rs)	2.5	4	5.5

Y & Co.(50% leverage)

EBIT	10,000	16,000	22,000
-Interest	6,000	6,000	6,000
Profit before tax	4,000	10,000	16,000
-Tax @ 50%	2,000	5,000	8,000
Profit after tax	2,000	5,000	8,000
Number of shares	1,000	1,000	1,000
EPS (Rs)	2	5	8

Z & Co. (75% leverage)

EBIT	10,000	16,000	22,000
-Interest	9,000	9,000	9,000
Profit before tax	1,000	7,000	13,000
-Tax @ 50%	500	3,500	6,500
Profit after tax	500	3,500	6,500
Number of shares	500	500	500
EPS (Rs)	1	7	13

On the basis of the figures given above, it may be analyzed as to how the financial leverage affects the returns available to the shareholders under varying EBIT levels.

5.4 DIVIDEND POLICY

The term dividend refers to that part of profits of a company which is distributed by the company among its shareholders. It is the reward of the shareholders for investments made by them in the shares of the company. The investors are interested in earning the maximum return on their investments and to maximize their wealth. A company, on the other hand, needs to provide funds to finance its long-term growth. If a company pays out as dividend most of what it earns, then for business requirements and further expansion it will have to depend upon outside resources such as issue of debt or new shares. Dividend policy of a firm, thus affects both the long-term financing and the wealth of shareholders.

Dividend Decision and Value of Firms: The value of the firm can be maximized if the shareholders' wealth is maximized. There are conflicting views regarding the impact of dividend decision on the valuation of the firm. According to one school of thought, dividend decision does not affect the shareholders' wealth and hence the valuation of the firm. On the other hand, according to the other school of thought, dividend decision materially affects the shareholders' wealth and also the valuation of the firm. We will discuss below the views of the two schools of thought under two groups:

1. The Irrelevance Concept of Dividend or the Theory of Irrelevance, and
2. The Relevance Concept of Dividend or the Theory of Relevance.

The Irrelevance Concept of Dividend or the Theory of Irrelevance:

Residual Approach: According to this theory, dividend decision has no effect on the wealth of the shareholders or the prices of the shares, and hence it is irrelevant so far as the valuation of the firm is concerned. This theory regards dividend decision merely as a part of financing decision because the earnings available may be retained in the business for re-investment. But, if the funds are not required in the business they may be distributed as dividends. This theory assumes that investors do not differentiate between dividends and retentions by the firm. Their basic desire is to earn higher return on their investment. In case the firm has profitable investment opportunities giving a higher rate of return than the cost of retained earnings, the investors would be content with the firm retaining the earnings to finance the same. However, if the firm is not in

a position to find profitable investment opportunities, the investors would prefer to receive the earnings in the form of dividends. Thus, a firm should retain the earnings if it has profitable investment opportunities otherwise it should pay them as dividends.

Modigliani and Miller Approach (MM Model): Modigliani and Miller have expressed in the most comprehensive manner in support of the theory of irrelevance. They maintain that dividend policy has no effect on the market price of the shares and the value of the firm is determined by the earning capacity of the firm or its investment policy. The splitting of earnings between retentions and dividends, may be in any manner the firm likes, does not affect the value of the firm. As observed by M.M. "Under conditions of perfect capital markets, 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 the shares."

Assumptions of MM Hypothesis

- a) There are perfect capital markets.
- b) Investors behave rationally.
- c) Information about the company is available to all without any cost.
- d) There are no floatation and transaction costs.
- e) No investor is large enough to affect the market price of shares.
- f) There are no taxes or there are no differences in the tax rates applicable to dividends and capital gains.
- g) The firm has a rigid investment policy.

The Argument of MM: The argument given by MM in support of their hypothesis is that whatever increase in the value of the firm results from the payment of dividend, will be exactly off set by the decline in the market price of shares because of external financing and there will be no change in the total wealth of the shareholders. For example, if a company, having investment opportunities, distributes all its earnings among the shareholders, it will have to raise additional funds from external sources. This will result in the increase in number of shares or payment of interest charges, resulting in fall in the earnings per share in the future. Thus whatever a shareholder gains on account of dividend payment is neutralized completely by the fall in the market price of shares due to decline in expected future earnings per share. To be more specific, the market price of a share in the beginning of a period is equal to the present value of dividends paid at the end of the period plus the market price of the shares at the end of the period. This can be put in the form of the following formula:

$$P_0 = \frac{D_1 + P_1}{1 + K_e}$$

Where, P_0 = Market price per share at the beginning of the period, or prevailing market price of a share.

D_1 = Dividend to be received at the end of the period.

P_1 = Market price per share at the end of the period.

K_e = Cost of equity capital or rate of capitalization.

The value of P_1 can be derived by the above equation as under:

$$P_1 = P_0 (1 + K_e) - D_1$$

The MM hypothesis can be explained in another form also presuming that investment required by the firm, on account of payment of dividends is financed out of the new issue of equity shares.

In such a case, the number of shares to be issued can be computed with the help of the following equation:

$$m = \frac{I(E - n D_1)}{P_1}$$

Further, the value of the firm can be ascertained with the help of the following formula :

$$n P_0 = \frac{(n + m) P_1 - (I - E)}{1 + k_e}$$

Where, m = number of shares to be issued.

I = Investment required.

E = Total earnings of the firm during the period.

P_1 = Market price per share at the end of the period.

K_e = Cost of equity capital.

n = number of shares outstanding at the beginning of the period.

D_1 = Dividend to be paid at the end of the period.

$n P_0$ = Value of the firm

Let us take the following illustration to illustrate MM hypothesis of irrelevance of dividend to the valuation of firm.

Illustration 17: ABC Ltd. belongs to a risk class for which the appropriate capitalization rate is 10%. It currently has outstanding 5,000 shares selling at Rs.100 each. The firm is contemplating the declaration of dividend of Rs.6 per share at the end of the current **financial year**. **The company expects to have a net income of Rs.50, 000 and has a proposal for making new investments of Rs.1,00,000.** Show that under the MM hypothesis, the payment of dividend does not affect the value of the firm.

Solution:

(A) Value of the firm when dividends are paid:

(i) Price of the share at the end of the current financial year

$$\begin{aligned} P_1 &= P_0 (1 + K_e) - D_1 \\ &= 100(1 + .10) - 6 \\ &= \text{Rs. } 104 \end{aligned}$$

(i) Numbers of shares to be issued

$$\begin{aligned} m &= \frac{I(E - n D_1)}{P_1} \\ &= \frac{1,00,000 - (50,000 - 5,000 \times 6)}{104} \end{aligned}$$

$$\begin{aligned}
&= \frac{80,000}{104} \\
(ii) \quad \text{Value of the firm} \\
n P_0 &= \frac{(n + m) P_1 - (I - E)}{1 + k_e} \\
&= \frac{\left[5000 + \frac{80,000}{104} \right] \times 104 - (1,00,000 - 50,000)}{1 + .10} \\
&= \frac{6,00,000 - 50,000}{1.10} \\
&= \text{Rs. } 5,00,000
\end{aligned}$$

(B) Value of the firm when dividends are not paid:

(i) Price per share at the end of the current financial year

$$\begin{aligned}
P_1 &= P_0 (1 + K_e) - D_1 \\
&= 100 (1 + .10) - 0 \\
&= \text{Rs. } 110
\end{aligned}$$

(ii) Numbers of shares to be issued

$$\begin{aligned}
m &= \frac{I(E - n D_1)}{P_1} \\
&= \frac{1,00,000 - (50,000 - 0)}{110} \\
&= \frac{50,000}{110}
\end{aligned}$$

(iii) Value of the firm

$$\begin{aligned}
n P_0 &= \frac{(n + m) P_1 - (I - E)}{1 + k_e} \\
&= \frac{\left[5000 + \frac{50,000}{110} \right] \times 1.10 - (1,00,000 - 50,000)}{1 + .10} \\
&= \frac{6,00,000 - 50,000}{1.10} \\
&= \text{Rs. } 5,00,000
\end{aligned}$$

Hence, whether dividends are paid or not value of the firm remains same i.e. Rs. 500,000

Criticism of MM Approach

1. Perfect capital market does not exist in reality
2. Information about the company is not available to all the persons.

3. The firms have to incur flotation costs while issuing 'securities.
4. Taxes do exist and there is normally different tax treatment for dividends and capital gains.
5. The firms do not follow a rigid investment policy.
6. The investors have to pay brokerage, fees, etc. while doing any transaction.
7. Shareholders may prefer current income as compared to further gains.

The Relevance Concept of Dividend Or The Theory Of Relevance: The other school of thought on dividend decision holds that the dividend decisions considerably affect the value of the firm. The advocates of this school of thought include Myron Gordon, James Walter and Richardson. According to them dividends communicate information to the investors about the firms' profitability and hence dividend decision becomes relevant. Those firms which pay higher dividends, will have greater value as compared to those which do not pay dividends or have a lower dividend payout ratio. We have examined below two theories representing this notion:

(i) Walter's Approach, and (ii) Gordon's Approach

Walter's Approach: Prof. Walter's approach supports the doctrine that dividend decisions are relevant and affect the value of the firm. Prof. Walter's model is based on the relationship between the firms's (i) return on investment. i.e. r . and (ii) the cost of capital or the required rate of return, i.e., k .

According to Prof. Walter, **If $r > k$** i.e., if the firm earns a higher rate of return on its investment than the required rate of return, the firm should retain the earnings. Such 'firms are termed as growth firm and the optimum pay-out would be zero in their case.

In case of declining firms which do not have profitable investments, i.e., **where $r < k$** , the shareholders would stand to gain if the firm distributes its earnings. For such firms, the optimum pay-out would be 100% and the firms should distribute the entire earnings as dividends.

In case of normal firms **where $r = k$** , the dividend policy will not affect the market value of shares as the shareholders will get the same return from the firm as expected by them. For such firms, there is no optimum dividend payout and the value of the firm would not change with the change in dividend rate.

Assumption of Walter's Model

- a) The investments of the firm are financed through retained earnings only and the firm does not use external sources of funds.
- b) The internal rate of return (r) and the cost of capital (k) of the firm are constant.
- c) Earnings and dividends do not change while determining the value.
- d) The firm has a very long life.

Walter's formula for determining the value of a share:

$$P = \frac{D + r \frac{(E + D)}{K_e}}{K_e}$$

Or
$$p = \frac{D}{K_e} + \frac{r(E-D)}{K_e}$$

Where,
 P = Price of Equity Share
 D = Initial dividend per share
 Ke = Cost of Equity capital
 r = Internal rate of return
 E = Earning per share

Let us illustrate this with following :

Illustration 18: The following information is available in respect of a firm:

Capitalization Rate = 10%
 Earning per share = Rs.50
 Assumed rate of return on investment:
 i) 12%
 ii) 8%
 iii) 10%

Show the effect of dividend policy on market price of shares applying walter's model when dividend pay out ratio is i) 0% ii) 40% iii) 100%

Solution:

$$p = \frac{D}{K_e} + \frac{r(E-D)}{K_e}$$

Effect of dividend policy on market price of shares

(i) = 12%	(ii) r = 8%	(iii)r = 10%
a) When dividend payout ratio is 0%.		
$P = \frac{0}{.10} + \frac{.12(50 - 0)}{.10}$ = Rs.600	$P = \frac{0}{.10} + \frac{.08(50 - 0)}{.10}$ = Rs.400	$P = \frac{0}{.10} + \frac{.10(50 - 0)}{.10}$ = Rs.500
b) When dividend payout ratio is 40%.		
$P = \frac{20}{.10} + \frac{.12(50 - 20)}{.10}$ = Rs.560	$P = \frac{20}{.10} + \frac{.08(50 - 20)}{.10}$ = Rs.440	$P = \frac{20}{.10} + \frac{.10(50 - 20)}{.10}$ = Rs.500
c) When dividend payout ratio is 100%		
$P = \frac{50}{.10} + \frac{.12(50 - 50)}{.10}$ = Rs.500	$P = \frac{50}{.10} + \frac{.08(50 - 50)}{.10}$ = Rs.500	$P = \frac{50}{.10} + \frac{.10(50 - 50)}{.10}$ = Rs.500

Conclusion: when,

$r > k$, the company should retain the profits, i.e., when $r = 12\%$, $k = 10\%$;
 r is 8% , i.e., $r < k$, the pay-out should be high; and
 r is 10% ; i.e. $r = k$; the dividend pay-out does not affect the price of the share.

Criticism of Walter's Model

The basic assumption that investments are financed through retained earnings only is seldom true in real world. Firms do raise funds by external financing. The internal rate of return, i.e. r , also does not, remain constant. As a matter of fact, with increased investment the rate of return also changes. The assumption that cost of capital (k) will remain constant also does not hold good. As a firm's risk pattern does not remain constant, it is not proper to assume that k will always remain constant.

Gordon's Approach: Myron Gordon has also developed a model on the lines of Prof. Walter suggesting that dividends are relevant and the dividend decision of the firm affects its value. His basic valuation model is based on the following assumptions:

- a) The firm is an all equity firm.
- b) No external financing is available or used. Retained earnings are the only source of finance.
- c) The rate of return on the firm's investment r , is constant.
- d) The retention ratio, b , is constant. Thus, the growth rate of the firm $g = br$, is also constant.
- e) The cost of capital for the firm remains constant and it is greater than the growth rate, i.e. $k > br$.
- f) The firm has perpetual life.
- g) Corporate taxes do not exist.

According to Gordon, the market value of a share is equal to the present value of future stream of dividends. Thus,

$$P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots$$

Gordon's basic valuation formula can be simplified as under:

$$P = \frac{E(1-b)}{K_e - br}$$

Or, $P_0 = \frac{D_1}{K_e - g} = \frac{D_0(1+g)}{K_e - g}$

Where, P = Price of shares

E = Earnings per share
 b = Retention ratio
 K_e = Cost of equity capital
 $br = g$ = Growth rate in r , i.e. rate of return on investment
 D_0 = Dividend per share
 D_1 = Expected dividend at the end of year 1.

The implications of Gordon's basic valuation model may be summarized as below:

1. When $r > k$, the price per share increases as the dividend payout ratio decreases. Thus, growth firm should distribute smaller dividends and should retain maximum earnings.
2. When $r = k$, the price per share remains unchanged and is not affected by dividend policy. Thus, for a normal firm there is no optimum dividend payout.
3. When $r < k$, the price per share increases as the dividend payout ratio increases. Thus, the shareholders of declining firm stand to gain if the firm distributes its earnings. For such firms, the optimum payout would be 100%.

Illustration 19: The following information is available in respect of the rate of return on investment (r), the cost of capital (k) and earning per share (E) of ABC Ltd.

Rate of return on investment (r) = (i) 15% (ii) 12% and (iii) 10%

Cost of capital (K) = 12%

Earning per share (E) = Rs. 10

Determine the value of its shares using Gordon's Model assuming the following:

	<i>D/P ratio (1- b)</i>	<i>Retention ratio (b)</i>
(a)	100	0
(b)	80	20
(c)	40	60

Solution:

$$P = \frac{E(1-b)}{K_e - br}$$

Dividend policy and value of shares

(i) $r = 15\%$	(ii) $r = 12\%$	(iii) $r = 10\%$
a) when D/P ratio is 100%		
$P = \frac{10(1-0)}{0.12 - (0)(.15)}$ $= \text{Rs.}83.33$	$P = \frac{10(1-0)}{0.12 - (0)(.12)}$ $= \text{Rs.}83.33$	$P = \frac{10(1-0)}{0.12 - (0)(.10)}$ $= \text{Rs.}83.33$
b) when D/P ratio is 80%		
$P = \frac{10(1-0.20)}{0.12 - (0.20)(.15)}$ $= \text{Rs.}88.89$	$P = \frac{10(1-0.20)}{0.12 - (0.20)(.12)}$ $= \text{Rs.}83.33$	$P = \frac{10(1-0.20)}{0.12 - 0.20)(.12)}$ $= \text{Rs.}80$
c) when D/P ratio is 40%		
$P = \frac{10(1-0.60)}{0.12 - (0.60)(.15)}$ $= \text{Rs.}133.33$	$P = \frac{10(1-0.60)}{0.12 - (0.60)(.12)}$ $= \text{Rs.}83.33$	$P = \frac{10(1-0.60)}{0.12 - (0.60)(.10)}$ $= \text{Rs.}66.67$

Gordon's Revised Model: The basic assumption in Gordon's Basic Valuation Model that cost of capital (k) remains constant for a firm is not true in practice. Thus, Gordon revised his basic model to consider risk and uncertainty. In the revised model, he suggested that even when $r = k$, dividend policy affects the value of shares on account of uncertainty of future, shareholders discount future dividends at a higher rate than they discount near dividends. That is there is a two fold assumption, viz. (i) investors are risk averse, and (ii) they put a premium on a certain, return and discount/penalize uncertain returns. Because the investors are rational and they want to avoid risk, they prefer near dividends than future dividends. Stockholders often act on the principle that a bird in hand is worth than two in the bushes and for this reason are willing to pay a premium for the stock with the higher dividend rate, just as they discount the one with the lower rate. Thus, if dividend policy is considered in the context of uncertainty, the cost of capital cannot be assumed to be constant and so firm should set a high dividend payout ratio and offer a high dividend yield in order to minimize its cost of capital.

5.4.2 Determinants of Dividend Policy

The payment of dividend involves some legal as well as financial considerations. The following are the important factors which determine the dividend policy of a firm:

1. **Legal Restrictions:** Legal provisions relating to dividends in the Companies Act, 1956 lay down a framework within which dividend policy is formulated. These provisions require that:
 - Dividend can be paid only out of current profits or past profits after providing for depreciation or out of the moneys provided by Government for the payment of dividends in pursuance of a guarantee given by the Government.
 - A company providing more than ten per cent dividend is required to transfer certain percentage of the current year's profits to reserves.
 - The dividends cannot be paid out of capital, because it will amount to reduction of capital adversely affecting the security of its creditors.
2. **Magnitude and Trend of Earnings:** As dividends can be paid only out of present or past year's profits, earnings of a company fix the upper limits on dividends. The dividends should, generally, be paid out of current year's earnings only as the retained earnings of the previous years become more or less a part of permanent investment in the business to earn current profits. The past trend of the company's earnings should also be kept in consideration while making the dividend decision.
3. **Desire and Type of Shareholders:** Desires of shareholders for dividends depend upon their economic status. Investors, such as retired persons, widows and other economically weaker persons view dividends as a source of funds to meet their day-to-day living expenses. To benefit such investors, the companies should pay regular dividends. On the other hand, a wealthy investor in a high income tax bracket may not benefit by high current dividend incomes. Such an investor may be interested in lower current dividends and high capital gains.

4. **Nature of Industry:** Certain industries have a comparatively steady and stable demand irrespective of the prevailing economic conditions. For instance, people used to drink liquor both in boom as well as in recession. Such firms expect regular earnings and hence can follow a consistent dividend policy. On the other hand, if the earnings are uncertain, as in the case of luxury goods, conservative policy should be followed.
5. **Age of the Company:** The age of the company also influences the dividend decision of a company. A newly established concern has to limit payment of dividend and retain substantial part of earnings for financing its future growth and development, while older companies which have established sufficient reserves can afford to pay liberal dividends.
6. **Future Financial Requirements:** The management of a concern has to reconcile the conflicting interests of shareholders and those of the company's financial needs. If a company has highly profitable investment opportunities it can convince the shareholders of the need for limitation of dividend to increase the future earnings.
7. **Economic Policy:** The dividend policy of a firm has also to be adjusted to the economic policy of the Government as was the case when the Temporary Restriction on Payment of Dividend Ordinance was in force. In 1974 and 1975, companies were allowed to pay dividends not more than 33 per cent of their profits or 12 per cent on the paid-up value of the shares, whichever was lower.
8. **Taxation Policy:** The taxation policy of the Government also affects the dividend decision of a firm. A high or low rate of business taxation affects the net earnings of company (after tax) and thereby its dividend policy. Similarly, a firm's dividend policy may be dictated by the income-tax status of its shareholders. If the dividend income of shareholders is heavily taxed being in high income bracket, the shareholders may forego cash dividend and prefer bonus shares and capital gains.
9. **Inflation:** Inflation acts as a constraint in the payment of dividends. When prices rise, funds generated by depreciation would not be adequate to replace fixed assets, and hence to maintain the same assets and capital intact, substantial part of the current earnings would be retained. Otherwise, imaginary and inflated book profits in the days of rising prices would amount to payment of dividends much more than warranted by the real profits, out of the equity capital resulting in erosion of capital.
10. **Control Objectives:** As in case of a high dividend pay-out ratio, the retained earnings are insignificant and the company will have to issue new shares to raise funds to finance its future requirements. The control of the existing shareholders will be diluted if they cannot buy the additional shares issued by the company.
11. **Requirements of Institutional Investors:** Dividend policy of a company can be affected by the requirements of institutional investors such as financial institutions, banks insurance corporations, etc. These investors usually favor a policy of regular payment of cash dividends and stipulate their own terms with regard to payment of dividend on equity shares.

12. **Stability of Dividends:** Stability of dividend simply refers to the payment of dividend regularly and shareholders, generally, prefer payment of such regular dividends. Some companies follow a policy of constant dividend per share while others follow a policy of constant payout ratio and while there are some other who follows a policy of constant low dividend per share plus an extra dividend in the years of high profits.
13. **Liquid Resources:** The dividend policy of a firm is also influenced by the availability of liquid resources. Although, a firm may have sufficient available profits to declare dividends, yet it may not be desirable to pay dividends if it does not have sufficient liquid resources. If a company does not have liquid resources, it is better to declare *stock-dividend* i.e. issue of bonus shares to the existing shareholders. The issue of bonus shares also amounts to distribution of firm's earnings among the existing shareholders without affecting its cash position.

5.4.3 Types of Dividend Policy

The various types of dividend policies are discussed as follows:

1. **Regular Dividend Policy:** Payment of dividend at the usual rate is termed as regular dividend. The investors such as retired persons, widows and other economically weaker persons prefer to get regular dividends. **Advantages of regular dividend policy:** (i) It establishes a profitable record of the company. (ii) It creates confidence amongst the shareholders. (iii) It aids in long-term financing and renders financing easier. (iv) It stabilizes the market value of shares. (v) The ordinary shareholders view dividends as a source of funds to meet their day-to-day living expenses. (vi) If profits are not distributed regularly and are retained, the shareholders may have to pay a higher rate of tax in the year when accumulated profits are distributed. However, it must be remembered that regular dividends can be maintained only by companies of long standing and stable earnings.
2. **Stable Dividend Policy:** The term 'stability of dividends' means consistency in the stream of dividend payments. In more precise terms, it means payment of certain minimum amount of dividend regularly. A stable dividend policy may be established in any of the following three forms: **(i) Constant dividend per share.** Policy of paying fixed dividend per share irrespective of the level of earnings year after year. Such firms, usually, create a 'Reserve for Dividend Equalization' to enable them pay the fixed dividend even in the year when the earnings are not sufficient. **(ii) Constant payout ratio.** Constant pay-out ratio means payment of a fixed percentage of net earnings as dividends every year. The amount of dividend in such a policy fluctuates in direct proportion to the earnings of the company. **(iii) Stable rupee dividend plus extra dividend.** Some companies follow a policy of paying constant low dividend per share plus an extra dividend in the years of high profits. Such a policy is most suitable to the firm having fluctuating earnings from year to year. **Advantages of Stable Dividend Policy:** (i) It is sign of continued normal operations of the company. (ii) It stabilizes the market value of shares (iii) It creates confidence among the investors, improves credit standing and makes financing easier (iv) It provides a source of livelihood to those investors who view dividends as a source of fund to meet day-to-day expenses (v) It

meets the requirements of institutional investors who prefer companies with stable divide.

3. **Irregular Dividend Policy:** Some companies follow irregular dividend payments on account of the following: (i) Uncertainty of earnings(ii) Unsuccessful business operations(iii) Lack of liquid resources
4. **No Dividend Policy:** A company can follow a policy of paying no dividends presently because of its unfavorable working capital position or on account of requirements of funds for future expansion and growth.

5.4.4 Forms of Dividend

Dividends can be classified in various forms. Dividends paid in the ordinary course of bus in known as **Profit dividends**, while dividends paid out of capital are known as **Liquidation dividends**. A dividend which is declared between two annual general meetings is called **interim dividend**, while the dividend recommended to the shareholders at the annual general meeting is known as **final dividend**.

Classification on the basis of medium in which they are paid:

- a) **Cash Dividend:** A cash dividend is a usual method of paying dividends. Payment of cash results in outflow of funds and reduces the company's net worth, though the shareholders get a opportunity to invest the cash in any manner they desire. This is why the ordinary shareholders prefer to dividends in cash.
- b) **Scrip or Bond Dividend:** A scrip dividend promises to pay the shareholders at a future specific date. In case a company does not have sufficient funds to pay dividends in cash, it may issue notes or bonds for amount due to the shareholders. The objective of scrip dividend is to postpone the immediate Payment. A scrip dividend bears interest and is accepted as a collateral security.
- c) **Property Dividend:** Property dividends are paid in the form of some assets other than cash are distributed under exceptional circumstances and are not popular in India.
- d) **Stock Dividend:** Stock dividend means the issue of **bonus shares** to the existing shareholders. If a company does not have liquid resources it is better to declare stock dividend. Stock dividend amounts to capitalization of earnings and distribution of profits among the existing shareholders without affecting the cash position of the firm. This has been discussed in detail under "Bonus Issue".

5.4.5 Bonus Issue

A company can pay bonus to its shareholders either in cash or in the form of shares. Many a times, a company is not in a position to pay bonus in cash in spite of sufficient profits because of unsatisfactory cash position or because of its adverse effects on the working capital of the company. In such cases, if the articles of association of the company provide, it can pay bonus to its shareholder in the form of shares by making partly paid shares as fully paid or by the issue of

fully paid bonus shares. Issue of bonus shares in lieu of dividend is not allowed as according to Section 205 of the Companies Act, 1956, no dividend can be paid except in cash. It cannot be termed as a gift because it only represents the past sacrifice of the shareholders.

When a company accumulates huge profits and reserves, its balance sheet does not reveal a true picture about the capital structure of the company and the shareholders do not get fair return on their capital. Thus, if the Articles of Association of the company so permit, the excess amount can be distributed among the existing shareholders of the company by way of issue of bonus shares. The effect of bonus issue is two-fold:

- (i) It amounts to reduction in the amount of accumulated profits and reserves. -
- (ii) There is a corresponding increase in the paid up share capital of the company.

Objectives of Bonus Issue:

- a) To bring the amount of issued and paid up capital in line with the capital employed so as to depict more realistic earning capacity of the company.
- b) To bring down the abnormally high rate of dividend on its capital so as to avoid labour problems such as demand for higher wages and to restrict the entry of new entrepreneurs due to the attraction of abnormal profits.
- c) To Pay bonus to the shareholders of the company without affecting its liquidity and the earning capacity of the company.
- d) To make the nominal value and the market value of the shares of the company comparable.
- e) To correct the balance sheet so as to give a realistic view of the capital structure of the company.

Advantages of Issue of Bonus Shares

Advantages from the viewpoint of the company

- 1. It makes available capital to carry an a larger and more profitable business.
- 2. It is felt that financing helps the company to get rid of market influences.
- 3. When a company pays bonus to its shareholders in the value of shares and not in cash, its liquid resources are maintained and the working capital of the company is not affected.
- 4. It enables a company to make use of its profits on a permanent basis and increases credit worthiness of the company.
- 5. It is the cheapest method of raising additional capital for the expansion of the business.
- 6. Abnormally high rate of dividend can be reduced by issuing bonus shares which enables a company to restrict entry of new entrepreneurs into the business and thereby reduces competition.
- 7. The balance sheet of the company will reveal a more realistic picture of the capital structure and the capacity of the company.

Advantages from the viewpoint of investors or shareholders.

The bonus shares are a permanent source of income to the investors.

- 1. Even if the rate of dividend falls, the total amount of dividend may increase as the investor gets dividend on a larger number of shares.

2. The investors can easily sell these shares and get immediate cash, if they so desire.

Disadvantages of Bonus Shares

1. The issue of bonus shares leads to a drastic fall in the future rate of dividend as it is only the capital that increases and not the actual resources of the company. The earnings do not usually increase with the issue of bonus shares.
2. The fall in the future rate of dividend results in the fall of the market price of shares considerably, this may cause unhappiness among the shareholders.
3. The reserves of the company after the bonus issue decline and leave lesser security to investors.

Illustration 20: The Shrike Paper Mill Ltd. is contemplating to expand its business and accordingly it desires to increase assets by 50% by the end of the year 1992. The existing capital structure of the company is given as:

8 % debentures Rs 8, 00,000
9% preference share capital Rs. 2, 00,000
Equity shares Rs. 10, 00,000

New debentures can be sold at par at 10% interest rate. Preference shares will have a 12% dividend rate and can be sold at par. Equity shares can be sold to net Rs. 90 per share. The shareholder required rate of return is 8% which is expected to grow at the rate of 4 %. Retained earnings for the year are estimated to be Rs. 1, 00,000.

You are required to determine the following:

1. What is the required amount of new capital expenditure.
2. What would be the optimal structure of new financing?
3. Calculate the cost of individual capital components. Assume average shareholder's marginal tax rate.
4. Calculate the weighted average cost of capital of the company.

Solution:-

Required amount of new capital expenditure: The Company desires to expand its assets by 50 percent. The present level of asset is Rs. 20, 00,000 which will increase to Rs. 30, 00,000. Hence, the required amount of new capital expenditure will be Rs. 10, 00,000.

Optimal Capital Structure of new financing: The existing pattern of capital structure i.e. debt 40 percent, preference share 10 percent and equity shares 50 percent. The proposed capital expenditure is expected to be financed with external as well as internal sources. Since retained earnings available for the expansion purpose are expected to be Rs. 1, 00,000; the rest of Rs. 9, 00,000 will have to be raised by external sources in the above proportion. Thus the optimal capital of new financing will be as under.

Source	Rs.	Percentage
Debentures	3, 60,000	36.0
Preference shares	90,000	9.0
Equity Shares	4, 50,000	45.0
Retained earnings	<u>1, 00,000</u>	<u>10.0</u>
	<u>10, 00,000</u>	<u>100.0</u>

Cost of individual capital components:

i. Cost of debentures = $\frac{I}{P} \times (I - T)$
= $\frac{10}{100} \times (1 - 0.50)$
= 5%

ii. Cost of Preference shares = $\frac{D}{MP}$
= $\frac{12}{100}$
= 12%

iii. Cost of equity shares = $\frac{D1}{MP} + g$
= $\frac{8}{90} + 0.04$
= 12.9%

4. Cost of retained earnings = $K_e (I - T) (1 - b)$
= 12.9%

Weighted average cost of capital (K_o)

Source	Percentage share	Specific Cost	Total Cost
Debt	36.0	5%	180.0
Preference share capital	9.0	12%	108.0
Equity share capital	45.0	12.9%	580.5
Retained Earnings	10.0	12.9%	129.0
	<u>10.0</u>		<u>997.5</u>

$K_o = 997.5/100 = 9.98\%$

The weighted average cost of capital is 9.98%

Illustration 21: A company is planning to raise to Rs. 20, 00,000 additional long terms funds to finance its additional capital budget of the current year. The debentures of the company to be sold on a 14% net yield basis to the company, are alternatives being considering by the company. The company expects to pay dividend of Rs. 5 percent at the end of coming year. The expansion

is expected to carry the company into a new, higher risk class. The required rate expected from the point of the investors community is 16%. Determine:

- i. The growth rate of the company which the market is anticipating.
- ii. Management is anticipating an 8 % growth rate. On this basis, what price should the equity share be sold by the company?

Solution:

- i.
$$K_e = D1/MP + g$$

$$16\% = Rs.5/50 + g$$

$$16\% = 10 \% +g$$

$$g = 16\% - 10\% = 6\%$$
- ii.
$$MP = D1/K_e - g$$

$$= Rs. 5/16\% - 8\%$$

$$= Rs. 62.50$$

Problem 1: Supreme industries ltd. has assets of Rs. 1, 60,000 which have been financed with Rs. 52,000 of debt and Rs. 90,000 of equity and a general reserve of Rs. 18,000. The firm’s total profit after interest and taxes for the year ended 31st march 1998 were Rs.13500. It pays 8 % interest on borrowed funds and is in the 50% tax bracket. It has 900 equity shares of Rs. 100 each selling at a market price of Rs. 120 per share. What is the weighted average cost of capital?

Problem 2.From the following capital structure of a company, calculate the overall cost of capital using (a) book value weights and (b) market value weights:

Source	Book Value(Rs.)	Market Value(Rs.)
Equity Share Capital (Rs. 10 per share)	45,000	90,000
Retained Earnings	15,000	-
Preference Share Capital	10,000	10,000
Debentures	30,000	30,000

The after –tax cost of difference sources of finance is as follows:

Equity share capital:	14%
Retained Earnings:	13%
Preference Share capital:	10%
Debentures:	5%

Problem 3.The capital structure of Pune Co ltd., as follows

Source	Amount(Rs.)
Equity Share Capital (Rs. 10 per share)	3,00,000
Reserves	10,00,000
14% Debentures	6,00,000
18% Bank loan	8,00,000

Company pays dividend at an average rate of 20%. Average after tax earnings in the industry is 15%. Tax rate is 50%. Calculate the weighted average cost of capital.

Problem 4: The following information regarding the existing capital structure of a company is available

Source	Amount(Rs.)	Before tax cost
Equity share capital	8,00,000	14%
Preference share capital	1,00,000	6%
Long Term debt	6,00,000	8%

The company wants to undertake an expansion project costing Rs. 5,00,000 which can be arranged at 9% from a financial institution. The minimum acceptable rate of returns from the new projects is based on the company's cost of capital. What is the minimum acceptable rate of return of the company in case of the proposed expansion project. You may assume 50 % tax rate for the company.

Problem 5: A company has in its book the following amount and specific cost of each type of capital

Source	Book Value(Rs.)	Market Value(Rs.)	Specific Cost
Debt	4,00,000	3,80,000	5%
Preference share capital	1,00,000	1,10,000	8%
Equity share capital	6,00,000	12,00,000	12%
Retained Earnings	2,00,000		
	<u>13,00,000</u>	<u>16,90,000</u>	

Determine the weighted average cost of capital using (a) book value weights and (b) market value weights, how are they different?

Problem 6. The share of a Chemical Company is selling at Rs. 20 per share. The firm has paid Rs. 2 per share dividend last year. The estimated growth of the company is approximately 5% per year. Determine:

1. The cost of equity capital of the company.
2. The estimated market price of the equity shares if the anticipated growth rate of the firm (a) rises to 8% and (b) falls to 3%

5.5 REVIEW QUESTIONS

1. What is meant by capital structure? What are the major determinants of capital structure?
2. Give the critical appraisal of A) NI (Net income) B) NOI (Net Operating Income).
3. Give critical appraisal of Traditional approach and Modigliani and Millers approach to the problem of capital structure.
4. What is meant by financial leverage? How it magnify the revenue available to equity share holders?
5. What is meant by operating leverage? How it magnify the revenue of a concern?
6. What do you understand by dividend policy? What is the various factor affecting dividend policies?
7. What are the various form of dividend? Discuss Bonus shares in detail.

WORKING CAPITAL ANALYSIS

Structure

6.1 Working Capital

- 6.1.1 Operating cycle/Working Capital Cycle
- 6.1.2 Factors Effecting Working Capital,
- 6.1.3 Importance of Adequate working capital
- 6.1.4 Financing of Working Capital,
- 6.1.5 Determining working capital financing mix
- 6.1.6 Working Capital Analysis
- 6.1.7 Estimation of Working Capital Requirements

6.2 Receivables Management

- 6.2.1 Costs of maintain Receivables,
- 6.2.2 Meaning and definition of Receivables Management
- 6.2.3 Dimensions of Receivables Management,

6.3 Review Questions

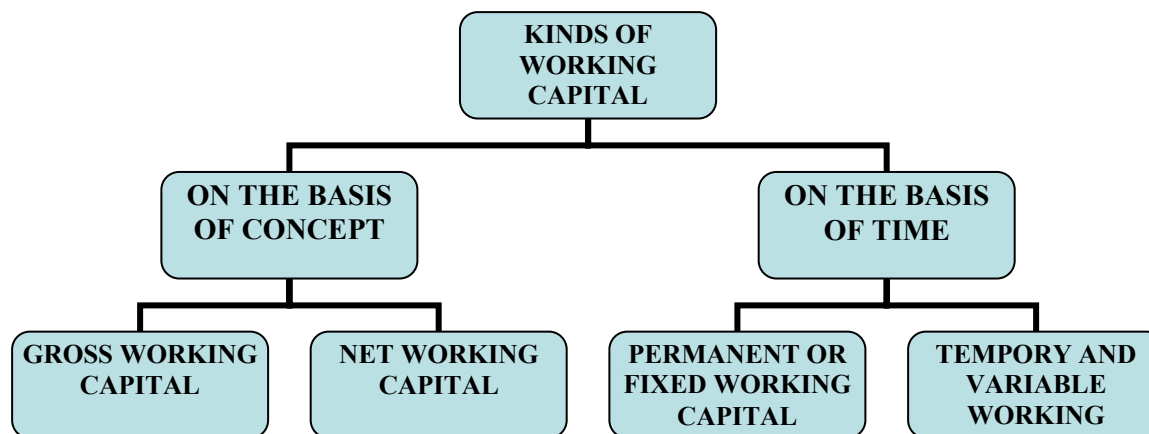
6.1 WORKING CAPITAL

Meaning of Working Capital: Capital required for the business can be of two types:

1. Fixed Capital
2. Working Capital

Fixed capital is required to create the production facilities through purchase of fixed assets like Land, Machinery, and Building etc. Investment in these assets represents that part of firm's capital, which is blocked on permanent or fixed basis and is called fixed capital. Funds are also needed for short-term purpose for the purchase of Raw material, Payment of Wages etc. these funds are known as Working Capital. In simple words, working capital refers to that part of firm's capital, which is required for financing short-term assets.

Definitions of Working Capital: According to Shubin: "Working Capital is the amount of funds necessary to cover the cost of operating the enterprises." According to Genestenberg: "Working Capital means current assets of a company that are changed in the ordinary course of business from one form to another as for e.g. Cash to inventories, inventories to receivables and receivables to cash".



(A) On the basis of concept

- (i) **Gross working capital concept:** According to this concept, working capital means total of all current assets of business..
Gross working capital = Total current assets.
- (ii) **Net working capital concept:** According to this concept, working capital means excess of current assets over current liabilities.
Net Working capital = Current Assets – current Liabilities

As per the general practice net working capital is referred to simply as working capital.

(B) On the basis of time

- (i) **Fixed or permanent working capital:** There is always a minimum level of current assets which is continuously required by the enterprise to carry out normal business operation. For ex. Every firm has to maintain a minimum level of stock and cash balance. This minimum level of current assets is called fixed working capital as this amount is permanently blocked in current assets
- (ii) **Temporary or variable working capital.** It is that amount of working capital which is required to meet the seasonal demand and some special needs. Any amount over and above the permanent level of working capital is called as Temporary or variable working capital.

6.1.1 Operating Cycle / Need for Working Capital

Every business needs some amount of working capital. The need for working capital arises due to the time gap between the production and realization of cash from sales. Thus working capital is needed for the following purposes:

1. For the purchase of raw material, components and spares parts.
2. To pay wages and salaries
3. To incur day-to-day expenses.

4. To meet the selling costs s packing, advertising.
5. To provide the credit facilities to the customers.
6. To maintain the inventories of Raw material, work in progress, finished stock

There is an operating cycle involved in the sales and realization of cash. The cycle starts with the purchase of raw material and ends with the realization of cash from sales of finished foods. It involves purchase of raw material and stores, it conversion in to stock of finished goods through work-in- progress, conversion of finished stock in to sales, debtors and receivables and ultimately in cash and this cycle continues again from cash to purchase of raw material and so on.

The gross operating cycle of the firm = RMCP + WIPCP + FGCP + RCP

Where, RMCP = Raw material conversion period
 WIPCP = Work in progress conversion period
 FGCP = Finished goods conversion period
 RCP = Receivables conversion period

However a firm may acquire some resources of credit and thus defer payments fro certain period. In this case

Net operating cycle period = Gross operating cycle period - Payable deferral period.

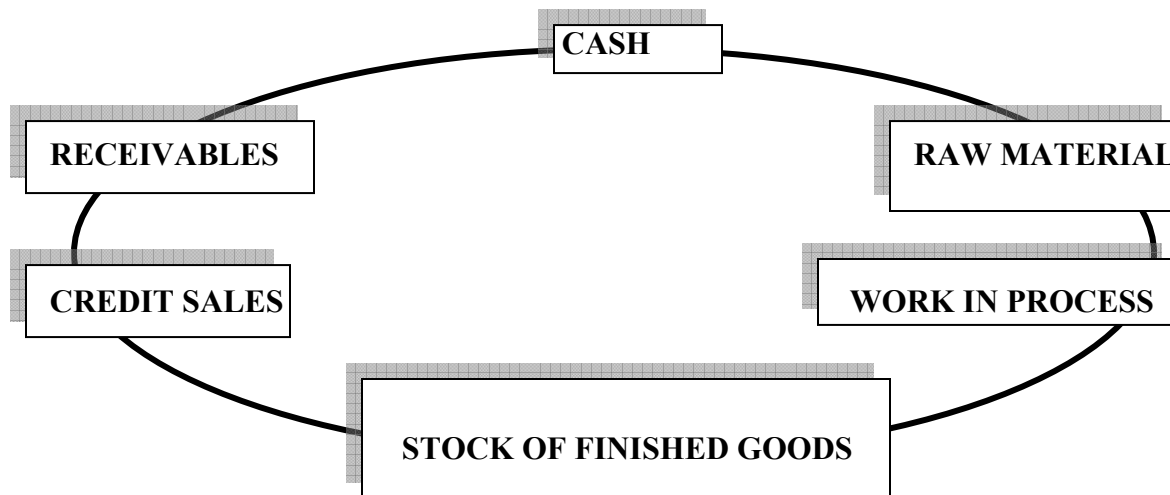


Figure 6.1: Working capital / Operating Cycle of a manufacturing concern

6.1.2 Factors Determining Working Capital Requirements

The working capital requirement of a concern depends upon a large number of factors, which are as follow:

1. **Nature or Character of Business:** Public utility undertakings like Electricity, Water supply and Railways need very limited working capital because they offer cash sales only and supply services not products. On the other hand, Trading and Financial firms require

less investment in fixed assets but have to investment large amount in current assets like inventories, receivables etc.

2. **Size of Business:** Greater the size of business unit, generally larger will be the requirement of working capital. In some case even a smaller concern need more working capital due to high overhead charges, inefficient use of resources etc.
3. **Production Policy:** The production could be kept either steady by accumulating inventories during slack periods with a view to meet high demand during the peak season or the production could be curtailed during the slack season and increased during peak season. If the policy is to keep the production steady by accumulating inventories it will require higher working capital.
4. **Seasonal Variations:** In certain industries, raw material; is not available throughout year. They have to buy raw material in bulk during the season to ensure an uninterrupted flow and process them during the entire year. A huge amount is blocked in the form of material inventories during such season, which give rise to more working capital.
5. **Working Capital Cycle:** In manufacturing concern, the working capital cycle starts with the purchase of raw material and ends with the realization of cash from the sales of finished products. This cycle involves purchase of raw material and starts, its conversion into stock of finished goods through work in progress with progressive increment of labor and service costs, conversion of finished stock into sales, Debtor and receivables and ultimately realization of cash and this cycle continues again from cash to purchase of raw material so on.
6. **Rate of Stock Turnover:** There is high degree of inverse co relationship between the quantum of working capital and the velocity or speed with which the sales are affected. A firm with having a high rate of stock turnover will need lower amount of working capital as compared to the firm having a low rate of turnover.
7. **Credit Policy:** A concern that purchases its requirement on credits and sells its products / services on cash require lesser amount of working capital. On the other hand, concern buying its requirement for cash and allow credit to its customers, will need larger amount of working capital as very huge amount of funds are bound to be tied up in debtors or bills receivables.
8. **Business Cycle:** Business Cycle refers to alternate expansion and contraction in general business activity. In period of boom i.e. when the business is prosperous, there is need for larger amount of working capital due to increase in sales, rise in prices, and expansion of business. On the contrary in the times of depression i.e., when there is down swing of cycle, the business contracts, sales decline, difficulties are faced in collection from debtors and firms may have a large amount of working capital lying idle.
9. **Rate of Growth of Business:** For the fast growing concern, larger amount of working capital is required.

6.1.3 Importance or Advantages of Adequate Working Capital

Working capital is the lifeblood and nerve center of a business. No business can run successfully without an adequate amount of working capital. The main advantage of maintaining an adequate amount of working capital is as follows:

1. **Solvency of the business:** Adequate amount of working capital helps in maintaining solvency of business by providing uninterrupted flow of production.
2. **Goodwill:** Sufficient amount of working capital enables business concern to make the prompt payment and helps in creating and maintaining goodwill.
3. **Easy Loans:** A concern having adequate amount of working capital, high solvency and credit standing can arrange loans from banks.
4. **Cash Discounts:** Adequate amount of working capital also enables a concern to avail cash discounts on the purchases and hence it reduces the costs.
5. **Exploitation of favorable market condition:** Adequate amount of working capital enables a concern to exploit favorable market conditions such as purchasing its requirement in bulk when the prices are lower and by holding its inventories for higher prices.
6. **Ability to face the crises:** Adequate amount of working capital enables a concern to face the business crises in emergencies such as depression because during such periods, generally there is much pressure on working capital.
7. **Quick and regular return on investments:** Adequate amount of working capital enables a concern to pay quick and regular dividends to its investors as there may not be much pressure to plough back profits.
8. **Regular supply of raw material:** Adequate amount of working capital ensures regular supply of raw material and continuous production.

6.1.4 Financing of Working Capital

- A) Financing of permanent/fixed/or Long term working capital
- B) Financing of Temporary, variable or short term working capital

A) **Financing of permanent/fixed/or Long term working capital:** Permanent working capital should be financed in such a manner that the enterprise may have its uninterrupted use for a sufficient long period. There are five important sources of long term or permanent capital .

1. Shares
2. Debentures / bonds
3. Public deposits
4. Plugging back of profits
5. Loans from financial institutions

These long term sources of finance have already been discussed in detail in the first unit of the book.

B) **Financing of Temporary, variable or short term working capital:** The main sources of short term working capital are as follows

- 1) **Indigenous Bankers:** Private money lenders used to be the only source of finance prior to the establishment of commercial banks. They used to charge very high rates of interest.
- 2) **Trade credit:** Trade credit refers to the credit extended by suppliers of goods in the normal course of business. The credit worthiness of a firm and the confidence of its suppliers are the main basis of securing trade credit. The main advantages of trade credit are:
 - It is easy and convenient method of finance.
 - It is flexible as the credit increases with the growth of firm
 - It is informal and spontaneous source of finance.
- 3) **Installment credit:** In this assets are purchased and possession of goods is taken immediately but payment is made in installment over a predetermined period. Generally, interest is charged on the unpaid price or it may be adjusted in the price.
- 4) **Advances:** Some business houses get advances from their customers and agents against orders. Usually the manufacturing concerns having long production cycle prefer to take advances from their customers.
- 5) **Factoring or Accounts Receivable Credit:** A commercial bank may provide finance by discounting bills or invoices of its customers. Thus, a firm gets immediate payment for sale made on credit. A factor is a financial institution which offers services related to management and financing of debts arising out of credit sales.
- 6) **Accrued expenses:** Accrued expenses are the expenses which have been incurred but not yet due and hence not yet paid also. For ex. Wages, salaries, rent, interest, taxes etc.
- 7) **Deferred Incomes:** Deferred incomes are incomes received in advance before supplying goods or services. However, firms having great demand for its products and services, and those having good reputation in the market can demand deferred incomes.
- 8) **Commercial Paper:** Commercial paper represents unsecured promissory notes issued by firms to raise short-term funds. But only large companies enjoying high credit rating and sound financial health can issue commercial paper to raise short-term funds. The Reserve Bank of India has laid down a number of conditions to determine eligibility of a company for the issue of commercial paper. Only a company which is listed on the Stock exchange has a net worth of at least Rs. 10 crores and a maximum permissible bank finance of Rs. 25 crores can issue commercial paper not exceeding 30 per cent of its working capital limit. The maturity period of commercial paper mostly ranges from 91 to 180 days. It is sold at a discount from its face value and redeemed at face value on its maturity.

6.1.5 Determining the Working Capital Financing Mix

There are two sources of financing working capital requirements: (i) Long-term sources (ii) short-term sources. Therefore, a question arises as to what portion of working capital (current assets) should be financed by long-term sources and how much by short-term sources? There are three basic approaches for determining an appropriate working capital financing mix.

The Hedging or Matching Approach: The term 'hedging' usually refers to two off-selling transactions of a simultaneous but opposite nature which counterbalance the effect of each other. With reference to financing mix, the term hedging refers to a process of matching maturities of debt with the maturities of financial needs. According to this approach, the maturity of sources of funds should match the nature of assets to be financed. This approach is, therefore, also known as 'matching approach'. This approach classifies the requirements of total working capital into two categories:

- (i) Permanent or fixed working capital which is the minimum amount required to carry out the normal business operations. It does not vary over time.
- (ii) Temporary or seasonal working capital which is required to meet special exigencies. It fluctuates over time.

The hedging approach suggests that the permanent working capital requirements should be financed with funds from long-term sources while the temporary or seasonal working capital requirements should be financed with short-term funds. The following example explains this approach.

Estimated total investments in Current Assets of Company X for the year 2008

<i>Month</i>	<i>Investments in Current assets (Rs.)</i>	<i>Permanent or Fixed Investment (Rs.)</i>	<i>Temporary or Seasonal investment (Rs.)</i>
January	50,400	45,000	5,400
February	50,000	45,000	5,000
March	48,700	45,000	3,700
April	48,000	45,000	3,000
May	46,000	45,000	1,000
June	45,000	45,000	-
July	47,500	45,000	2,500
August	48,000	45,000	3,000
September	49,500	45,000	4,500
October	50,700	45,000	5,700
November	52,000	45,000	7,000
December	48,500	45,000	3,500
		Total	44,300

According to hedging approach the permanent portion of current assets required (Rs. 45,000) should be financed with long-term sources and temporary or seasonal requirements in different months (Rs. 5,400 Rs. 5,000 and so on) should be financed from short-term sources.

The Conservative Approach: This approach suggests that the entire estimated investments in current assets should be financed from long-term sources and the short-term sources should be used only for emergency requirements. According to this approach, the entire estimated requirements of Rs. 52,000 in the month of November (in the above given example) will be financed from long-term sources. The short-term funds will be used only to meet emergencies.

The distinct features of this approach are: (i) Liquidity is severally greater (ii) Risk is minimized (iii) The cost of financing is relatively more as interest has to be paid even on seasonal requirements for the entire period

Trade off Between the Hedging and Conservative Approaches : The hedging approach implies low cost, high profit and high risk while the conservative approach leads to high cost, low profits and low risk. Both the approaches are the two extremes and neither of them serves' the purpose of efficient working capital management. A trade off between the two will then be an acceptable approach. The level of trade off may differ from case to case depending upon the perception of risk by the persons involved in financial decision-making. However, one way of determining the trade off is by finding the 'average of maximum and the minimum requirements of current assets or working capital. The average requirements so calculated may be financed out of long-term funds and the excess over the average from the short-term funds. Thus, in the above given example the average requirements of Rs. 48.500.

$$\frac{45,000+52,000}{2}$$

may be financed from long-term while the excess capital required during various months from short-term sources.

The Aggressive Approach: The aggressive approach suggests that the entire estimated requirements of currents asset should be financed from .short-term sources and even a part of fixed' assets investments be financed from short-term sources. This approach makes the finance-mix more risky, less costly and more profitable.

6.1.6 Working Capital Analysis

Working capital is very essential to maintain the smooth running of a business. No business can run successfully without an adequate amount of working capital. The concept of working capital has its own importance in a going concern. A going concern, usually, has a positive balance of working capital, *i.e.*, the excess of current assets over current liabilities, but sometimes the uses of working capital may be more than the sources resulting into a negative value of working capital. This negative balance is generally offset soon by gains in the following periods. A study of changes in the uses and sources of working capital is necessary to evaluate the efficiency with which the working capital is employed in a business. This involves the need of working capital analysis. The analysis of working capital can be conducted through a number of devices, such as:

1. Ratio Analysis
2. Funds Flow Analysis
3. Budgeting

Ratio Analysis: A ratio is a simple arithmetical expression of the relationship of one number to another. The technique of ratio analysis can be employed for measuring short-term 'liquidity or working capital position of a firm. The following ratios may be calculated for this purpose:

- i. Current Ratio
- ii. Acid Test Ratio
- iii. Absolute Liquid Ratio

- iv. Receivables Turnover Ratio
- v. Payables Turnover Ratio
- vi. Working Capital Turnover ratio
- vii. Ratio of Current Liabilities to Tangible Net Worth

Funds Flow Analysis: Funds flow analysis is a technical device designated to study the sources from which additional funds were derived and the use to which these sources were put. It is an effective management tool to study changes in the financial position (working capital) of a business enterprise between beginning and ending financial statements dates. The funds flow analysis consists of: (i) preparing schedule of changes in working capital, and (ii) statement of sources and application of funds.

Working Capital Budget: A budget is a financial and/or quantitative expression of business plans and policies to be pursued in the future period of time. Working capital budget, as a part of total budgeting process of a business, is prepared estimating future long-term and short-term working capital needs and the sources to finance them, and then comparing the budgeted figures with the actual performance for calculating variances, if any, so that corrective actions may be taken in the future. The objective of a working capital budget is to ensure availability of funds as and when needed, and to ensure effective utilization of these resources. The successful implementation of working capital budget involves the preparing of separate budgets for various elements of working capital, such as, cash, inventories and receivables, etc.

6.1.7 Estimation of Working Capital Requirements

Factors requiring consideration while estimating working capital	
1	Total costs incurred on material, wages and overheads.
2	The length of the time for which materials are to remain in stores before they are issued for production.
3	The length of the production cycle or work in progress.
4	The length of the sales cycle during which finished goods are to be kept waiting for sales.
5	The average period of credit allowed to customers.
6	The amount of cash required to pay day to day expenses of the business.
7	The average amount of cash required to make the payments.
8	The average credit period expected to be allowed by suppliers.
9	Time lag in the payment of wages and other expenses.

Illustration 1: You are required to prepare a statement showing the working capital required to finance the level of activity of 18,000 units per year from the following information:-

Particulars	Rs.
Raw material Per Unit	12
Direct labor Per Unit	3
Overheads per Unit	<u>9</u>
Total cost Per Unit	24
Profit per Unit	<u>6</u>
Selling price Per Unit	<u>30</u>

Additional Information:

1. Raw material is in stock on an average for 2 months.
2. Materials are in process on an average for half-a- month.
3. Finished goods are in stock on an average for two months.
4. Credit allowed by creditors is two months in respect of raw materials supplied.
5. Credit allowed to debtors is three months.
6. Lag in payment of wages is half month. Cash on hand and at bank is expected to be Rs. 7,000.
7. You are informed that all activities are evenly spread out during the year.

Solution:

		Estimation of Working Capital:	
		Rs.	
Current Assets:			
1. Stock-in-Trade			
a. Raw materials	$18,000 \times 12 \times \frac{2}{12}$	=	36,000
b. Work in progress	$18,000 \times 18 \times \frac{1}{2} \times \frac{1}{12}$	=	13,500
c. Finished goods	$18,000 \times 24 \times 2 \times \frac{1}{12}$	=	72,000
			<u>1, 21,500</u>
2. Sundry debtors	$18,000 \times 30 \times \frac{3}{12}$	=	1, 35,000
3. Cash on hand and at bank	$18,000 \times 30 \times \frac{3}{12}$	=	<u>7,000</u>
			2, 63,500
Less: Current liabilities:			
4. Sundry creditors	$18,000 \times 12 \times \frac{3}{12}$	=	36,000
5. Wages	$18,000 \times 3 \times \frac{1}{2} \times \frac{1}{12}$	=	<u>2250</u>
Estimated Working Capital Requirement			<u><u>2, 25,250</u></u>

Working Notes:

(1) Cost of each unit of Work in process	Rs.
Raw materials	12
Labour(50% of Rs. 3)	1.50
Overhead(50% of Rs. 9)	<u>4.50</u>
Total	<u>18</u>

Illustration 2: Runwall Ltd. had annual sales of 50,000 units at Rs.100per unit. The company works for 50 weeks in the year. Cost details of the Company are as given below:

Particulars	Rs.
Raw material Per Unit	30
Labour Per Unit	10
Overheads per Unit	<u>20</u>
Total cost Per Unit	60
Profit per Unit	<u>40</u>
Selling price Per Unit	<u>100</u>

Additional Information:

1. The Company has the practice of storing raw materials for 4weeks requirements.
2. The wages and other expenses are paid after a lag of 2 weeks.
3. Further the debtors enjoy a credit of 10 weeks and Company gets a credit of 4 weeks from suppliers.
4. The processing time is 2 weeks and finished goods inventory is maintained for 4 weeks.

From the above information prepare a working capital estimate, allowing for a 15% Contingency.

Solution:

Estimation working Capital:

Current Assets:		Rs.
1. Stock-in-Trade		
a. Raw materials	$50,000 \times 30 \times \frac{4}{50}$	= 1, 20,000
b. Work in progress	$50,000 \times 45 \times \frac{2}{50}$	= 90,000
c. Finished goods	$50,000 \times 60 \times \frac{4}{50}$	= <u>2, 40,000</u>
		4, 50,000
2. Sundry debtors	$50,000 \times 100 \times \frac{10}{50}$	= <u>10, 00,000</u>
		14, 50,000
Less: Current liabilities:		
3. Sundry creditors	$50,000 \times 30 \times \frac{4}{50}$	= 1, 20,000

4. Wages	$50,000 \times 10 \times \frac{2}{50}$	=	20,000
1. Overhead	$50,000 \times 20 \times \frac{2}{50}$	=	<u>40,000</u>
			12, 70,000
Add: 10 % for contingencies			<u>1, 27,000</u>
Estimated Working Capital Requirement			<u>13, 97,000</u>

Working Notes:

(1) Cost of each unit of Work in process	Rs.
Raw materials	30
Labour (50% of Rs. 10)	5
Overhead (50% of Rs. 20)	<u>10</u>
Total	<u>45</u>

Illustration3: From the following particulars, you are required to prepare a statement of working capital requirements:

Estimates for the next year:	Rs.
Raw Material cost	31,20,000
Wages	18,72,000
Overhead(including depreciation Rs. 1,20,000)	<u>7,44,000</u>
	57,36,000
Profit	<u>12,64,000</u>
Selling Price	<u>70,00,000</u>
Additional Information:	

1. Inventory norms:
 - a. Raw material 2months
 - b. Work in progress 3 weeks
 - c. Finished goods 1 month
2. 50% of the sales is on credit and 2 weeks credit is normal.
3. The company enjoys 4 weeks credit facilities on 30 % of the purchases.
4. Lag in payment of overheads is one month.
5. Wages are paid at the end of the month.
6. Cash is to be held to the extent of 50% of the current liabilities.

Solution:

Estimation working Capital:

Current Assets:		Rs.
1. Stock-in-Trade		
a. Raw materials	$31, 20,000 \times \frac{2}{12}$	= 5, 20,000
b. Work in progress	$43, 68,000 \times \frac{3}{52}$	= 5, 52,000

c. Finished goods (31, 20,000+18, 72000+7, 44,000)				
-Depreciation 1, 20,000 =	56, 16,000 x $\frac{1}{12}$	=	4, 68,000	
2. Sundry debtors	56, 16,000 x $\frac{50}{100} \times \frac{2}{52}$	=	1, 08,000	
3. Cash in hand	2, 02,000 x $\frac{50}{100}$	=	<u>1, and 01,000</u>	
			14, 49,000	
Less: Current liabilities:				
4. Sundry creditors	31, 20,000 x $\frac{30}{100} \times \frac{4}{52}$	=	72,000	
5. Wages	18, 72,000 x $\frac{1}{24}$	=	20,000	
6. Overhead	6, 24,000 x $\frac{1}{12}$	=	<u>52,000</u>	<u>2, 02,000</u>
Estimated working capital Requirement				<u><u>12, 47,000</u></u>

Illustration4: From the following information, you are required to estimate the net working capital.

Particulars	Rs.
Raw material Per Unit	400
Labour Per Unit	150
Overheads per Unit	<u>300</u>
Total cost Per Unit	<u>850</u>

Additional information:

1. Selling Price Rs. 1000 per unit
2. Output 52000 units per annum
3. Raw material in stock Average 4 weeks
4. Work in progress (Assume 50% of stage with full material consumption) Average 2weeks
5. Credit allowed by the Suppliers Average 4 weeks
6. Credit allowed to debtors Average 8 weeks
7. Cash at bank expected to be Rs. 50,000

Assume that production is sustained at an even pace during the 52 weeks of the year. All sales are on credit basis. State any other assumptions that you might have make while computing.

Solution

Statement of Working Capital Estimation

Current Assets:

1. Stock-in-Trade			
a. Raw materials	$52,000 \times 400 \times \frac{4}{52}$	=	16,00,000
b. Work in progress	$52,000 \times 625 \times \frac{2}{52}$	=	12,50,000
c. Finished goods	$52,000 \times 850 \times \frac{4}{52}$	=	34, 00,000
2. Sundry debtors	$52,000 \times 850 \times \frac{8}{52}$	=	68, 00,000
3. Cash at bank		=	<u>50,000</u>
			1, 31, 00,000
Less: Current liabilities:			
4. Sundry creditors	$52,000 \times 400 \times \frac{4}{52}$	=	<u>16, 00,000</u>
Net working capital			<u>1, 51, 00,000</u>

6.2 RECEIVABLES MANAGEMENT

Receivables constitute a significant portion of the current assets of a firm. But, for investments in the receivables, a firm has to incur certain costs. There is also a risk of bad debts also. It is therefore very necessary to have a proper control and management of receivables.

Meaning of Receivables: Receivables represents amount owed to the firm as a result of sale of goods or services in the ordinary course of business these are the claims of firm against its customers and form a part of the current assets. Receivables are also known as accounts Receivables; trade Receivables, customer Receivables, etc. the Receivables are carried for the customers. The period of credit and extent of Receivables depend upon the credit policy followed by the firm. The purpose of maintaining or investing in Receivables is to meet competition, and to increase the sale and profits of the business.

6.2.1 Costs of maintaining Receivables

1. **Cost of Financing Receivables.** When a firm maintains receivables, some of the firm's resources remain blocked in them because there is a time lag between the credit sale to customer and receipt of cash from them as payment. Whether this additional finances is met from its own resources or from outside, it involves a cost to the firm in terms of interest (if financed from outside) or opportunity costs (if internal resources are used).
2. **Administrative costs.** When a company maintains receivables, it has to incur additional administrative expenses in the form of salaries to clerks who maintain records of debtors, expenses on investigating the creditworthiness of debtors etc.

3. **Collection costs.** These are costs, which the firm has to incur for collection of the amount at the appropriate time from the customers.
4. **Defaulting cost:** When customers make default in payment not only is the collection effort to be increased but the firm may also have to incur losses from bad debts.

6.2.2 Meaning and Objectives of Receivables Management

Receivables management is the process of making decision relating to investment in trade debtors. Certain investment in Receivables is necessary to increase the sales and profits of a firm. But at the same time investment in this asset involves cost consideration also. Further there is always risk of bad debts too. Thus the objective of Receivables management is to take a sound decision as regards investment in debtors. *In the word of Bolton, S.E.* “The objective of Receivables Management is to promote the sales and profits until that point is reached where the return on investment in further funding of Receivables is less than the cost of funds raised to finance that additional credit”.

6.2.3 Dimensions of Receivables Management

Receivables management involves the careful consideration of the following steps:

1. Forming of Credit Policy
2. Executing the Credit Policy
3. Formulating and Executing Collection policy

Forming of Credit Policy: A credit policy is related to decision such as Credit standards, length of credit periods, cash discount and discount period.

1. **Credit standards:** The volume of sales will be influence by the credit policy of the concern. By liberalizing the credit policy the volume of sales can be increased resulting into increased profits. The increased volume of sales is associated with the certain risks also. It will result in enhanced costs and risk of bad debts and delayed receipts. The increase in number of customers will increase the clerical work of maintaining the additional accounts and collecting of information about the credit worthiness of the customers. On the other hand, extending the credit only to credit worthy customers will save the costs like bad debts losses, collection costs, investigation costs etc. the restriction of credit to such customers only will certainly reduce sales volume, thus resulting in reduced profits. The credit should be liberalized only to the level where incremental revenue matches the additional costs. This the optimum level of investment in receivables is achieved at a point where there is a trade off between the costs, profitability and liquidity
2. **Length of Credit period:** Length of Credit period means the period allowed to the customers for making the payment. The customers paying well in time may also be allowed certain cash discounts. There are no bindings on fixing the terms. The length of credit period and quantum of discount allowed determine the magnitude of investment in receivables. A firm may allow liberal credit terms to increase the volume of sales. The

lengthening of this period will mean blocking of more money in receivables, which could have been, invested somewhere else to earn income. There may be an increase in debt collection costs and bad debts losses too. If the earnings from additional sales by Length of Credit period are more than the additional costs then the credit terms should be liberalized. A finance manager should determine the period where additional revenues equates the additional costs and should not extend credit beyond this period as the increases in the cost will be more than the increase in revenue.

3. **Cash discount:** cash discount is allowed to expedite the collection of receivables. The funds tied up in receivables are released. The concern will be able to use the additional funds received from expedited collection due to cash discount. The discount allowed involves cost. The finance manager should compare the earnings resulting from released funds and the cost of the discount. The discount should be allowed only if its cost is less than the earnings from additional funds. If the funds cannot be profitably employed then discount should not be allowed.
4. **Discount period:** The collection of receivables is influenced by the period allowed for availing the discount. The additional period allowed for this facility may prompt some more customers to avail discount and make payments. For example, if the firm allowing cash discount for payments within 7 days now extends it to payments within 15 days. There may be more customers availing discount and paying early but there will be those also who were paying earlier within 7 days will now pay in 15 days. It will increase the collection period of the concern.

Executing the Credit Policy. The evaluation of credit applications and finding out the credit worthiness of customers should be undertaken.

1. **Collecting the Credit information:** The first step in implementing the credit policy will be to gather the information about the customers. The information should be adequate enough so that the proper analysis about the financial position of the customers is possible. The type of the information can be undertaken only up to a certain limit because it will involve cost. The cost incurred on collecting this information and the benefit from reduced bad debts losses will be compared. The credit information will certainly help in improving the quality of receivables but the cost of collecting information should not increase the reduction of bad debt losses. The information may be available from the financial statements of the applicant, credit rating agencies; reports from the banks, firm's records etc. a proper analysis of financial statements will be helpful in determining the creditworthiness of customers. Credit rating agencies supply information about various concerns. These agencies regularly collect the information about the business units from various sources and keeps the information up to date. Credit information may be available with the banks also. The banks have their credit departments to analyze the financial position of customers. In case of old customer, businesses own records may help to know their credit worthiness. The frequency of payments, cash discount availed may help to form an opinion about the quality of the credit.
2. **Credit analysis:** After gathering the required information, the finance manager should analyze it to find out the credit worthiness of potential customers and also to see whether they satisfy the standard of the concern or not. The credit analysis will determine the

degree of risk associated with the account, the capacity of the customers to borrow and his ability and willingness to pay.

3. **Credit Decision:** The finance manager has to take the decision whether the credit is to be extended and if yes up to which level. He will match the creditworthiness of the customers with the credit standard of the company. If the customer's creditworthiness is above the credit standards then there is no problem in taking a decision. In case the customer's are below the company's standards then they should not be out rightly refused. Therefore they should be offered some alternatives facilities. A customer may be offered to pay on delivery on goods; invoices may be sent through bank and released after collecting dues.
4. **Financing Investments in receivables and Factoring:** Receivables block a part of working capital. Efforts should be made so that the funds are not tied up in receivables for longer periods. The finance manager should make the efforts to get the receivable financed so that working capital needs are met in time. The banks allow the raising of loans against security of receivables. Banks supply between 60-80% of the amount of receivables of dependable parties only. Then quality will determine the amount of loan. Beside banks, there may be other agencies, which can buy receivables and pay cash for them known as **factoring**. The factor will purchase only the accounts acceptable to him. The factoring may be with or without recourse. If it is without recourse then any bad debts loss taken up by the factor but if it is with recourse then bad debts loss will be recovered from the seller. The factor may suggest the customer for whom he will extend this facility.

Formulating and executing Collection Policy. The collection of amount due to the customers is very important. The concern should devise the procedures to be followed when accounts become due after the expiry of credit period. The collection policy termed as strict and lenient. A strict policy of collection will involve more efforts on collection. This policy will enable the early collection of dues and will reduce bad debts losses. The money collects will be used for other purpose and the profits of the concern will go up. A lenient policy increases the debt collection period and more bad debts losses. The collection policy should weigh the various aspects associated with it, the gains and losses of such policy and its effects on the finances of the concerns. The collection policy should also devise the steps to be followed in collecting over due amounts. The steps should be like

- a) Personal request through telephone
- b) Personal visit to customers
- c) Taking help of collecting agencies
- d) Taking legal action etc.

Problem 1: From the following information you are required to estimate the net working capital

	Cost Per Unit (Rs.)
Raw material	40
Direct Labour	15
Overheads	<u>30</u>
	<u>85</u>

Additional information:

Selling Price	Rs. 100 per unit	
Output	52000 units per annum	
Raw material in stock		Average 4 weeks
Work in progress		Average 2 weeks
Finished goods in stock		Average 4 weeks
Credit allowed by suppliers		Average 4 weeks
Credit allowed to debtors		Average 8 weeks

Cash at bank is expected to be Rs. 10000. Assume that production is sustained at even pace during the 2 weeks of the year. All the sales are on credit basis. State any other assumption that you might have made while computing.

Problem2. Estimate working capital required from the data of Delhi Ltd.,

	Cost Per Unit	
Raw Material	Rs. 40	
Labor	Rs. 10	
Overhead	Rs. 30	
Projected sales 78000 units @ 100		
Debtors pay after		10 weeks
Creditors per paid after		4 weeks
Finished stock		8 weeks
Raw material stock		6 weeks
Production and processing time		4 weeks
Wages are paid once in		4 weeks
Contingency 10% of working capital		
Assume cash and bank balance Rs. 187500		

Problem 3: XYZ Ltd sells its products at a gross profit of 20% on sales. The following information is extracted from its annual accounts for the current year ended 31st December.

Sales at 3 months credit	Rs. 40, 00,000
Raw Material	Rs. 12, 00,000
Wages Paid - Average time lag 15 days	Rs. 9, 60,000
Manufacturing Expenses paid- one month in arrears	Rs.12, 00,000
Administrative expenses paid – one month in arrear	Rs. 4, 80,000
Sales promotion expenses - payable half yearly in advance	Rs. 2, 00,000

The company enjoys one month credit from the suppliers of raw material and maintains a 2 months stock of raw materials and one-and- half months stock of finished goods. The cash balance is maintained at Rs. 1, 00,000 as a precautionary measure. Assume a 10% margin; Find out the working capital requirements of XYZ Ltd.

Problem 4: The board of directors of Jay Ltd requests you to prepare a statement showing the working capital requirements for a level of activity at 1,56,000 units of production. The following information is available for your calculation.

	Per Unit (Rs)
Raw Materials	75
Direct Labour	90

Overheads	<u>40</u>
Total	<u>205</u>
Profit	60
Selling price per unit	<u>265</u>

Other information:

1. Raw Material is in stock on average for one month
2. Materials are in process (50% complete) on average for 4 weeks
3. Finished goods are in stock, on average for one month
4. Credit allowed by supplier is one month
5. Time lag in payment from debtors is 2 months
6. Average lag in payments of wages is 1.5 weeks and of overheads is 1 month 20% of the output is sold against cash. Cash in hand and in bank is expected to be Rs. 60,000. It is assumed that production is carried on evenly throughout the year, wages and overheads accrue similarly, and a time period of 4 weeks is equivalent to a month.

6.3 REVIEW QUESTIONS

1. What is meant by working capital management? What are the determinants of working capital requirement of an enterprise?
2. What do you understand by working capital cycle? Discuss the various sources of working capital funds.
3. Write a detailed note on analysis and control of working capital. What are the various methods of working capital analysis?
4. Discuss the various approaches to determine the appropriate financing mix of working capital.
5. What is receivables management? Discuss the factors which influence size of receivables.
6. What should be considerations in forming credit policy?
7. Discuss the various aspects or dimensions of Receivable management.

INVENTORY MANAGEMENT

Structure

- 7.1 Inventory Management
 - 7.1.1 Meaning of inventory
 - 7.1.2 Purpose of holding inventory
 - 7.1.3 Inventory Management
 - 7.1.4 Objectives of Inventory Management;
- 7.2 Inventory Management Techniques
- 7.3 Review Questions

7.1 INVENTORY MANAGEMENT

Introduction: Every enterprise needs inventory for smooth running of its activities. It serves as a link between production and distribution processes. There is generally a time lag between the recognition of needed and its fulfillment. The greater the time, higher the requirement of inventory. Thus it is very essential to have proper control and management of inventories.

7.1.1 Meaning of Inventory

The inventory means stock of goods, or a list of goods in manufacturing concern, it may include raw material, work in progress and stores etc. it includes the following things:

1. **Raw materials** are those basic inputs that are converted into finished product through the manufacturing process. Thus, raw materials inventories are those units, which have been purchased and stored for future production.
2. **Work-in-process** inventories are semi-manufactured products. They represent products that need more work before they become finished products for sale.
3. **Finished goods** inventories are those completely manufactured products, which are ready for sale. Stocks of raw materials and work-in-process facilitate production, while stock of finished goods is required for smooth marketing operations.

Thus, inventories serve as a link between the production and consumption of goods. The levels of three kinds of inventories for a firm depend on the nature of its business. A manufacturing firm will have substantially high levels of all three kinds of inventories, while a retail or wholesale firm will have a very high level of finished goods inventories and no raw material and work-in-process inventories. Within manufacturing firms, there will be differences. Large heavy engineering companies produce long production cycle products. therefore, they carry large inventories. On the other hand, inventories of a consumer product company will not be large because of short production cycle and fast turnover. **Supplies (or stores and spares) is a** fourth type of inventory is also maintained by firms. Supplies include office and plant cleaning

materials like soap, brooms, oil, fuel, light bulbs etc. These materials do not directly enter production, but are necessary for production process. Usually, these supplies are small part of the total inventory and do not involve significant investment. Therefore, a sophisticated system of inventory control may not be maintained for them.

7.1.2 Purpose of Holding Inventories

There are three main purposes for holding the inventories:

1. **The Transaction Motive:** This facilitates the continuous production and timely execution of sales orders.
2. **The Precautionary Motive:** This necessitates the holding of inventories for meeting the unpredictable changes in demand and supply of material.
3. **The Speculative Motive:** This includes keeping inventories for taking the advantage of price fluctuations, saving in reordering costs and quantity discounts.

7.1.3 Inventory Management

The investment in inventory is very high in most of the undertakings engaged in manufacturing, wholesale and retail trade. The amount of investment is sometimes more in inventory than on other assets. In India, a study of 29 major industries has revealed that the average cost of the material is 64 paise and the cost of labor and overhead is 36 paise in a rupee. It is necessary for every management to give proper attention inventory management.

A proper planning of purchasing, handling, storing, and accounting should form a proper inventory management. An efficient system of inventory management will determine:-

1. What to purchase
2. How much to purchase
3. From where to purchase
4. Where to store

The purpose of inventory management is to keep the stocks in such a way that neither there is over stocking nor under stocking. The over stocking will mean a reduction of liquidity and starving for other production processes. On the other hand, under stockings, will result in stoppage of work. The investment in inventory should be left in reasonable limits.

7.1.4 Objectives of Inventory Management

The main objectives of inventory management are operational and financial. The operational objectives mean that the materials and spares should be available in sufficient quantity so that work is not disrupted for want of inventory. The financial objective mean that investment in inventories should not remain idle and minimum working capital should be locked in it. The following are the objectives of inventory management:

1. To ensure the continuous supply of raw material, spare and finished goods so that the production should not suffer at any time.

2. To avoid both over stocking and under stocking of inventory.
3. To maintain the investment in inventories at the optimum level as required the operational and sales activities.
4. To keep material cost under control so that they contribute in reducing the cost of production and overall costs.
5. To eliminate duplication in ordering stocks. This is possible with the help of centralized purchase.
6. To minimize the losses through pilferages, wastages and damages.
7. To design the proper organization for inventory management.
8. To ensure the perpetual inventory control so that the material shown in the stock ledgers should be actually lying in the stores.
9. To facilitate the furnishing of data for short term and long term planning and control of inventory.

7.2 TOOLS AND TECHNIQUES OF INVENTORY MANAGEMENT

Effective inventory management requires an effective control, system for inventories. A proper inventory control not only helps in solving the acute problem of liquidity but also increases the profits and causes substantial reduction in the working capital of the concern. The following are the important tools and techniques in inventory management and control:

1. Determination of stock level
2. Determination of safety stock
3. Determination of economic order quantity
4. A.B.C. analysis
5. V E D analysis
6. Inventory turnover ratio
7. JIT Control system

Determination of stock level: Carrying too much and too little inventories is detrimental to the firm. If the inventory level is too little, the firm will face frequent stock outs involving heavy ordering costs and if the inventory is too high it will be unnecessary tie up of capital. Therefore an efficient inventory management requires that a firm should maintain an optimum level of inventory where inventory costs are minimum. Various stock levels are as follow:

- a) **Minimum level:** This represents the quantity, which must be maintained in hand at all, times. If stocks are less than the minimum level than the work will stop due to shortage of material. Following factors are undertaken while fixing minimum stock level.

- b) **Lead time:** The time taken in processing the order and then executing is known as lead time
- c) **Rate of consumption:** It is the average consumption of material in the factory. Minimum stock Level = Re order level – (Normal consumption x Normal reorder period)
- d) **Reorder level:** Re order level is fixed between minimum and maximum level. Reorder level = Maximum Consumption x Maximum reorder period
- e) **Maximum Level:** It is the quantity of the material beyond which a firm should not exceeds its stocks. If the quantity exceed maximum level limit then it will be overstocking. Maximum Level = Reorder level + reorder quantity – (Minimum Consumption x Minimum reorder period)
- f) **Average stock level:** Average Stock level = Minimum stock level + $\frac{1}{2}$ of reorder quantity

Determination of the safety stock: Safety stock is a buffer to meet some unanticipated increase in usage. The usage of inventory cannot be perfectly forecasted. It fluctuates over a period of time. Two costs are involved in the determination of this stock.

- Opportunity cost of stock out
- Carrying costs

The stock out of Raw Material would cause production disruption. The stock out of finished goods result into the failure of the firm in competition as the form cannot provide proper customer service.

Economic order of quantity: A decision about how much to order has a great significance in inventory management. The quantity to be purchased should be neither small nor big. EOQ is the size of lot to be purchased which is economically viable. This is the quantity of the material, which can be purchased at minimum cost. Cost of managing the inventory is made up of two parts:-

Ordering Costs: This cost includes:

- a) Cost of staff posted for ordering of goods
- b) Expenses incurred on transportation of goods purchased.
- c) Inspection costs of incoming material
- d) Cost of stationery, postage, telephone charges.

Carrying costs: These are the costs for holding the inventories. It includes:

- a) The cost of capital invested in inventories.
- b) Cost of storage
- c) Insurance cost

- d) Cost of spoilage on handling of materials
- e) The loss of material due to deterioration.

The ordering and carrying costs of material being high, an effort should be made to minimize these costs. The quantity to be ordered should be large so that economy may be made in transport cost and discounts may also be earned.

Assumptions of EOQ

- a) The supply of goods is satisfactory.
- b) The quantity to be purchased by the concern is certain
- c) The prices of the goods are stable.

$$EOQ = \sqrt{\frac{2AS}{I}}$$

Where ,
 A = Annual consumption in rupees
 S = Cost of placing an order
 I= Inventory carrying cost of one unit

Illustration 1: A firm buys casting equipment from outside suppliers@Rs.30/unit. Total annual needs are 800 units. You have with you following further data:

- a) Annual return on investment, 10%
- b) Rent, insurance, taxes per unit per year, Re.1
- c) Cost of placing an order, Rs.100
- d) How will you determine the economic order quantity?

Solution:

Annual consumption (A) = 800 units

Ordering cost (S) = Rs.100.

Annual consumption in Rs. = 800 unit x Rs. 30 per unit = Rs. 24,000

Total interest cost = 10% of 24000 = Rs.2400

Interest cost per unit = 2400 / 800 = Rs.3

Inventory Carrying cost (I) = Interest cost + Rent, insurance, Taxes cost = 3 + 1 = Rs.4 per unit

$$\begin{aligned}
 EOQ &= \sqrt{\frac{2AS}{I}} \\
 &= \sqrt{\frac{2 \times 800 \times 100}{4}} \\
 &= \mathbf{200 \text{ units}}
 \end{aligned}$$

Illustration 2: The annual demand for a product is 6,400 units. The unit cost is Rs.6 and inventory carrying cost per unit per annum is 25% of the average inventory cost. If the cost of procurement is Rs. 75, determine:

- a) Economic Order Quantity (EOQ)
- b) Number of orders per annum
- c) Time between two consecutive orders

Solution:

- a) Annual consumption (A) = 64,00 units
 Ordering cost (S) = Rs.75
 Inventory Carrying cost of one unit (I) = $6 \times \frac{25}{100} = \text{Rs.}1.50$ per unit

$$\begin{aligned} \text{EOQ} &= \sqrt{\frac{2AS}{I}} \\ &= \sqrt{\frac{2 \times 6400 \times 75}{1.50}} \\ &= 800 \text{ units} \end{aligned}$$

b) **Number of orders per annum** = $\frac{6400}{800} = 8$ orders

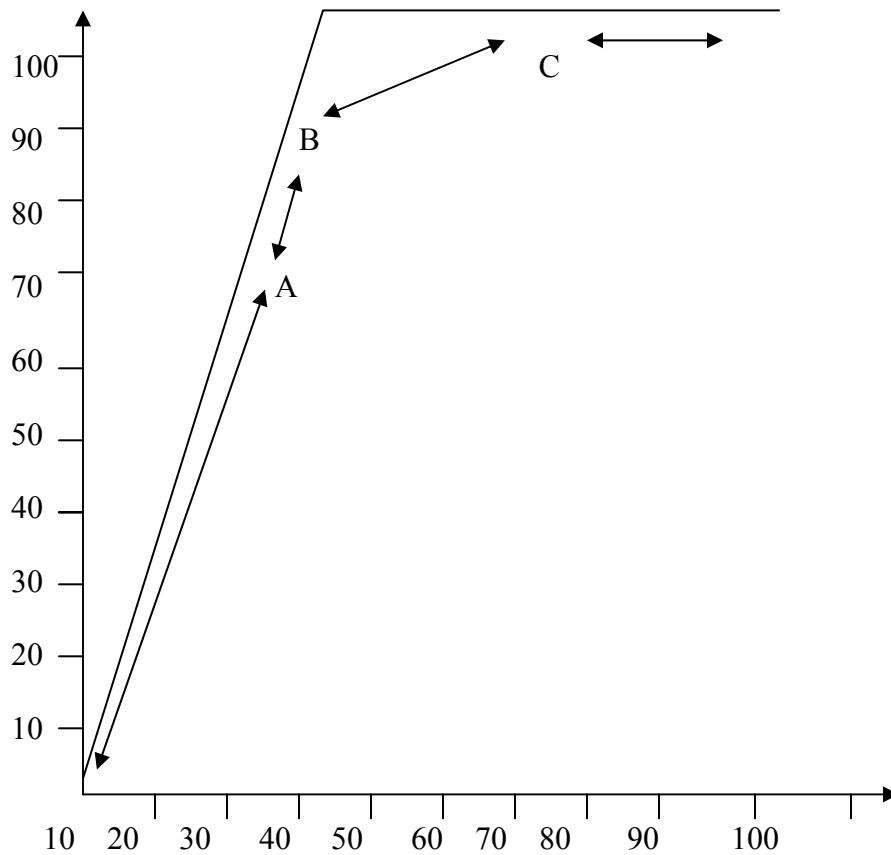
c) **Time between two consecutive orders** = $\frac{12 \text{ months}}{8 \text{ orders}} = 1.5$ months

A-B-C Analysis: The materials divided into a number of categories for adopting a selective approach for material control. Under ABC analysis, the materials are divided into 3 categories viz, a B and C. Past experience has shown that almost 10% of the items contribute to 70% of the value of the consumption and this category is called ‘a’ category. About 20% of the items contribute 20% of the value of the consumption and is known as category ‘B’ materials. Category ‘C’ covers about 70% of the items of the material, which contribute only 10% of the value of the consumption.

Class	No. of items	Value of the Items
	%	%
A	10	70
B	20	20
C	70	10

A B C ANALYSIS helps to concentrate more efforts on category A. since greatest monetary advantage will come by controlling these items. An attention should be paid in estimating the requirements, purchasing, maintaining the safety stocks and properly storing of ‘A’ Category, material. These items are kept under a constant review so that a substantial material cost may be controlled. The control of ‘C’ items may be relaxed and these stocks may be purchased for the

year. A little more attention should be given toward 'B' category items and their purchase should be undertaken at quarterly or half yearly intervals.



V E D Analysis: The VED analysis is generally used for spare parts. The requirement and urgency of spares parts is different from that of the material. Spare parts are classified as Vital (V), essential (E), and Desirable (D). The vital spares are must for running the concern smoothly and these must be stored adequately. The non-availability of spare parts will cause havoc on the concern. The E type of spares is also necessary but their stock may be kept at low figures. The stocking of D type of spares may be avoided at times. If the lead time of these spares is less, then stocking of these spares can be avoided. The classification of spares under these three categories is an important decision. A wrong classification of any spare will create difficulties for production department. The classification should be left to the technical staff because they know the need urgency and use of these spares.

Inventory Turnover Ratio: This ratio is calculated to indicate whether the inventories have been used efficiently or not. The purpose is to ensure the blocking of only required minimum funds in inventory. This ratio is also known as Stock velocity.

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory at cost}}$$

$$\text{Inventory Conversion period} = \frac{\text{Days in Year}}{\text{Inventory Turnover Ratio}}$$

Just In Time (JIT) Inventory Control System : Just in time philosophy, which aims at eliminating waste from every aspect of manufacturing and its related activities, was first developed in Japan. Toyota introduced this technique in 1950's in Japan, how U.S. companies started using this technique in 1980's. The term JIT refers to a management tool that helps produce only the needed quantities at the needed time.

Just in time inventory control system involves the purchase of materials in such a way that delivery of purchased material is assured just before their use or demand. The philosophy of JIT control system implies that the firm should maintain a minimum (zero level) of inventory and rely on suppliers to provide materials just in time to meet the requirements.

Objectives of JIT

1. Minimum (zero) inventory and its associated costs.
2. Elimination of non-value added activities and all wastes.
3. Minimum batch/lot size.
4. Zero breakdowns and continuous flow of production.
5. Ensure timely delivery schedules both inside and outside the firm.
6. Manufacturing the right product at right time. -

Features of JIT

1. It emphasises that firms following traditional inventory control system overestimate ordering cost and underestimate carrying costs associated with holding of inventories.
2. It advocates maintaining good relations with suppliers so as to enable purchases of right quantity of materials at right time.
3. It involves frequent production/order runs because of smaller batch/lot sizes.
4. It requires reduction in set up time as well as processing time.
5. The major focus of JIT approach is to purchase or produce in response to need rather than as per the plans and forecasts.

Advantages of JIT Inventory Control System

1. The right quantities of materials are purchased or produced at the right time.
2. Investment in inventory is reduced.
3. Wastes are eliminated.
4. Carrying or holding cost of inventory is also reduced because of reduced inventory.

Reduction in costs of quality such as inspection, costs of delayed delivery, early delivery, processing documents etc. resulting into overall reduction in cost.

7.2 REVIEW QUESTIONS

1. What is inventory management? Discuss in detail the objectives of inventory management.
2. Explain various tools and techniques of inventory management.
3. Write short notes on a) ABC analysis b) EOQ c) JIT system.

CASH MANAGEMENT ANALYSIS

Structure

8.1 Cash Management

8.1.1 Motives for holding Cash,

8.1.2 Cash Management

8.1.3 Managing cash flows

8.2 Cash Management models

8.3 Review Questions

8.1 CASH MANAGEMENT

Introduction: Cash is the most liquid asset that a business owns. Cash in the business enterprises may be compared to the blood in the human body, which gives life and strength to the human body and the cash imparts life and strength, profits and solvency to the business organization.

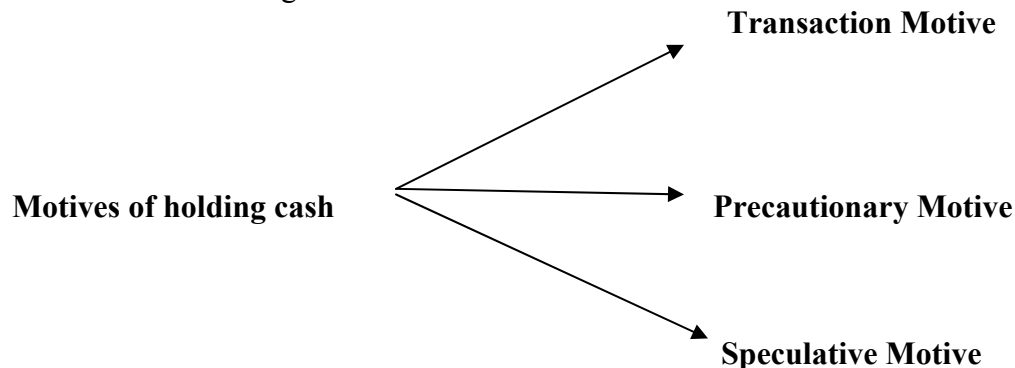
What do you understand by Management of Cash? The modern day business comprises of numerous units spread over vast geographical areas. It is the duty of the finance manager to provide adequate cash to each of the units. For the survival of the business it is absolutely necessary that there should be adequate cash. It is the duty of the finance manager to maintain liquidity at all parts of the organization while managing cash. On the other hand, he has also to ensure there are no funds blocked in idle cash. Idle cash resources entail a great deal of cost in terms of interest charges and in terms of opportunity costs. Hence the questions of cost of idle cash must also be kept in mind by the finance manager. A cash management scheme therefore, is a delicate balance between the twin objectives of liquidity and costs.

Why we need for cash: The following are the three basic considerations in determining the amount of cash or liquidity as have been outlined by Lord Keynes:

1. **Transaction needs:** Cash facilitates the meeting of the day to day expenses and other payments on the debts. Normally, inflows of cash from operation should be sufficient for this purpose. But sometimes this inflow may be temporarily blocked. In such cases, it is only the reserve cash balance that can enable the firm to make its payments in time
2. **Speculative needs:** Cash may be held in order to take advantage of profitable opportunities that may present themselves and which may be lost for want of ready cash settlement.
3. **Precautionary needs:** Cash may be held to act as for providing safety against unexpected events. Safety as is typified by the saying that a man

8.1.1 Motives for Holding Cash

The firm with the following motives holds cash:



1. **Transaction Motive:** Transaction Motive requires a firm to hold cash to conduct its business in the ordinary course. The firm needs cash to make payments for purchases, wages, operating expenses and other payments. The need to hold cash arises because cash receipts and cash payments are not perfectly synchronized. So firm should maintain cash balance to make the required payment. If more cash is need for payments than receipts, it may be raised through bank overdraft. On the other hand if there are more cash receipts than payments, it may be spent on marketable securities.
2. **Precautionary Motive:** cash is also maintained by the firm to meet the unforeseen expenses at a future date. Their are uncontrollable factors like government policies, competition, natural calamities, labor unrest which have heavy impact on the business operations. In such situations, the firm may require cash to meet additional obligations. hence the firm should hold cash reserves to meet such contingencies. Such cash may be invested in the short term marketable securities which may provide the cash s and when necessary.
3. **Speculative Motive:** To take the advantage of unexpected opportunities, a firm holds cash for investment in profit making opportunities. Such a motive is purely speculative in nature. For e.g. holding cash to rake advantage of an opportunity to purchase raw material at the reduced price on the payment of immediate cash or delay that purchase of material in anticipation of declining prices. It may like to keep some cash balance to make profits by buying securities at the time when their prices fall on account of tight money conditions.

Cash Management: Cash management deals with the following:

1. Cash Planning
2. Managing Cash flows
3. Determining optimum cash balance

Following are some facets of cash management:

Cash planning: cash planning is a technique to plan and control the use of cash. A projected cash flow statement may be prepared, based on the present business operations and anticipated future activities.

Cash Budget / Cash Forecasts: cash budget is a summary statement of the firm's expected cash flows and cash balances over the projected period. This information helps the finance manager to determine the future cash needs of the firm, plan for the financing of these needs and exercise control over the cash and to reach liquidity of the firm. It is a forecast of expected cash intake and outlays.

The short-term forecast can be made with the help of cash flow projections. The finance manager will make the estimate of likely receipts in the near future and the expected disbursement in that period. The long-term cash forecast are also essential for proper cash planning. Long-term forecast indicates company's future financial needs for working capital, capital projects etc. Both short term and long-term forecasts may be made with the help of the following methods:

1. **Receipts and disbursement methods**
2. **Adjusted net income methods**

Receipts and Disbursement Methods: In this method the receipts made payments of cash are estimated. The cash receipt may be from cash sales, collection from debtors, and sale of fixed assets. Payment may be made for cash purchases, to creditors for goods, purchases of fixed assets etc. the receipts and disbursement are to be equaled over a short as well as long periods. Any shortfall in receipts will have to be met from banks or other sources. Similarly surpluses cash may be invested in the risk free marketable securities.

Adjusted Net Income Method: This method also known as Sources and Uses approach. This method helps in projecting the company's need for cash at some future date and to see whether the company will be able to generate sufficient cash. If not, then it will have to decide about borrowing.

In preparing the adjusted net income forecast, items such as net income. Depreciation, tax, dividends can be easily determined from the company's annual operating budget. Difficulty is faced in estimating the working capital changes because they are influenced by factors such as fluctuation in raw material costs, changing demand for the company's products, for projecting working capital ratios relating to receivables and inventories may be used.

Safety as is typified by the saying that a man has only three friends
an old wife, an old dog and money at bank.

Come on students we will start learning to prepare Cash Budget.

Illustration 1: Prepare a cash budget for the quarter ended 30th September, 1987 based on the following information.

Cash at bank on 1 st July 1987	Rs.	25,000
Salaries and wages estimated	Rs.	10,000
Interest payable August 1987	Rs.	5,000

	June	July	August	September
	Rs.	Rs.	Rs.	Rs.
Estimated Cash Sales	-	1,40,000	1,52,000	1,21,000
Credit sales	1,00,000	80,000	1,40,000	1,20,000
Purchases	1,60,000	1,70,000	2,40,000	1,80,000
Other expenses	-	20,000	22,000	21,000
Payable in month				

Credit sales are collected 50% in the month of sales made 50% in the month following collection from credit sales are to 5% discount if, payment is received in the month of sales 2.5% if, payment is received in the following month. Creditors paid either on a prompt, or, 30 days's credit basis. It is estimated that, 10% of the creditors are in the proper prompt category.

Solution:

Cash Budget (For Quarter Ending September 1987).

	July	August	September
	Rs.	Rs.	Rs.
(A) Cash inflows	1,40,000	1,52,000	1,21,000
Cash Sales			
Collection from debtors			
Last month	48,750	39,000	68,250
Current month	38,000	66,500	57,000
	2,26,750	2,57,500	2,46,250
(B) Cash outflows			
Sundry creditors			
Prompt basis	17,000	24,000	18,000
Others	1,44,000	1,53,000	2,16,000
Salaries and wages	10,000	10,000	10,000
Other expenses	20,000	22,000	21,000
Interest	-	5,000	-
	1,91,000	2,14,000	2,65,000
(C) Net cash inflow (A-B)	35,750	43,500	(18,750)
Opening balance	25,000	60,750	1,04,250
+ Surplus for the month	35,750	43,500	(18,750)
Closing balance	60,750	1,04,250	85,500

Illustration 2: A.B.C. Company Limited wishes to arrange overdraft facilities with its bankers during the period April to June 1987 when it will be manufacturing mostly for stock. Prepare a cash budget

for the above period from the following data, indicating the extent of the bank facility the company will require at the end of each month.

Month	Sales Rs.	Purchases Rs.	Wages Rs.
February	1,80,000	1,24,800	12,000
March	1,92,000	1,44,000	14,000
April	1,08,000	2,43,000	11,000
May	1,74,000	2,46,000	10,000
June	1,26,000	2,68,000	15,000

Additional information:

1. All sales are credit sales. 50% of credit sales are realized in the month following the sales and the remaining 50% in the second month following.
2. Creditors are paid in the month following the month of purchases.
3. Cash at bank of 1.4.87 (estimated) Rs. 25,000.

Solution:

Cash Budget of A.B.C. Company Limited Problems Solved.

		April 1987	May 1987	June 1987
(A)	Cash inflows			
	Sundry debtors			
	For first 50%	96,000	54,000	87,000
	Second 50%	90,000	96,000	54,000
		1,86,000	1,50,000	1,41,000
(B)	Cash outflows			
	Sundry creditors	1,44,000	243,000	2,46,000
	Wages	1,55,000	2,53,000	2,61,000
(C)	Net cash inflows, or, outflows	31,000	(-) 1,03,000	(-) 1,20,000
(D)	Estimated cash surplus, or,			
	Opening cash balance	25,000	56,000	
	+ Surplus/ Deficit for the month	31,000	(-) 1,03,000	(-) 1,20,000
	Closing cash balance	56,000	(-) 47,000	(-) 1,20,000

Illustration 3: Shri Ramesh has given the sales forecast for January to July 1995 and actual sales for November, December 1994 were as under. With the other particulars given, prepare cash budget (cash flow statement) for five months January-May

Sales	November	Rs. 80,000
	December	70,000
	January	80,000
	February	100,000
	March	80,000
	April	100,000
	May	90,000
	June	120,000
	July	100,000

Additional information . Sales :- 20 percent cash 80 percent credit collection in the third month (January sales in march). (b) Variable Expenses 5 percent on turnover time lag half month (c) Commission 5 percent on credit sales payable i Purchases= 10.40. third month (d) purchase 60 percent of the sales of the third month payment 3rd month of purchases. (d) rent and other expenses Rs. 3000 paid every month. (e) other payment:- Fixed Assets purchase March Rs. 50,000 (f) Taxes April Rs. 20000 (g) Opening Cash Balance Rs. 25,000

Solution:

CASH BUDGET OF 1995					
Particulars	January	February	March	April	May
Opening Balance	25,000	47,050	52,750	24,050	32,550
Receipts:					
Sales: Cash	16,000	20,000	16,000	20,000	18,000
Credit	64,000	56,000	64,000	80,000	64,000
Total Receipts (A)	105,000	123,050	132,750	124,050	114,550
Payment: -					
Variable Expenses	3,750	4,500	4,500	4,500	4,750
Commission at 5% of credit sales	3,200	2,800	3,200	4,000	3,200
Purchases	48,000	60,000	48,000	60,000	54,000
Rent / Other expenses	3,000	3,000	3,000	3,000	3,000
Fixed assets purchases	-		50,000		
Taxes	-			20,000	
Total Payment (B)	57,950	70,300	108,700	91,500	64,950
Closing Balance (A-B)	47,050	52,750	24,050	32,550	49,600

Working Notes

Variable Expenses :

Particulars	January	February	March	April	May
1/ 2 of current month (5%)	2000	2500	2000	2500	2250
1/2 of Pr. Month	1750	2000	2500	2000	2500
	3750	4500	4500	4500	4750

Illustration .4 A manufacturing company has prepared a budget for the year ended 31st December 1997 using the relevant data given below, prepare cash budget for each of the month of February, march and April 1997

Estimated cost per unit	Rs.
Direct Material	3
Direct Wages	4
Production overhead	2
Total	9

Fixed overhead are estimated at Rs. 48000 per annum. These are expected to be increased in equal amounts each month during the budget period. Estimated sales at Rs. 11 per unit for the first five month are given below: 10% of sales will be made on cash; balance will be made one month's credit the flowing information is available

- a Finished goods Stock: 75% of each month's invoiced sales units to be produced in the month of sale and 25% of each month's involved in sales unit to be produced in the previous month.
- b Stocks, direct material:- 50% of direct material required for each month's production to be purchases in the previous month
 - i Direct Material: to be paid in the month following the month of purchase.
 - j Direct Wages: 50% in the month used and the balance in the following month
 - k Expenses: 1 month's lag
- c Estimated cash balance as on 1st February 1997 Rs. 5000

Solution;

CASH BUDGET			
Particulars	February	March	April
Opening Balance	5,000	12,360	26,720
Collection:			
Cash Sales	7,480	5,940	6,600
Credit Sales	61,380	67,320	53,460
Total Receipts (A)	73,860	85,620	86,780
Payment :-			
Fixed Overheads	4,000	4,000	4,000
Creditors for Materials	19,200	18,000	17,325
Wages			
(1/2 Current months)	12,900	11,100	12,000
1/2 Next Month	12,700	12,900	11,100
Overheads	12,700	12,900	11,100
Total Payment (B)	61,500	58,900	55,525
Closing Balance (A-B)	12,360	26,720	31,255

Working Notes

Cash Sales

Particulars	February	March	April
6800x11x10%	7480		
5400x11x10%		5940	
6000x11x10%			6600
	7480	5940	6600

Credit sales collection

	Jan's Sales 6200 x 11x 90 % =
Feb – 97	61,380
	Feb's Sales 6800 x 11 x 90 % =
Mar – 97	67320
Apr – 97	March's sales 5400 x 11x 90 % =

8.1.3 Managing Cash Flows

After estimating the cash flows, efforts should be made to adhere to the estimates of receipts and payment of cash. Cash management will be successful only if cash collections are accelerated and cash disbursement is delayed. The following method of cash management will help:

Prompt payment by customers: In order to accelerate cash inflows, the collections from the customers should be prompt. The customers should be promptly informed about the amount payable and the time by which it should be paid. One method is to avail cash discounts.

Quick conversion of payment into cash: improving the cash collection process can accelerate Cash flows. Once the customer writes a cheque in favor of the concern the collection can be quickened by its earlier collection. There is the time gap between the cheque sent by the customers and the amount collected against it. This is due to may factors:

- a) Mailing time
- b) Postal float i.e. time taken by the post office for transferring the Cheque from customers to the firm.
- c) Bank floats i.e. collection time within the bank.

All these are known as Deposit float

An efficient cash management will be possible only if time taken in deposit float vis reduced which can be done only by decentralizing collections.

Decentralized Collections: A big firm operating over wide geographical area can accelerate collections by using the system of decentralized collections. A number of collection centers are opened in different area. To reduce the mailing time.

8.2 CASH MANAGEMENT MODELS

Determining Optimum Cash Balance: There are basically two approaches to determine an optimum cash balance

1. **Minimizing Cost models**
2. **Preparing cash Budget**

Cash Budget: cash budget is a summary statement of the firm's expected cash flows and cash balances over the projected period. This information helps the finance, manager to determine the future cash needs of the firm, plan for the financing of these needs and exercise control over the cash and to reach liquidity of the firm. It is a forecast of expected cash intake and outlays.

The cash budget should be coordinated with the other activities of the business. The functional budgets may be adjusted according to the cash budgets. The available funds should be fruitfully used and the concern should not suffer for the wants of funds,

Cash Management Models: There are two models:

- a. **William J. Baumol's Model**
- b. **Miller and Orr model**

William J. Baumol's Model: Acc to this model the optimum cash balance is the trade off between the opportunity cost and the transaction cost. The optimum cash balance is reached at a point where the total cost is minimum. The Baumol's Model is based on the following assumptions:

- a) The cash needs of the firm are known with certainty.
- b) The opportunity cost of holding cash is known and it remains constants.
- c) The transaction cost of converting securities into cash is known and remains constant.

The Baumol's Model can be represented algebraically.

$$C = \sqrt{\frac{2A \times F}{O}}$$

Where, C = optimum balance
 A = Annual cash Disbursements
 F = Fixed cost per transaction
 O = opportunity cost of holding cash

Miller and Orr Model: The Miller and Orr Model provides two control limits

- a) **The upper control limit**
- b) **Lower control limit**

When the cash balance touches the upper control limit, marketable securities are purchased to the extent of hz to return back to normal cash balance of z. in the same manner when the cash balance touches the lower control point the firm will sell the marketable securities to the extent of oz to again to return to the normal cash balance. The spread between the upper and lower cash balance limits can be computed using miller and orr Model as follow:

$$Z = \left[\frac{3}{4} \times \frac{\text{Transaction Cost} \times \text{Variance of Cash Flows}}{\text{Interest Rate}} \right]^{\frac{1}{3}}$$

$$\text{Return Point} = \text{Lower Limit} + \frac{Z (\text{Spread})}{3}$$

Variance of Cash flows = (Standard deviation)²

8.3 REVIEW QUESTIONS

1. “Efficient cash management will aim at maximizing the cash inflows and slowing cash outflows.” Discuss.
2. Explain the a) William J. Baumol’s Model b) Miller and Orr model of cash management.
3. What do you mean by cash management? What are the motives of holding cash?

FOREIGN EXCHANGE ORIENTATION

Structure

9.1 International Finance

9.1.1 Exchange rate

9.1.2 Arbitrage Process as a means of Attaining Equilibrium on Spot Markets

9.1.3 Arbitrage in Forward Market

9.2 Managing of Foreign Exchange Risk

9.2.1 Foreign Exchange risk management

9.2.2 Management of Economic exposure

9.2.3 Management of Operating Exposure

9.3 Raising foreign currency finance

9.4 Review Questions

9.1 INTERNATIONAL FINANCE

International Financial management is concerned with decisions related to multinational capital budgeting, cost of capital, working capital and sources of international finance. Different countries have different currencies and the settlement of all business transactions within a country is required in local currency. The foreign exchange (FE) market provides a forum where the currency of one country is traded for the currency of another country.

The FE market deals with a large volume of funds as well as large number of currencies of various countries. The major FE markets are London, New York and Tokyo and the major currencies traded are the US Dollar, British Pound Sterling, Euro, French Franc, Japanese Yen, Deutsche mark, and Swiss franc.

9.1.1 Exchange Rates

An exchange rate is the price of one country's currency expressed in terms of the currency of another country. For instance, a rate of Rs 48 per US \$ implies that one US dollar costs Rs 48.

Direct quotation and Indirect quotation: **Direct quotation or European quotation** is expressed in a manner that reflects the exchange of a specified number of domestic currencies for one unit of foreign currency. For example, Indian Rs 48 = US \$1. **Indirect quotation or American quotation** is expressed in a manner that reflects the exchange of a specified number of foreign currencies for one unit of local currency. For example, US \$0.02083 = Indian Re 1. Both quotations reflect the same exchange/conversion rate and are reciprocal to each other. Direct quotations are easier to comprehend and are, hence, followed by a large number of countries, including India.

Two-way Quotations/Rates. The FE rates explained above are single quote/rate. In practice, dealers quote two-way rates, **one for buying the foreign currency (known as bid price/rate)**

and another **for selling the foreign currency (referred to as ask price/rate)**. Since dealers expect profit in foreign exchange operations, the two prices obviously cannot be the same. Evidently, the dealer will buy the foreign currency at a lower rate and sell the foreign currency at a higher rate. For this reason, the 'bid' quote is at a lower rate and the 'ask' quote is a higher rate. The quotations are always with respect to the dealer. For example, when a dealer in Bombay quotes pound sterling 1 = Rs 78.0 - Rs 78.15, it implies that the dealer is prepared to buy British pound sterling at Rs 78 and sell it at Rs 78.15.

Spread. Spread is the difference between the ask price (sale Price) and the bid price (Purchase price). Spread to the dealer is like the gross profit for a business firm, out of which he is to meet its establishment expenses.

In percentage terms, spread can be expressed as:

- Spread (per cent) = $[(\text{Ask price} - \text{Bid price}) / \text{Ask price}] \times 100$
- Spread (per cent) = $[(\text{Ask price} - \text{Bid price}) / \text{Bid price}] \times 100$

In the above example of the £, the spread per cent is 0.19193, that is $[(\text{Rs } 78.15 - \text{Rs } 78.0) / \text{Rs } 78.15] \times 100$, when it is determined with reference to the ask price.

Spot Rates and Forward Rates: In discussing exchange rates, it is important to between spot exchange rates and forward exchange rates. **Spot exchange rates** are applicable to the purchase and sale of foreign exchange on an immediate delivery basis. Though the 'immediate' gives an impression of instantaneous delivery, in practice, it actually takes place two days later. Suppose Air India has bought aircrafts from US. It is to convert Indian Rupees into US \$ In case the terms of payment are immediate, Air India to arrange the spontaneous purchase of the required sum of US \$/Ff at the Spot rate from the spot market.

Forward exchange rates are applicable for the delivery of foreign exchange at a future date. If Air India is to make payment after 90 days, as per credit terms from the US firm, and it may wish to avoid the uncertainty of the exchange rate three months now. In that case, Air India is to purchase the required US \$ in the forward market at a forward exchange rate that is decided at the time of the agreement. The agreed forward rate is valid for settlement irrespective of the actual spot rate on the date the maturity of the forward contract (that is, 90 days from today in the case of Air India). The delivery of US \$ and the payment of Indian rupees takes place 90 days later, on the date settlement.

Cross Rates. When a direct quote of the home currency or any other currencies is not available in forex market, it is computed with the help of exchange quotes of other pairs of currencies. Known as Cross Rates. For example let's assume that the direct quote of Indian rupee and New Zealand dollars is not available. Then we can use the other two relevant quote as

New Zealand \$ / US \$: 1.7908 – 1.8510

Rupee / US \$: 48.0465 – 48.2111

Then, we can calculate cross rate of Indian rupee and New Zealand dollars as

Rupee per New Zealand \$: 25.9571 – 26.9215

In case the actual exchange rates are not in tune with cross rates, firms as well as deal bankers would like to switch over to markets offering them more favorable rates. Trading firms will benefit in terms of receiving more or paying less. On the other hand, non-equivalence of two rates would provide a risk less arbitrage opportunity to dealers, bankers and arbitrageurs in the forex markets. Eventually, the arbitrage process is likely to align actual and cross rates.

1.1.2 Arbitrage Process as a means of Attaining Equilibrium on Spot Markets

The term arbitrage in the context of forex markets refers to an act of buying currency in one market (at lower price) and selling it in another (at higher price). Thus, the difference in exchange rates (in a specified pair of currencies) in markets provides an opportunity to the operators/arbitrageurs in the market to profit without risk. As a result, equilibrium is restored in the exchange rates currencies in different forex markets. The essence of the arbitrage process is to buy currencies from markets where prices are lower and sell in markets where prices are higher. In operational terms, the arbitrage process is essentially a balancing operation that does not allow the same currency to have varying rates in different forex markets on a sustainable basis.

In the context of spot markets, two types of arbitrages are possible:

1. Geographical arbitrage and
2. Triangular arbitrage

Geographical Arbitrage: As the name suggests, geographical arbitrage consists of buying currency from a forex market (say, London) where it is cheaper and sell in another forex market (say, Tokyo) where it is costly. Since geographical distance does not have much relevance in view of the fact that forex transactions primarily take place through telephone and fax messages, arbitrageurs will gain in buying at London and selling at Tokyo.

Illustration 1: At two forex centers, the following Re-US \$ rates are quoted:

London : Rs 47.5730 - 47.6100

Tokyo : Rs 47.6350 - 47.6675

Find out arbitrage possibilities for an arbitrageur who has Rs 100 million.

Solution: The following modus operandi will be deployed by the arbitrageur:

- (i) He will buy US \$ from the London forex market at the rate of Rs 47.6100, as it is cheaper there compared to the Tokyo market (Rs 47.6350). He will obtain (Rs 100 million/Rs 47.6100) US \$2,100,399.075 on conversion.
- (ii) He will sell US \$2,100,399.075 at the rate of Rs 47.6350 per US \$ and will obtain Rs 100,052,509.90.
- (iii) As a result of arbitrage, he will earn a profit of Rs 52,059.90 (Rs 100,052,059.90 - Rs 100 million) without any risk.

Triangular Arbitrage As the name suggests, triangular arbitrage takes place when there are three currencies involving three markets. For this reason, triangular arbitrage is also known as a three-point arbitrage. Following illustration illustrates the concept of such an arbitrage.

Illustration 2. The following are three quotes in three forex markets:

\$1 = Rs 48.3011 in Mumbai

£1 = Rs 77.1125 in London

\$1 US = \$1.6231 in New York

Are any arbitrage gains possible? Assume there are no transaction costs and the arbitrageur has US \$1,000,000.

Solution: Arbitrage gains are possible since the cross rate between US \$/British £ by using the rates at London and at Mumbai is different ($\text{Rs } 77.1125/\text{Rs } 48.3011 = \text{US } \$1.5965/\text{£}1$) from that of New York (\$1.6231). The arbitrageur can adopt the following steps to realize arbitrage gain.

- (i) The arbitrageur will buy Indian rupees with US \$1 million. The total proceeds he obtains is ($\text{Rs } 48.3011 \times \$1 \text{ million US } \$$) Rs 48,301,100.
- (ii) He converts Indian rupees in British £ at the London forex market. He receives ($\text{Rs } 48,301,100/\text{Rs } 77.1125$) £626,371.8592.
- (iii) He then converts £626,371.8592 at the New York forex market. He obtains ($\text{£}626,371.8592 \times \1.6231) US \$1,016,664.164
- (iv) Thus, he has net gain of ($\text{US } \$1,016,664.164 - \$1,000,000$) US \$16,664.164

To sum up the discussion, it can be said that the arbitrage process will set in whenever there are significant differences between cross rates and quoted rates and this process continues till there is realignment between these rates.

9.1.3 Arbitrage in Forward Market

Arbitrage gain possibilities exist in forward markets also, in case the difference between the forward rate and the spot rate (in terms of premium or discount) is not matched by the interest rate differentials of the two currencies. Conceptually, interest rate differentials of the two currencies should be equal to the forward premium or discount on their exchange rates. Since the comparison is to be made with interest rate differentials, this kind of arbitrage is also appropriately referred to as **covered interest arbitrage**. For example there is a arbitrage gain possible from the following data:

Spot Rate	:	Rs.78.10/£
3 months forward rate :		Rs 78.60/£
3 months interest rates:		Rupees: 9% and British £: 5%

Because 3 month forward rate of £ is higher (at Rs 78.60) than the spot rate (Rs 78.10).

$$\begin{aligned}\text{Premium (percentage)} &= \frac{(\text{Rs.}78.60 - \text{Rs } 78.10)}{\text{Rs.}78.10} \times \frac{12}{3} \times 100 \\ &= \mathbf{2.56\%}\end{aligned}$$

$$\text{Interest rate differential} = 9\% - 5\% = \mathbf{4\%}$$

Since interest rate differential and premium percentage is different, there is a arbitrage gain possibilities.

9.2 MANAGING OF FOREIGN EXCHANGE RISK

What Does *Foreign-Exchange Risk* Mean?

The risk of an investment's value changing due to changes in currency exchange rates; The risk that an investor will have to close out a long or short position in a foreign currency at a loss due to an adverse movement in exchange rates. Also known as "currency risk" or "exchange-rate risk"

9.2.1 Foreign Exchange Risk Management (FERM)

For the multinational and other business firms having global business operations it is imperative to know of various types of foreign exchange risks they are exposed to as well as are fully conversant with the various important FERM techniques to deal with such risks.

Types of Exposure: Foreign exchange exposure can be classified into three broad categories:

1. Transaction exposure
2. Translation exposure
3. Operating exposure

Transaction and Operating Exposure both together are also known as 'Economic Exposure' and Translation exposure is referred to as "Accounting Exposure or Balance sheet Exposure"

Transaction Exposure: Transaction exposure stems from transactions that give rise to known contractually determined future foreign-currency denominated cash inflows or outflows. Cross border trade, borrowings and lendings in foreign currencies, and the local purchases and sales of foreign subsidiaries are examples of such transactions. If exchange rates change between now and when these transactions settle, the value of the associated foreign currency cash flows changes, resulting in currency gains and losses. For example, if an Indian exporter has a receivable of \$100,000 due three months hence and if in the meanwhile the dollar depreciates relative to the rupee a cash loss occurs. Conversely, if the dollar appreciates relative to the rupee, a cash gain occurs. In the case of a payable, the outcome is of an opposite kind: a depreciation of the dollar relative to the rupee results in a gain, whereas an appreciation of the dollar relative to the rupee results in a loss.

In the books of accounts, the foreign currency amount is expressed in the reporting currency by applying the exchange rate prevailing on the transaction date. If an item is settled during the current account period, it is revalued at the rate prevailing on the settlement day. This may result in loss or gain. At each balance sheet date, foreign currency monetary items are reported using the exchange rate on the balance sheet date, non-monetary items carried at historical cost are reported using the exchange rate on the transaction date, and non-monetary items carried at fair value are reported using the exchange rate that existed when the fair values were determined. Exchange differences arising from either settlement or restatement of monetary items on the balance sheet date should be recognized as income or expense in the period in which they arise. When a forward exchange contract is entered into as a hedge, the premium or discount arising at the inception of the contract should be amortized as expense or income over the Life of the contract.

Translation Exposure: Translation exposure, also called accounting exposure, stems from the need to convert the financial statements of foreign operations from foreign currencies to domestic currency for purposes of reporting and consolidation. If there is a change in exchange rates since the previous reporting period, the translation or restatement of foreign-currency denominated assets, liabilities, revenues, and expenses will result in foreign exchange gains or losses. Translation gains/losses do not involve cash flows as they are purely paper gains/losses, except when they have some tax implications.

Indian accounting standards require consolidation of the accounts of foreign subsidiaries or branches with those of the parent firm in India. The method used for translating foreign currency statements depends on the nature of relationship between the parent and the foreign operations. From this point of view, foreign operations can be classified in to two categories.

1. **Integral Foreign Operations:** An integral operation carries out business as if it is an extension of the operations of the parent. For example, the foreign operation may just sell goods imported from the parent and remit the proceeds of the same to its parent.
2. **Independent Foreign Operations:** An independent or non-integral foreign operation is run independently, as if it is a separate enterprise. It is also referred to as a foreign entity.

The financial statements of an integral foreign operation are translated using the rules we discussed under transaction exposure. The assets and liabilities, both monetary and nonmonetary, of the non-integral foreign operation are translated at the rates prevailing on the balance sheet date. The profit and loss items of such operations are translated at the exchange rates prevailing on the date of the transactions. All the resulting exchange differences are accumulated in a foreign currency translation reserve until the disposal of the foreign operations.

Operating Exposure: The exchange rate changes significantly alter the costs of a firm's inputs and the prices of its output and thereby influence its competitive position substantially. We can explain this by following examples:

Volkswagen had a highly successful export market for its 'Beetle' model in the US before 1970. With the breakdown of the Bretton Wood system of fixed exchange rates, the Deutschemark appreciated significantly against the dollar. This created problems for Volkswagen as its expenses were mainly in Deutschemark but its revenues in dollars. However, in a highly price-sensitive US market, such an action caused a sharp decrease in sales volume—from 600,000 vehicles in 1968 to 200,000 in 1976. (Incidentally, Volkswagen's 1973 losses were the highest as of that year, suffered by any company anywhere in the world.) In wake of East Asian crisis in 1997, currencies of several East Asian countries fell sharply. This made exports from these countries very competitive in advanced markets. As a consequence, gems and jewellery exports from India suffered competitive disadvantage as compared to their rivals from South East Asia.

Management of Transaction Exposure: Transaction exposure arises on account of imports, exports, and foreign currency borrowings. To cope with such exposure the followings may be used:

Forward Market Hedge: In a forward market hedge, a net liability (asset) position is covered by an asset (liability) position in the forward market. For example a consider the case of a Indian firm which has a liability of \$1,00,000 payable in 60 days to an American supplier on account of credit purchases. The firm can follow these steps:

Step 1 Enter in to a forward contract to purchase \$1, 00,000in 60 days from a foreign exchange dealer. The 60 day forward contract rate is, say, Rs. 46.90 per dollar.

Step 2 On sixtieth day pay the dealer Rs. 4,690,000 (\$1, 00,000 x Rs. 46.90). By following this mechanism the firm can eliminate the exchange risk in dollars. To cover a net asset position in the foreign currency a reverse process has to be followed.

To illustrate this process, consider, Indian firm which is expecting a payment of \$100,000 due in 60 days, on account of a credit sale, from an American customer. The firm can take the following steps to cover its t position.

Step1 Enter into a forward contract with a foreign exchange dealer to sell \$100,000 in 60 days. The 60 day forward rate is, say, Rs. 46.85.

Step2 On the sixtieth day collect \$100,000 from the American customer, deliver the same to the dealer, and collect Rs. 4,685,000. The forward market hedge is a relatively simple and convenient arrangement. It involves getting a forward quotation from a foreign exchange dealer and advising do the needful. Of course, the dealer will charge a commission for performing transaction.

Option Forwards A variant of the forward contract is an option forward in which exchange rate between the currencies is fixed when the contract is entered into but delivery date is not fixed. In this contract, one of the parties (typically the corporate customer) enjoys the option to give or take delivery on any day between two fixed dates. For example, Alpha Corporation enters into an option forward with National Bank under which it agrees to sell forward \$1 million at Rs. 46.50 per dollar, to be delivered on any day between the 91st day and the 120th day from the time the contract is entered into. In case, the period 91-120 days is the option period during which Alpha Corporation give delivery. Option forwards make sense when the exact timing of a foreign c inflow or outflow is not known, though the amount is known.

Money Market Hedge In a money market hedge, the exposed position in a foreign currency is covered through borrowing or lending in the money market. To illustrate how the money market hedge may be employed, consider the case of a British firm which has a liability of \$100,000 on account of purchases from a US supplier, which is payable after 30 days. Today's spot rate is \$1.692 per £. The 30-day money market rates in the US are 1 percent for lending and 1.5 percent for borrowing. In order to hedge, the British firm can take the following steps:

Step 1 Determine the present value of the foreign currency liability (\$100,000) by using the money market rate applicable to the foreign country. This works out to: $\$100,000/1.01 = \$99,010$.

Step 2 Obtain \$99,010 on today's spot market in exchange for 58,516 pounds. Today's spot rate is \$1.692 per pound.

Step 3 Invest \$99,010 in the US money market. (This investment will compound to exactly \$100,000 the known future dollar liability after 30 days.)

To cover a net asset position in the foreign currency, a reverse process has to be followed. To illustrate this process, consider the case of a British firm which has a receivable of \$100,000, on account of sales, that is due in 30 days. The British firm can take the following steps:

Step 1 Determine the present value of the foreign currency asset (\$100,000) by using the borrowing rate of 1.5 percent per month. This works out to: \$98,552.

Step 2 Borrow \$98,522 in the US money market in dollars and convert them to pounds in the spot market.

Step 3 Repay the borrowing of \$98,522 after 30 days from the collection of the receivable which is due in 30 days. (The borrowed amount of \$98,522 will compound to \$100,000 which will be repaid from the collection of the receivable)

Financial Swaps A financial swap basically involves an exchange of one set of financial obligations with another. The two most important financial swaps are the interest rate swap and the currency swap. Interest rate swaps involve exchange of interest rate obligation between two parties. Currency swaps involve two parties who agree to pay each others debt obligation denominated in different currencies.

Currency Options currency option is a financial instrument that provides its holder the right but no obligation to buy/sell a specified amount of foreign currency at a specified rate up to a specified period. After a decade of hedging currency risk mainly through forward contracts, the RBI allowed currency options from July 2003. The salient features of the present guidelines are as follows: (a) Corporates can only buy currency options, but not write them. (b) Only banks can write currency options, that too only plain vanilla European options. (c) Corporates can buy currency options only for hedging underlying exposures. (d) Corporates can buy cross-currency options.

Leading and Lagging Sometimes, exposures can be managed by altering the timing of foreign currency flows through leading and lagging. Leading involves advancing and lagging involves delaying. The general rule is to lead payables and lag receivables in "strong" currencies. By the same token, lead receivables and lag payables in "weak currencies."

Netting and Offsetting If a firm has receivables and payables in different currencies, it can net out its exposure in each currency. Suppose an Indian firm has exports of \$100,000 to the US and imports of \$120,000 from the US. It can use its receivables of \$100,000 and hedge only the net US dollars payable. Even if the timings of the flows are not matched, it can lead or lag one or both of them to achieve a match.

Management of Operating Exposure: Transaction exposure is short-term in nature and well-identified. Operating exposure, on the other-hand, is long-term in nature and can scarcely be identified with precision. So, the instruments of financial hedging (forwards, options, and so on) which are helpful in hedging short-term well-identified transaction exposure are not of much help in hedging operating exposure.

Managing operating exposure calls for designing the firm's marketing, production, and financing strategy to protect the firm's earning power in the wake of exchange rate fluctuations. The important levers for managing operating exposure are briefly described below as :

1. **Product Strategy** A firm may introduce new products and expand its product line after home currency depreciates. Conversely, after its home currency appreciates, a firm may re-orient its product line so that it caters to market segments which are more quality-conscious and less price-sensitive.
2. **Pricing Strategy** When faced with currency volatility, should a firm emphasize market share or profit margin? Economies of scale and price elasticity of demand are the key factors that drive the pricing strategy. If significant economies of scale exist or price elasticity of demand is high, it makes sense to hold prices down, expand demand, and lower unit cost of production. If economies of scale are insignificant or if price elasticity of demand is low, it may be profitable to charge higher prices.
3. **Plant Location** A firm may locate its production to countries whose currencies have depreciated in real terms to lessen the adverse impact of exchange rate variation.
4. **Sourcing** A firm may source its inputs in countries where it sells its products to achieve a better match between currency footprints of revenues and costs. Multinational giants such as Toyota, Honda, GM, and IBM manage their operating exposure through a better matching of currency footprints.
5. **Product Cycle** In a world of volatile exchange rates, a firm can get a competitive edge by reducing the time it takes to bring new products to market. A shorter product cycle compresses the adjustment period following a significant exchange rate change.
6. **Liability Structure** Suppose an Indian firm derives a good portion of its revenues from exports to the US. It would do well to hold a portion of its liabilities denominated in the US dollar. This way it can achieve a certain match between its earnings and debt servicing burden.

9.3 RAISING FOREIGN CURRENCY FINANCE

The major sources available to an Indian Firm for raising foreign currency finance are:

1. Foreign currency term loans from financial Institution
2. Export credit schemes
3. External Commercial Borrowings
4. Euro issues

5. Issue in Foreign domestic markets

We will discuss only few sources over here

ECB (External Commercial Borrowings) : External Commercial Borrowings subject to certain terms and conditions, the government of India permits Indian firms to resort to external commercial borrowings for the import of plant and machinery. Corporates are allowed to raise up to a specified amount from the global markets through the automatic route. Companies wanting to raise more than the specified amount have to get an approval of the MOF. The key steps involved in such borrowings are as follows:

1. Secure the permission of the Capital Goods Committee/Projects Approval Board
2. Obtain an offer from a bank
3. Get the approval of the Department of Economic Affairs (DEA) , Ministry of Finance, for the offer
4. Arrange for the documentation of the loan
5. Secure the approval of the Reserve Bank of India
6. Deposit the loan document with the DEA
7. Draw the loan.

Euro Currency Loans A eurocurrency is simply a deposit of a currency in a bank outside country of the currency. For example, a eurodollar is a dollar deposit in a bank outside the United States. Likewise, a euroyen is a yen deposit in a bank outside Japan. How do eurocurrency deposits arise? This may be explained with an example. Suppose an American company buys oil from a sheik in the middle east and pays \$10 million drawn on the Chase Manhattan bank and the sheik deposits the cheque in his account with a Swiss bank. The dollar deposit, placed outside the United States, the country of the dollar currency, is a eurodollar deposit. The Swiss bank can use this deposit for granting eurodollar loans. The main features of Eurocurrency loans, which represent' the principal form of external borrowings, are as follows:

- a) **Syndication** Eurocurrency loans are often syndicated loans, wherein a group of lenders particularly banks; participate jointly in the process of lending under a single loan agreement. The syndicate of lenders is represented by the lead bank. The borrower required to pay a syndication fee, which is a front-end payment usually ranging between 1/2 percent and 2 percent to the lead bank. This represents the management fees payable to the lead bank, participation fee to the other banks, and other charges.
- b) **Floating Rate** The rate of interest on eurocurrency loans is a floating rate. It is linked to LIBOR (London Inter Bank Offer Rate) or SIBOR (Singapore Inter Bank Offer Rate). The spread over the LIBOR or SIBOR rate is mainly a function of the credit worthiness of the borrower, the size of the loan, and the prevailing market conditions For example, in May 2003, Indian Railway Finance Corporation raised \$75 million through a 5-year bullet maturity syndicated term loan facility at a coupon of 70 basis point over LIBOR. While the rate is determined at the beginning of each interest period, the interest is payable at the end of each period.
- c) **Interest Period** The interest period may be 3, 6, 9, or 12 months in duration. It is largely left to the option of the borrower.

- d) **Currency Option** The borrower often enjoys the multi-currency option which enables it to denominate the interest and principal in the new currency opted for. This option is exercisable at the end of each interest period.
- e) **Repayment and Prepayment** The eurocurrency loans are repayable in instalments, which are typically equal, or in the form of balloon repayment, as agreed to by the parties. The borrower may prepay the loan after giving due notice to the lead bank. When prepayment is done, some premium is payable. The lender may also reserve the right to recall the outstanding loan under certain circumstances.

In recent years, the government has adopted a very cautious approach to external commercial borrowings. Borrowings of maturities less than three years are more or less ruled out and the government controls the access to syndicated loan markets by a queue system within the overall annual ceiling on total borrowing specified by the government. Certain sectors such as power projects are given preference over others in accessing the loan markets.

Euroissues: Following the economic liberalization, Indian companies started exploring the market again. Unlike the earlier period when syndicated credit was the predominant form of raising external finance, companies began looking at bonds and euro equities collectively referred to as "Euroissues". The following are the primary instruments used by Indian companies in international markets:

- (i) Foreign Currency Convertible Bonds (FCCBs)
- (ii) Global Depository Receipts (GDRs)
- (iii) American Depository Receipts (ADRs)

Foreign Currency Convertible Bonds (FCCB): FCCBs are bonds issued to and subscribed by a non-resident in foreign currency which are convertible into certain number of ordinary shares at a pre-fixed price. They are like convertible debentures, have a fixed interest rate and a definite maturity period. These bonds are listed on one or more overseas stock exchanges. Euro convertible bonds are listed on a European Stock Exchange. The issuer company has to pay interest on FCCBs in foreign currency till the conversion takes place and if the conversion option is not exercised by the investor; the redemption of bond is also to be made in foreign currency. Essar Gujarat, Reliance Industries, ICICI, TISCO and Jindal Strips are some of the Indian companies which have successfully issued such bonds.

Global Depository Receipts (GDR): GDR is an instrument, denominated in dollar or some other freely convertible foreign currency, which is traded in Stock Exchanges in Europe or the US or both. When company issues equity outside its domestic market and the equity are subsequently traded in the foreign market, it is usually in the form of a Global Depository Receipt. Through the system of GDRs, the shares of a foreign company are indirectly traded. The issuing company works with a bank to offer to its shares in a foreign country via the sale of GDRs. What happens under this system is that a bank holds the shares of a foreign firm and it further issues claims against the shares it holds. The bank issues GDRs as an evidence of ownership. Thus foreign company/corporation instead of directly making the issue to the public in the foreign market deals through the bank called Overseas Depository Bank. The equity shares or bonds representing the GDRs are registered in the name of the overseas depository bank and

the share/bond certificates are delivered to another intermediary called the 'Domestic Custodian Bank'. A holder of a GDR is given an option to convert it into equity shares or bonds. However, till conversion, the GDR does not carry any voting rights. The biggest advantage of issuing GDR is that the issuing companies are relieved from the burden of complying with various legal formalities imposed by the regulatory authorities of that country in which they are making issues through GDRs. It also gives them the benefit of reducing license fees and exempt them from reporting various information regarding issue of securities required by the regulatory authorities. Further, the GDR issue does not involve any foreign exchange risk to the issuing Indian companies as the shares represented by GDR are expressed in rupees. The listing of GDRs on Overseas Stock Exchange provides liquidity and makes the-company's securities more attractive.

American Depository Receipts (ADRs): ADRs are the US version of GDRs. American Depository Receipts has almost the same features as of GDRs with a special feature that ADRs are necessarily denominated in US dollars and pay dividend in US dollars.

9.4 REVIEW QUESTIONS

1. Explain the principle features of euro currency loans.
2. Write short notes on the following
3. Foreign Currency Convertible Bonds (FCCBs)
4. Global Depository Receipts (GDRs)
5. What are spot and forward exchange rates? How do they differ from each other?
6. Distinguish between geographical arbitrage and triangular arbitrage.
7. What types of exchange exposures do international companies) MNCs) face?
8. What are the various techniques to hedge against the foreign exchange risk?

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