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UNIT 1: FINANCIAL MANAGEMENT

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Structure

1.1 CONCEPT AND EVOLUTION OF FINANCE

Finance is very essential for the smooth running of the business. Without finance neither any business can be started nor successfully run. Finance is the oil of wheels, the marrow of the bones, the blood in the veins and the spirit of all trade, commerce and industry. Without adequate finance no business can survive and without efficient financial management no business can prosper and grow. Evolution of finance can be classified into three broad phases *i.e.*, Traditional Phase, Transitional Phase and Modern Phase.

Traditional Phase (up to 1940)

1. Finance was a part of economics; no separate attention was paid to finance.
2. Record keeping, preparing different reports and managing cash were the main functions of finance manager.

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3. Finance manager called only when firm need to locate new sources of funds.
4. Focus of attention was no long term resources concept of working capital was virtually non-existent.
5. Descriptive in nature rather than analytical.
6. Procuring of funds for expansion activities.

Transitional Phase (1940–1950)

1. Firms realize that the function of finance was more than procuring funds.
2. Funds analysis and control on a regular basis was required.

Modern Phase (After 1950)

Two important theories were developed during this phase and these theories provide a platform to break the tradition that finance functions are the work of accountant. For finance decision making an expert person is required who has an analytical knowledge and skill *i.e.,* finance manager. These theories are (*i*) Theory of Portfolio Management in 1950 by **Harry Markowitz**, (*ii*) Theory of Leverage and Valuation of firm in 1958 by **Modigliani** and **Miller**.

1.2 MEANING AND DEFINITIONS OF FINANCIAL MANAGEMENT

Financial Management is that area of general management which is concerned with the timely procurement of adequate finance from various sources and its utmost effective utilization for the attainment of business objectives. It encompasses within its purview all aspects of financial activity in an enterprise.

Financial Management has been defined differently by different authors. According to modern finance experts, Financial Management is concerned with the procurement and effective utilization of finance. This approach gives equal weightage to both procurement and utilization aspects of finance. Thus, it is a managerial of problem centred approach to Financial Management. Some definitions of Financial Management are as follows:

J.F. Bradley, *"Financial Management is the area of business management devoted to a judicious use of capital and careful selection of sources of capital in order to enable a business firm to move in the direction of reaching its goals."*

J.L. Massie, *"Financial Management is the operational activity of a business that is responsible for obtaining and actively utilizing the funds necessary for efficient operations."*

It is clear from the above definitions that Financial Management is that specialized function of general management, which is concerned, with the timely procurement of adequate funds and their effective utilization for the efficient functioning of the business enterprise. Financial Management therefore, includes financial planning, procurement of finance, investment of funds and financial control. The study of financial management corporations includes all financial aspects like issue of shares and debentures, internal financial control, procurement of additional capital, Elimination of financial crisis, determination of policies relating to reserves, surpluses, dividends, depreciation, investments, etc.

1.3 OBJECTIVES OF FINANCIAL MANAGEMENT

One of the basic and most important objectives of a business enterprise is to earn maximum profit by maximizing the output at the minimum cost. Financial Management is also an important

area of General Management. The main objective of Financial Management is, therefore, to earn maximum profits out of the available resources. However, some scholars on the subject have objected on the use of the term 'profit maximization'. According to them, the objective of Financial Management should be to earn reasonable profit in place of profit maximization. Theoretically it is right, because if the management earns reasonable profits, this would avoid the exploitation of any section of society. But in practice, the objective of Financial Management is not to make 'reasonable profit' but to earn 'maximum profit'. In fact, the modern investors are also inclined to invest their funds in those enterprises, which earn profits at a higher rate.

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Solomon Ezra, an expert on Financial Management, has also expressed his views by saying that *"the proper goal of Financial Management is wealth maximization"*. Other objectives of Financial Management are also centered on the objective of wealth maximization. In sum, the main objective of Financial Management is to maximize profits and wealth. The rest of its objectives depend on the objective of wealth maximization.

1.4 IMPORTANCE OF FINANCIAL MANAGEMENT

The importance of financial management may be discussed under the following points:

1. **Importance to Business Executive:** Financial Management is one of the most significant functional areas of management. The subject is of prime importance to the business executives for the efficient functioning of their enterprises. Financial management helps the business executives in making all the strategic managerial decision. It assists the mangers in determining the financial needs of the enterprise and allocation of funds to specific capital projects. Financial Management also plays an important role in the determination of dividend policy, merger and acquisition decisions, credit policy, etc., the modern tools and techniques of financial management enable business managers to effectively manage the working capital of the firm. Budgets serve as chief instruments of financial planning and control in the hands of business executive. Manager are the trustees of shareholder's funds. They provide capital to a company with the expectation of shareholders by distributing reasonable dividends to them. This is only possible when business executives have full knowledge of the every business enterprise is to maximize the profits by maximizing the production at the least cost. Financial management leads the managers in achieving this objective, and helps them in discharging their obligations to different parties. Financial management is, therefore, of pivotal significance to the business executives not only in coordinating various functional activities and smooth functioning of an enterprise but also in effective decision making for the successful and efficient functioning of the undertaking.
2. **Importance to Potential Investors:** The subject of financial management also benefits investors of different classes. Investors generally arrange to invest their savings through security dealers and financial brokers. But it is not expected that they would always take rational decisions regarding the selection of company as well as securities. Thus, the investors having knowledge of the principles of financial management can themselves take a satisfactory decision on this subject, and can safely earn regular income on their accumulated capital. Speculator investors can also avail the advantage of the knowledge of financial management. Besides this, corporations are also able to earn maximum profits with the help of efficient financial management. Consequently, the investors get maximum rate of return on their investment.
3. **Importance to Shareholders:** The knowledge of financial management is equally useful to shareholders. Although shareholders are the owners of

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a company, but the management corporations is left on the elected board of directors. It is, therefore, necessary for the shareholders to appraise that to what extent the managers/directors are discharging their duties in the interest of shareholders. If shareholders are well acquainted with the principles of financial management, they can safeguard their interest in the company by suitably appraising its financial position. If the managers/directors of the corporation do anything against their interest, the shareholders can make them to follow a suitable financial policy. Thus, the knowledge of financial management is inevitable for the shareholders in order to preserve and protect their inherent interest in the company. The shareholders can lead the company to earn more profits by persuading and forcing the managers/ directors of the company to follow a suitable financial policy, and consequently they can receive higher dividends on their investments.

4. **Importance to Financial Institutions:** The existence of financial institutions absolutely depends on effective financial management. Thus, it is indispensable for them to be well versed with every aspect of financial management for the profitable employment of their funds. Investment banks, underwriters, trustee companies, commercial banks and other financial institutions must have full knowledge of financial management; otherwise, they would remain unsuccessful in achieving their goals and in providing guidance to their customers willing to invest their savings.
5. **Importance to Employees:** The main objective of employees is to maximize their financial and non-financial benefits. On the basis of sound financial management, managers of an enterprise can protect their interests by the productivity and efficiency of the employees. Sound financial management also benefits the employees.
6. **Importance to Government:** It is also essential for the government to have full knowledge of every aspect of financial management. Government attempts to effectively utilise the funds collected from the public in the form of taxes. In absence of full knowledge of financial management, it becomes impossible for the government to attain maximum social welfare out of the public expenditure. Thus, the economic and social revolution of any country largely hinges upon sound financial management by its government.
7. **Importance to Other Parties:** All such parties as economists, students of commerce and management, politicians, sociologists etc., having interest in the economic problems of the country, are also benefited by the knowledge of the principles of financial management, it is difficult to undertake reliable studies on economic problems of a country.

1.5 SCOPE AND RESPONSIBILITIES OF FINANCIAL MANAGEMENT

The scope of finance function is not so narrow as conceived by some of the thinkers on the subject. If we confine its scope to the raising of funds for the business, it would fail to provide answers to various problems, which arise after the funds, have been procured. These problems include: (i) whether the investment made is likely to cover the risks involved? (ii) Whether the purpose of investment to be made is socially desirable?, (iii) How does the cost of capital is affected by the mixture of financial resources? Thus, the scope of finance function covers not only the acquisition of funds from different sources but also their effective utilization as well. Thus, the scope of Financial Management is quite wide and includes the following Points:

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1. **Financial Planning:** This relates to the assessment of financial requirements for different projects undertaken by an enterprise and the selection of sources for the procurement of the estimated finance. Financial planning includes the determination of objectives, policies and procedures pertinent to finance, estimating the size for capitalization, construction of capital structure, advance planning for the possible changes in future etc.
2. **Procurement of Finance:** Activities relating to the procurement of required capital in accordance with the estimated capitalization and proposed capital structure for the efficient functioning of the business also fall with in the scope of Financial Management.
3. **Organization of Finance Function:** Organization of finance department and sub-departments, determination of functions, powers and responsibilities of treasurer and controller as well as the activities concerning the maintenance of account books also fall within the scope of Financial Management.
4. **Effective Management of Assets:** Deliberations on financial aspects relating to purchase of fixed and floating assets as well as the arrangement of their timely supply fall within the purview of Financial Management. Active assistance and advise to top management with regard to different financial aspects of effective management of assets such as-policies regarding management of fixed assets, inventory policy, sales and collection policies, policies regarding cash, personnel management policy and policies regarding determination of sales price etc., are also included within the scope of Financial Management.
5. **Financial Control:** Financial control is inevitable to ensure that the available funds are being utilized effectively and efficiently to the achievement of organizational goals. Control on financial system is observed by modern financial control measures like – capital budgeting, cash budgeting, flexible budgeting etc.
6. **Management of Income:** Effective management of income of an enterprise also falls within the scope of Financial Management. It involves the preparation of various statements like-balance sheet, income statement, profit and loss account etc., in accordance with the existing law and the prevailing business practices. It also involves the determination of net profit and its allocation as dividends to shareholders and retained earnings for future investments.
7. **Analysis and Appraisal of Financial Performance:** With a view to bring necessary changes in future policies and procedures, an appraisal of financial performance of the enterprise is made as against the previous year with the help of modern techniques of financial analysis. These techniques include ratio analysis, trend analysis, funds flow analysis, cost-volume-profit analysis, variance analysis, return on investment etc. Thus, the appraisal of financial performance of an enterprise also falls within the scope of Financial Management.
8. **Miscellaneous Functions:** In addition to the above function, receipt and disbursement of cash, payment of various taxes, arrangements of insurance of assets, maintenance of financial records, negotiations with banks and financing corporations, development of financial data for decision making, arrangement of financial reporting for the management etc., are the major routine functions included in the scope of Financial Management.

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1.6 OBJECTIVES OF THE FIRM

The objectives of financial management derive from the corporate objectives. Financial goals of a firm are a pre-requisite to financial planning, strategic and tactical decisions and procedures. Financial theory is based on the fundamental assumption that a firm's primary loyalty is towards its owner. Other interest groups who are closely connected with the operations and results of the financial performance of the enterprise include employees, creditors, suppliers, community, government etc., a business enterprise balance its objectives in such a manner that all these groups gain optimal satisfaction, but it is well accepted that its primary responsibility is towards its owners.

In case of owner-managed undertakings, the objectives of the firm and the owner coincide. In case of a joint stock company, the ordinary shareholders are its owners. They are the residual claimants of its profits and assets in case of its dissolution. They are also responsible for its losses to the extent of their shareholders. The dominant objective of a joint stock company is, therefore, to maximize the wealth of its ordinary shareholders. Thus, the supreme objective of financial management is to maximize the wealth of its owners.

A shareholder's wealth in a company is the multiple of the number of shares held by him and the current market price of the share. (Shareholders wealth in the company = Number of shares owned x Market price per share). While operating with the objective of wealth maximization, the company plans its activities in such a manner that the shareholders get the highest combination of dividends (*i.e*., payment out of profit) and capital gains accruing from increase in the marker price of shares.

1.6.1 Profit Maximization

Profit maximization is often regarded as the desirable objective of a business undertaking. It means that the company should increase its rupee earnings in the shortest period. It is argued that if a firm makes maximum profit, it will automatically result in wealth maximization. Moreover, it is more concrete and verifiable objective than that of maximization of shareholder's wealth. However, profit maximization objective suffers from following serious limitations:

1. It does not take into account the risk factor, and would justify a management decision which maximizes profits irrespective of the risk involved in it.
2. Profit maximization objective also ignores the risk associate with the alternate methods of financing investments. It is likely to encourage management to depend on borrowed funds as long as its cost is less than the projected profits. Obviously, this may lead to excessive debt in its capital structure, and result in high financial risk. On the contrary, another management may use too little debt and issue shares whenever need for capital funds arise. This course will, of course, dilute the wealth as well as control of the existing shareholders.
3. The profit maximization objective is not as inclusive as the wealth maximization objective. Profits as an absolute amount are not so important as earnings per share. Even the concept of earning per share does not consider the time factor.
4. The objective of profit maximization also ignores the effect of dividend policy on the market price of shares. If a management were to pursue the objective of maximizing earnings per share, it might never pay any dividends to its shareholders, and seek to increase earnings per share through re-investment of retained profits. This is likely to affect adversely the market price of shares as shareholders want a regular stream of income from their investments in shares as well as capital gains through increase in the market price of their shares.

1.6.2 Wealth Maximization

The wealth maximization objective is based on the assumption that the net result of all the operations of a company is reflected in the current market price of its shares. This objective has several merits. **First,** it is quantifiable, *i.e*., it can be expressed in numerical terms and the company's performance can be measured against it. **Second,** this objective is operational as it is tied with variables which the firm is able to control through its policies and operations. **Third,** it is fully consistent with the concept of the perpetual life of the firm. **Finally,** capital markets allocate investment funds among competing enterprises on the basis of market evaluation or their expected return and risk. The wealth maximization objective embodies this risk-return trade of the market, and it is the dominant criterion of allocation of funds between and within business enterprises. Any other criterion will result in sub-optimal allocation of funds and adversely affect the performance of the economy.

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The wealth maximization objective is subject to criticism mainly on two counts:

1. It is prescriptive and normative as it indicates what the firm should be striving to achieve. It is not descriptive as it does not indicate what it actually does; and
2. It may not necessarily be a socially desirable goal. It is also argued that managements of corporate undertakings, separated from ownership as they are, tend to satisfy rather than maximize. In other words, they aim at earning as much profit for the company as will satisfy its owners, rather than maximize it.

It is, therefore, obvious that profit maximization or maximization of earnings per share is less satisfactory' wealth maximization. The objective of shareholders' wealth maximization results in financing policies and practices which would maximize the market value of the company's ordinary shares. It also reflects the market valuation of its prospective earnings and financial health over time. Moreover, it also takes into account the turning and risk of earnings, dividend policy of the company, and performance of its management. Thus, the proper goal of financial management is wealth maximization.

1.7 FINANCIAL DECISION AREAS

Financial decision is crucial decision made by the financial manger relating to the financing mix of an organisation. *It is concerned with the borrowing and allocation of funds required for the investment decision*. The financing decision involves two source from where funds cane raised: using a company's own money, such as share capital, retained earnings or borrowing funds from outside is the form of debentures , loan bond, etc., the adjective of financial decision is to maintain an optimum capital structure, is prepare mix of debt and equity, to ensure the trade off between the risk and return to the shareholders

It is very difficult to determine the functions or areas of financial decision. In this field there are a great number of decisions. Decisions regarding finance may be in the following areas:

1. ***Determining Financial Needs:*** It is one of the most important decision area for any finance expert. One has to ensure availability of adequate financing. Financial needs have to be checked from different purposes. Funds are required for initial expenses, fixed capital and working capital. Initial or promotional expenses include expenditure incurred in the process of company formation. Fixed assets depend upon the nature of business. Working capital need depend upon the current assets and current liabilities required by organization.

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2. ***Determining Sources of Funds:*** In this respect sources of funds are decided. Different types of securities and debentures are issued. For borrowing purposes banks, public and other financial institutions may be approached. When a firm is new, at that time the sources of funds should be decided.
3. ***Optimal Capital Structure:*** In this respect optimum capital structure should be ensured and maximum rate of return on investment should be there. The ratio of debt and equity must be carefully defined. For this purpose operating and financial leverages may be calculated. The operating leverage exists due to the operating expenses and financial leverage exists due to amount of debt involved in firm's capital structure.
4. ***Fixed Asset Management:*** Fixed assets of a firm are land building, machinery furniture and intangible assets are like goodwill, patents and so on. Whenever fixed assets are purchased, it contains long term commitment of funds so whenever they are purchased, they must be justified to the extent of their utility and productive capacity. Mostly the fixed assets are purchased by issuing shares, debentures long term borrowings and deposits from public and any time whenever they are free, they should not be kept idle and should be given on lease. Besides it proper depreciation policy must be formulated.
5. ***Project Planning and Evaluation:*** At the time of starting of any project, decision should be taken on the basis of feasibility and project reports which contain analysis of economic, technical, commercial and financial feasibility. Technical analysis involves essentiality of project, economic and commercial analysis involves marketability and demand position for the product. In all, financial analysis is the most important and includes forecast of cash-in-flow and total outflow. Organizational analysis involves the requisite manpower required to run the project. So on the basis of risk and all the projects are undertaken. Sometimes even if the project is profitable it is rejected because it may involve high amount of risk.
6. ***Working Capital Management:*** Working capital is a financial lubricant which keeps the business as operative. The main components of working capital are bank, cash, debtors, Accounts receivables and stock. Cash is the central reservoir of a firm and ensures liquidity. Inventory should always be matched with sales level.
7. ***Corporate Taxation:*** It is an important area of decision. As company is a separate legal entity so its taxation structure is changed from personal taxation.
8. ***Acquisitions and Mergers:*** Firms may expand their business by co-operative arrangements, by acquiring other concerns or by the process of merger. Acquisition means purchase of a smaller firm by a big organization. The process of valuation of a firm and its securities is quite a difficult task. So the valuation process should be done very carefully.

1.8 FUNCTIONS OF A FINANCE MANAGER

The functions of a financial executive can broadly be classified as follows:

1.8.1 Executive Finance Functions

Executive finance functions include all such financial decisions which involve administrative skill in planning and execution. Some of the basic executive functions are as follows:

1. ***Financial Forecasting:*** The financial manager is concerned with the determination of the need for capital funds for the efficient operation of the company. He has to forecast the cash inflows and outflows from the proposed investment projects and existing operations relative to the current availability of cash resources. This forecasting and analysis provides the basis for estimating the need for additional financial resources. However, this function makes the financial executive to perform a tight-rope dance, maintaining a nice balance between the objectives of liquidity and profitability. The financial manager attempts to match the inflows and outflows of cash to eliminate the idle cash balance earning nothing to the corporate enterprise. Since cash inflows originate in sales which are uncertain, it is quite difficult to precisely predict the cash inflows to meet the time-bound obligations as the payment of bills etc., thus, the dilemma relating to this function is of liquidity vs. profitability.
2. ***Allocation of Fund:*** One of the most important functions of the financial manager is the allocation of funds to specific capital projects. The most important aspect of this function is capital budgeting. The financial manager is responsible for collecting the relevant information pertaining to investment proposals competing for capital allocation, forecasting incremental cash inflows during the future period, comparing the projects against one another and against the criteria of profitability and risk, and identifying the most profitable projects. Funds are finally allocated in terms of the optimum discounted net cash inflows and acceptability of the incremental risk level. Capital investment decisions are the most crucial decisions in determining the future size and composition of fixed assets, and also effect the working capital requirements. Decisions regarding allocation of funds also influence the risk complexion of the company, and affect the investors' and creditors' decisions to commit their financial resources to the undertaking.
3. ***Raising Financial Resources:*** The financial manager is responsible for the procurement of funds from various sources including suppliers' credit, lease financing, notes payable, loans from banks and other financial institutions, issue of shares and debentures, public deposits, retained earnings and foreign collaborations. Each of these sources of finance has certain unique characteristics associated with it pertaining to cost, maturity, managerial control, burden to assets, and other terms and conditions imposed by the lenders. Keeping this in view, the financial manager determines the mix of various financial resources in the financial structure of the company. Financing decisions, therefore, determine the financial structure of the enterprise. While making the financing decisions, the financial executive has to estimate the financial risk resulting from its influence on the composition of financial structure. Too much of debt-capital increases the financial risk, and too little debt may prevent opportunities to minimize the composite cost of capital and maximize profitability.
4. ***Establishing Assets-Management Policies:*** Management of fixed and current assets is yet another important function of the financial manager. The investment policy in fixed and current assets is popularly known as assets-management policy. The investment decisions regarding fixed assets are referred to as capital budgeting, while the financial decisions regarding current assets are known as working capital management. The establishment of sound and consistent assets-management policies is an indispensable pre-requisite for the effective financial management. The financial manager spends more time with the management of current assets rather that fixed (non-cash) assets. Current assets including cash, marketable securities, bills receivables and inventories

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comprise the working capital of the company. Management of cash involves cash forecasting so that an adequate amount of cash is available at all times for meeting the firm's obligations. At the same time, there should be no idle cash funds resulting in loss of interest. The financial manager faces the dilemma of Liquidity vs. Profitability as it is never possible to forecast cash inflows accurately. The more he tries to protect the company against the risk associated with the non-payment of bills on time, the more he runs the risk of losing interest on idle funds.

It may be noted that the financial manager is not directly involved in the determination of the volume of inventories, which lies in the domain of production and marketing executives. The financial manager, however, develops data relating to the cost of ordering and carrying inventories which lies at the base of determination of the economic order quantity of inventories. The financial executive is more concerned with providing the requisite funds for purchasing and carrying inventories, as well as their performance. With regard to bills receivables, the financial manager is responsible for the formulation of the company's credit policy as well as for supervising the collection of receivables. He attempts to keep the bills receivable to the lowest limit which is consistent with need for credit sales as part of marketing strategy.

5. ***Dividend Policy Decisions and Allocation of Net Profits:*** The financial manager also plays an important role in the determination of dividend policy of the company. It involves the determination of divided payout ratio, *i.e.,* the proportion of net profit that should be paid in cash to shareholders. Dividend policy decisions result in the determination of retained earnings available for future investments. The optimal dividend policy is that which maximizes the shareholders' wealth.
6. ***Financial Planning and Control:*** Chief instruments of financial planning are budgets, cash flow statement, Performa profit and loss account and balance sheet. The financial manager exercises control on financial performance by comparing the actual performance against the above plans. He also employs ratio analysis to measure financial performance in such areas as debt-equity relationship, inventory turnover, contribution margin, liquidity, etc.

1.8.2 Routine Finance Functions

Routine functions mainly comprise the work of routine nature which is necessary for the execution of financial decisions at the executive level. Some of the important routine finance functions are as follows:

1. Receipt and disbursement of cash.
2. Maintenance of financial records.
3. Preparation of financial statements.
4. Negotiations with banks and financing corporations.
5. Custody and safeguarding of securities, insurance policies and other valuable documents.
6. Development of financial data for decision-making.

1.8.3 Episodic or Incidental Finance Functions

Episodic or incidental finance functions include:

1. Preparation of financial plan on promotion of company.
2. Financial re-adjustment at the time of financial crisis.
3. Valuation of firm at the time of merger or re-organization.
4. All other incidental functions.

1.9 RISKS AND RETURN ANALYSIS

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Whenever we think about the value of firm, we have to think about value of securities. The two determinant of security value or price are risk and return. So, before valuation of security the financial manager must know about the measurement of financial risk.

1.9.1 Definition of Return

The rate of return of an asset for a given period is the annual income received plus any change in market price, which is usually expressed as a percentage of the opening market price. The return may be defined in terms of (*i*) realized return *i.e.,* the return which was earned or could have been earned, (*ii*) expected return is the return which in the investor anticipate to earn over some future period.

Calculation of expected return:

$$K = \frac{P_1 - P_0 + D_1}{P_1}$$

K = Expected Rate of Return

P_0 = Market Price at time 0

P_1 = Market Price at time 1

D_1 = Cash dividend for the period 1

Avg Expected Return = $r = \Sigma p_i x_i$

P_i = Probability of i^{th} return

x_i = Possible Return

1.9.2 Definition of Risk

The variability of the actual return from the expected return associated with a given security is defined as risk. If there is high variability, the security is said to be more risky. If the return on the security is certain and less variability then it is less risky.

Risk in investment means that future returns from that investment are unpredictable the concept of risk may be define as the possibilities that the actual return may not be same as expected. Risk is differentiated with uncertainty. Risk is define as a situation where the possibility of happening or non-happening of an event can be quantified and measured while uncertainty is defined as situation where this possibility can not be measured. Risk can be measured by standard deviation an follows:

Measurement of Risk $\sigma = \sqrt{\sum P_i (x_i - \bar{x})^2}$

1.9.3 Risk, Return and Investment Decision (Trade off)

Risk and Return tradeoff is a situation at which risk is minimum possible and return is maximum possible. This tradeoff is vary from investor to investor or company to company. The following table shows the Risk Return tradeoff in different situation.

Risk

		High	*Low*
Return	High	may be	Definite
	Low	no invest-ment	may be

Aggressive investor prefers high risk high return situation where conservation investor prefer low risk low return situation.

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1.9.4 Risk and Return of a Portfolio

Portfolio means combination of two or more assets. In case an investor invests in portfolio of investments the analysis takes place in the following manner:

Portfolio Expected Return

The expected return on a portfolio is the weighted average of the expected returns of the securities comprising the portfolio. The weights are equal to the proportion of total funds in each security.

Portfolio Risk

The risk of portfolio can be measured in the same way as of a single asset. But their computation can be changed because portfolio holds certain benefits to investors as compared to holding of single assets.

Portfolio investments provide an opportunity to diversify investments. Successful diversification may make the risk of a portfolio investment less than the risk of a single asset. So, when we talk about portfolio standard deviation, as a measure of risk, it is not the simple weighted average of individual security standard deviation because of the correlation covariance between the return on different securities constituting the portfolio.

Correlation/Covariance

To diversify risk to have an efficient portfolio, that is maximum return for a given level of risk or to minimize risk for a given level of return, the correlation between returns on different securities is significant. Correlation is a statistical method of the degree to which security returns move together.

Positive correlation means that they move together, negative correlation means that they move in opposite direction and zero correlation means there is no tendency to vary together. The coefficient of correlation has a range of 1.

1.9.5 Types of Risks

Risk has two parts. A part of the risk arises from the uncertainties which are unique to individual securities, and which is diversifiable if large number of securities are combined to form well-diversified portfolios. This part of the risk can be totally reduced through diversi-fication, and it is called *unsystematic,* or *unique,* risk. The examples of unsystematic risk are :

- Workers declare strike in a company
- The R & D expert of the company leaves
- A formidable competitor enters the market
- The company loses a big contract in a bid
- The company makes a breakthrough in process innovation
- The government increases custom duty on the material used by the company
- The company is not able to obtain adequate quantity of raw material from the suppliers.

The other part of the risk arises on account of the economy-wide uncertainties and the tendency of individual securities to move together with changes in the market. This part of risk cannot be reduced through diversification, and it is called systematic, or markets risk. Investors are exposed to market risk even when they hold well-diversified portfolios of securities. The examples of systematic risk are:

- The government changes the interest rate policy

- The corporate tax rate is increased
- The government resorts to massive deficit financing
- The inflation rate increases
- The Reserve Bank of India promulgates a restrictive credit policy.
- Total risk, which in the case of an individual security is the variance (or standard deviation) of its return, can be divided into two parts:

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1.9.6 Classification of Systematic Risk

1. Market Risk: It is a risk which arises due to change in political, social and economic issues. It is referred to as stock variability due to changes in investor's attitudes and expectations.

   Investors can eliminate market risk by being conservative in framing their portfolios. With wise combination of stocks on the portfolio, to some extent, the risk will be reduced.

2. Interest Rate Risk: Interest rates change constantly for bonds, stock and equity shares. Interest rate risk can be reduced by diversifying in various kinds of securities and also buying securities of different maturity dates.

   Example: A Government bond or a bond issued by Financial Institution like IDBI is a risk less bond.

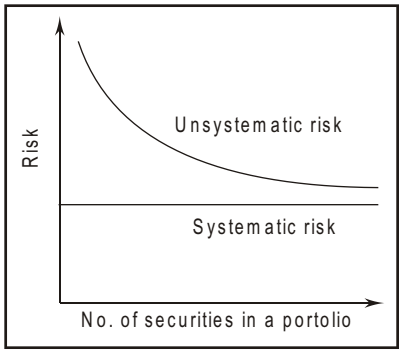
3. Purchasing Power Risk: It is known as a inflation risk also. This risk arises out of change in the price of goods and technically it covers both inflation and deflation periods. The behaviour of purchasing power risk can in some ways be compared to interest rate risk. They have a systematic influence on the price of both stocks and bonds.

1.9.7 Classification of Unsystematic Risk

The importance of unsystematic risk arises out of the uncertainty surrounding a particular firm due to factors like strike, management policies, consumer preferences. These uncer-tainties directly affect the financing and operating environment of the firm.

1. **Business Risk:** Business risk is mainly associated with variation in operating profits, internal environment of the firm and those beyond its control. A firm can reduce its business risk by keeping its fixed expenses low and by diversify its business into a wide range of products.
2. **Financial Risk:** Financial risk in a company is associated with the method through which it plans its financial structure. To reduce this risk the company should constantly test its debts to fixed assets, debts to net worth, and debts to working capital.

   Total risk = Systematic risk + Unsystematic risk



Systematic and unsystematic risk

As shown in following figure, unsystematic risk can be reduced as more and more securities are added to a portfolio. How many securities should be held by an investor to eliminate unsystematic risk? Diversification is not able to reduce the systematic risk. Thus the source of risk for an investor who holds a well-diversified portfolio is that the market will swing due to economic activities

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affecting the investor's portfolio. Typic-ally, the diversified portfolios move with the market. The most common well-diversified portfolios in India include the Reserve Bank of India Share Price Index, the Economic Time Share Price Index, the Sensitivity Index and the Financial Express Share Price Index. Thus diversification may be able to eliminate only half of the total risk (viz. unsystematic risk). The systematic risk cannot be diversified, and therefore, an investor will expect a compensation for bearing this risk.

1.10 SUMMARY

- Financial Management is that area of general management which is concerned with the timely procurement of adequate finance from various sources and its utmost effective utilization for the attainment of business objectives.
- One of the basic and most important objectives of a business enterprise is to earn maximum profit by maximizing the output at the minimum cost.
- The objectives of financial management derive from the corporate objectives. Financial goals of a firm are a pre-requisite to financial planning, strategic and tactical decisions and procedures.
- A firm's primary loyalty is towards its owner.
- The financial performance of the enterprise include employees, creditors, suppliers, community, government etc., a business enterprise balance its objectives in such a manner that all these groups gain optimal satisfaction.
- Profit maximization is often regarded as the desirable objective of a business undertaking. It means that the company should increase its rupee earnings in the shortest period.
- The wealth maximization objective is based on the assumption that the net result of all the operations of a company is reflected in the current market price of its shares.
- It is concerned with the borrowing and allocation of funds required for the investment decision.
- Routine functions mainly comprise the work of routine nature which is necessary for the execution of financial decisions at the executive level.
- The rate of return of an asset for a given period is the annual income received plus any change in market price, which is usually expressed as a percentage of the opening market price.
- The variability of the actual return from the expected return associated with a given security is defined as risk. If there is high variability, the security is said to be more risky. If the return on the security is certain and less variability then it is less risk.
- Risk and Return tradeoff is a situation at which risk is minimum possible and return is maximum possible.
- To diversify risk to have an efficient portfolio, that is maximum return for a given level of risk or to minimize risk for a given level of return, the correlation between returns on different securities is significant.
- Risk has two parts. A part of the risk arises from the uncertainties which are unique to individual securities, and which is diversifiable if large number of securities are combined to form well-diversified portfolios

1.11 REVIEW QUESTIONS

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1. What is the meaning of Financial Management? What is the importance of Financial Management?
2. What are the responsibilities and scope of Financial Management.
3. What is project maximisation and wealth maximisation?
4. What are the routine finance functions?
5. What are the types of financial decisions?
6. Define returns
7. What is Risk?

UNIT 2: CAPITAL BUDGETING DECISIONS

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Structure

2.1 CAPITAL BUDGETING DECISIONS

Investment decision is concerned with allocation of funds. As financial management deals with mobilization and deployment of funds, equal importance must be given to both the functions. Funds are mobilized through long-term, medium-term and short-term sources. Long term and medium term finance must be deployed on long term investment. The main aim of such investment is to get proper yield from the project, so that it can recover the cost associated with each source of funds. Finance decision is very risky in nature which is taken by managers and it is based on several uncertainties the finance manger has to evaluate the investment proposals in relation of their expected returns and risk to determine whether the investment feasible or not. The process through which different projects are evaluated is known as 'Capital Budgeting'.

Capital expenditure decisions relate to fixed assets or long-term investments which yield a return over a period of time. Capital budgeting is one of the most important areas of financial decision-making. It involves the selection of that assortment of investment opportunities which will maximize the shareholders' wealth by maximizing the long-term profitability of the firm. Since capital investment decisions commit the firm's resources far into the future, the future growth and profitability of the firm is vitally dependent upon prudent capital investment decisions.

The term 'Capital Budgeting' refers to long-term planning for making and financing proposed capital outlays. Capital Budgeting, thus, includes both raising of long-term funds and their optimum utilization. Thus, Capital Budgeting is the firm's formal process for the acquisition and investment of capital. Some important definitions of Capital Budgeting are as follows:

Charles T. Horngren, *"Capital Budgeting is the long-term planning for making and financing proposed capital outlays."*

R.M.Lynch, *"Capital Budgeting consists in planning the development of available capital for the purpose of maximising the long-term profitability (return on investment) of the firm."*

Robert N. Anthony, *"The Capital Budget is essentially a list of what management believes to be worthwhile projects for the acquisition of new capital assets together with the estimated cost of each project."*

Capital Budgeting is, thus, a broader term and includes not only investment decisions but also the exploration of profitable investment opportunities, marketing and engineering investigation of these opportunities and financial analysis as to their future profitability. However, the terms 'Investment Decisions', 'Capital Expenditure Decisions', 'Capital Expenditure Management', 'Long-term investment Decisions' and 'Management of Fixed Assets' are generally used interchangeably.

Basic features of Capital Budgeting

The basic features of capital budgeting is as follows:

(*i*) It has the potentiality of large anticipated profits.

(*ii*) It involves a relatively high degree of risk,

(*iii*) It involves a longer gestation period between the initial outlay and the anticipated returns.

2.2 NEED FOR CAPITAL BUDGETING

The necessity of capital budgeting arises due to the following reasons:

1. **Analysis of Capital Expenditure:** It provides adequate opportunity to the management to take the right decision by analysis the various capital investment proposals.
2. **Selection of the Best Alternative:** Capital budgeting helps the management in selecting the best investment proposals in order of their desirability.
3. **Co-ordination among Various Capital Outlays:** The management of a firm has to invest capital in different projects of areas simultaneously. The manager can establish co-ordination among different capital investments with the help of capital budgeting.
4. **Control on Capital Expenditure:** Control of capital expenditures is difficult without capital budgeting. A comparison of budgeted outlay and actual expenditure enables the management to identify and remove the cause of deviation, if any.

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5. **Avoidance of Losses:** Capital expenditures involve huge amounts for a fairly long period of time. An ill-advised and incorrect investment decision cannot be reversed without sustaining a considerable financial loss, and may even affect the very survival of the firm. Capital budgeting, through prudent evaluation of investment proposals, helps a firm not only in avoiding losses but also in testing the profitability of capital expenditures.
6. **Analysis of Risk and Uncertainty:** Capital expenditure decisions have their effects over a long-time span. Capital expenditure involves relatively more risk and uncertainty of benefits. Capital budgeting is, thus, necessary for estimating and minimizing such uncertainties and risks.
7. **Arrangement of Funds:** Capital expenditure budget is a well-conceived plan of capital expenditure in future. Capital budgeting, thus, facilities in finding out whether the necessary funds would be provided by internal or external sources. It assists the management in arranging the sizable funds for financing the capital expenditure program well in advance to ensure their availability at the right time.

2.3 KINDS OF CAPITAL BUDGETING DECISIONS

Investment decisions may be classified are as follows:

1. **Tactical Investment Decisions:** These decisions involve relatively small capital outlays and do not result in a major change in the firm's products, production methods, scale of operations etc. They do not make any significant change in the future profit earning capacity of the firm. Examples of such investments are outlays on parking place, reception rooms, recreation facilities, air conditioning, rearran-gement of physical layout, new elevator etc.
2. **Strategic Investment Decisions:** These decisions involve substantial capital outlays and have far reaching effect on the firm's future growth and profitability. These investment decisions relate to such vital areas as product line, major product improv-ements, new products, marketing strategy, creation of research and development facilities, change in plant location, etc. These decisions do not only give a new shape to the operations but also provide a different profile to the firm.
3. **Conventional Investment Decisions:** Conventional investment decisions involve one or more installments of capital outlays followed by one or a series of cash inflows. For example, establishment of a new production facility may involve cash outlays over a period of one or more years.
4. **Non-conventional Investment Decisions:** These decisions involve capital outlays over a period of time followed by a series of returns or cash inflows. For instance, establishment of a new production facility may involve capital outlays over a period of one or more years followed by cash inflows over a number of years.
5. **Economically Independent Investment Decisions:** The decisions in respect of which the management has no alternative investment opportunities are called as economically independent investment decisions. Independent decisions have only a particular capital project to decide for or against it. For example, where the management of a firm have an investment proposal to create a new warehouse, it has no alternative before it except to decide whether to make the investment or not.
6. **Dependent Investment Decisions:** These decisions involve choice from among a number of alternative investment opportunities. Dependent investment decisions may be complementary, mutually exclusive or joint.

2.4 FACTORS AFFECTING CAPITAL BUDGETING DECISIONS

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Capital expenditure decisions are of paramount significance to the firm as the future success and growth of the firm hinges heavily upon them. However, managerial decision-making in respect of investment proposals is a difficult and complicated problem. Although profitability is an important factor in capital expenditure decisions, but it cannot be relied upon completely. Over reliance on the estimated cost and revenue figures can be as dangerous as working on intuition. There may be investment proposals which cannot be evaluated by the profitability criterion alone. The following considerations other than profitability need to be made in managerial decisions about investment proposals:

Availability of Funds: Capital projects involving huge amount of investment call for the managerial consideration of internal and external sources of funds. Since most firms have limited funds, only such investment project should be taken which are within their financial capacity. For example, if a firm undertakes a high cost capital project without considering the financial capacity of the business, will suffer from financial hardships which may ultimately endanger the very survival of the firm. Thus, availability of funds, their liquidity and lesser payback period should be taken into account rather than the profitability of investment proposals. Every wise management decides to take up only such investment proposals which are in accordance with the financial ability of the firm and the availability of sources of finance. The high yielding projects are sometimes rejected simply because the required funds for them cannot be arranged. In case of non availability of adequate funds, a project having lower payback period is preferred despite of its low profitability.

Additional Funds: Investment in new project may also result in increase or decrease of working capital requirements. Generally, all capital investment proposals for increasing revenue require additional funds for meeting working capital needs. Conversely, almost all capital investment proposals for reducing cost result in saving of working capital by increasing the operating efficiency of the firm. Thus, the availability of additional funds for meeting the increased working capital requirements and contingencies in future constitutes an important factor affecting the managerial decisions about capital investment proposals.

Utilization of Funds: Where a firm has large investable funds, the management considers to invest them even in capital projects with comparatively lower profitability in order to fully utilize the firm's funds so as to maximize the total profits of the concern. Idle funds will, of course, reduce the total profit of the firm. Thus fuller utilization of the firm's funds is an important consideration other than profitability in managerial decision regarding investment proposals.

Urgency of the Project: Certain capital projects, which are essential for the survival of the firm, are undertaken irrespective of their profitability. There are many situations in the life of a firm when adhoc decisions are taken about capital expenditure. For example, if there is a breakdown in production process, the management has to take immediate decision to buy the available components to resume production. The urgency of taking quick remedial action, therefore, constitutes an important factor other than profitability which affects the managerial decision about capital investment proposals.

Expectations of Future Earnings: Expected rate of return on future investment also affect the selection of present investment proposals. If management has plans for undertaking more profitable projects in future, it may presently choose those investment proposals whose economic life or payback period is very short, although they may be less remunerative. This is so because the funds invested in such capital projects will be shortly recorded and made available for investment in more profitable investment proposals selected earlier. Conversely, if the firm has more investible funds and the investment projects planned

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to be undertaken in future warrant a downward trend in the rate of return of such projects may be less than those of shorter payback period capital projects.

Intangible Factors: Statutory obligation, prestige of the firm, employees welfare, motive of power, etc., are other non-economic and intangible factors which are not at all concerned with the profitability of investment, but affect the managerial decisions about investment proposals. For example, statutory obligations such as safety measures, welfare investments such as magnificent building of head office and guest-house and strategic investments such as formulation of subsidiaries, etc., are such as intangible factors which can not be ignored. These non economic factors are duly considered by the management while taking decisions in respect of investment proposals, although the above mentioned factors have no relevance to the profitability of the investments.

Risk and Uncertainty: Different capital investment proposal have different degrees of risk and uncertainty. The involve situations in which the profitability of occurrence of a particular event are known, whereas in case of the later these probabilities are not known. Risk in capital investment decision may be due to changes in economic conditions, competition, technological developments, labour conditions, consumer preferences, etc. On account of these reasons the costs, revenues and economic life of a capital project becomes uncertain. Thus, the degree of certainty of income on investment and the risk of obsolescence are also important considerations other than profitability which affect the managerial decisions in respect of investment proposals. The management, thus, prefers the investment proposals which have regular low of income and lesser payback period.

Other Factors: In addition to the above considerations, the other factors affecting capital investment decisions are as follows:

(*i*) **Minimum Rate of Return on Investment:** The management accepts only such investment proposals with are expected to yield a minimum rate of return on investment, which is determined on the basis of the cost of capital. The project giving a return below the expected one is rejected.

(*ii*) **Relative Profitability of Investment Proposals:** When a number of investment proposals appear to be a acceptable on the basis of their profitability, the management prefers to accept the most profitable project.

2.5 OBJECTIVES OF CAPITAL BUDGETING

The objectives of capital budgeting are as follows:

1. Expansion in existing production capacity of the enterprise.
2. Purchase of new machinery and other facilities with a view to operate in several markets so as to reduce the firm's risk.
3. Replacement of worn-out or outdated fixed assets.
4. Quality improvement in production through acquisition of new fixed assets.
5. Benefits of technological innovations through research and development projects.
6. Investment n fixed assets for availing the benefits of contingent opportunities.
7. Fulfillment of legal requirements, *e.g.,* installation of pollution control equipment.

2.6 SIGNIFICANCE OF CAPITAL BUDGETING

Capital budgeting decisions are among the most crucial and important business decisions. These may relate to (*i*) cost reduction through modernization, rationalization, automation,

etc., (*ii*) increasing production through expansion of capacity, creation of balancing facilities, replacement of semi-automatic plants etc., (*iii*) product improvement, addition to the existing product line, diversification, etc., and (*iv*) larger mixed share through establishment of new distribution outlets, creation of new warehousing and transportation facilities, etc. The capital budgeting is necessary not only because the capital projects involve huge amounts of the firm and affect its future growth and profitability, but the following factors further increase the need of capital budgeting:

1. Capital projects involve long-term commitment of the company's sizable financial resources, and hence capital budgeting is necessary. Capital budgeting not only estimates the future expenditure on each capital project but also indicates the sources from which the requisite funds would be procured.
2. Funds invested in capital projects are irreversible without a substantial loss, hence capital budgeting is necessary to arrive at the correct decisions.
3. Capital projects affect the future earnings of the enterprise. It is, therefore, necessary to resort to capital budgeting which determines the capital projects after taking into account their urgency and future rate of return of each project.
4. Since long-term capital projects are subject to a high degree of risks and uncertainty, capital budgeting becomes necessary.
5. Capital budgeting is also necessary because it helps in exercising effective control over capital expenditure on projects within the authorized limits.

2.7 ESSENTIAL COMPONENTS OF CAPITAL BUDGETING ANALYSIS

The basis components of capital investment analysis are of three types:

1. **Net Cash Outflows or Net Capital Investment**

   The total net capital investment outlay or total net cash outflows refer to incremental or marginal investment in a capital expenditure project at a point of time or over a period of time. It represents the net amount of capital expenditure in executing a capital project. The net capital investment outlay of a capital project includes not only the cost of purchasing land, building and plant, but also an increase in the level of working capital required to carry out the investment proposals. If a project results in the replacement of an existing capital asset, its current book value is a sunk cost. However, its salvage value is deducted from the capital outlay. Since the payment of income tax results in cash expenditure, tax on profit on sale of an existing asset in case of a replacement decision is added to the capital outlay of the new project. Investment allowance, if any, is deducted from the capital outlay for arriving at the net investment outlay.

2. **Net Operating Cash Inflows**

   Operating cash inflows are the estimates of future streams of cash inflows resulting from the implementation of a capital project. These estimates are based on a number of estimates. The forecasts relate to production, plant performance, market share, sales revenues, profit margin, tax laws, state of the economy etc. Cash inflows at different point of time have to be estimated on the basis of various forecasts. Though based on systematic forecasts and past experiences of the firm and industry, projections of future cash inflows based on these estimates are not absolute. Net cash inflows are estimates of cash revenues minus cash expenditures. Since depreciation

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is a book adjustment and does not involve any cash outflows, it is not deducted from cash inflows for estimating the net cash inflows. But tax-benefit result from depreciation or appropriation is included in cash inflows. The salvage value of an asset at the end of its operational life is another component of cash inflow. Removal expenses and capital gains taxes, if any, are deducted from the salvage value of the assets. Thus, net cash inflows are equal to cash revenues minus cash expenses plus tax benefit from depreciation or appropriation plus salvage value of asset, net of removal (expenses and capital gains tax plus value of current assets working capital) released.

3. **Choice of Horizon**

   The choice of horizon refers to the selection of the time period to be considered in evaluating the benefits and costs of an investment proposal. However, establishing a horizon is a practical matter. The most practical way of resolving the horizon problem is to let the discount rate take care of it. The cash flow analysis is pertinent to the time period corresponding to the economic life of the proposed project. The end of this period is called the horizon for the project, beyond which the project ceases to yield the economic benefits.

2.8 RISK AND UNCERTAINTY IN CAPITAL BUDGETING

Capital investment involves a business unit's decision to invest its current funds for adoption, disposition, modification and replacement of fixed assets, whose returns would be available only after a period of time longer than one year, hence involves an element of risk and uncertainty of returns. The basic features of capital budgeting are (a) potentiality of large anticipated profits, (b) relatively high degree of risk and uncertainty, (c) longer gestation period between the initial outlay and the anticipated returns. Generally a large part of total investment is invested in fixed assets in almost all business units. Investment infixed assets being a complex problem; it can be controlled through capital budgeting in various segments. Analysis of capital expenditure has to be done carefully so as to arrive at an optimum level, as the capital expenditure decisions have their effects over a long-time span and involves relatively more risk and uncertainty of benefits. For minimizing such risk and uncertainties, capital expenditure budgeting should be exercised in a careful manner. The main points for considering an optimum level of capital expenditure, so as to minimize the risk and uncertainty are:

(*i*) Origin, presentation and screening of investment proposal,

(*ii*) Evaluation of proposal,

(*iii*) Project selection and final approval,

(*iv*) Formulation of capital budget,

(*v*) Authorization of capital expenditure,

(*vi*) Project execution and follow up.

2.9 DATA FOR CAPITAL INVESTMENT DECISIONS

Profitability is the most decisive factor in taking decision on capital expenditure proposals. Such decisions are based on future costs and revenues. The data required for capital budgeting or investment decision-making are as follows:

1. **Cash Flows versus Accounting Profit:** Capital budgeting is concerned with capital investment decisions which yield return or benefit to the enterprise over a period

of time in future. It is, therefore, necessary to estimate the future benefits accruing from the investment proposals while evaluating such proposals. There are two criteria available for quantifying the future benefits of investment proposals: (*a*) accounting profit and (*b*) cash flows. The difference between these two measures of future profitability is due to the presence of certain non cash expenditures like-depreciation, amortization of intangible assets, allowances for future taxation, loss on sale of fixed assets, etc., in the profit and loss account. Thus, the accounting figure of profit needs, adjustment for all such non-cash expenditures to determined the actual cash inflow. The cash flow approach of estimating future benefits of the investment proposals is superior to the accounting approach on account of the following reasons:

(*i*) ***Determination of Economic Value:*** While making capital investment decisions, the management of the firm is really interested in estimating the economic values of the projects. The economic value of a project is determined by comparing the cash outflows (costs) and cash inflows (benefits) associated with the project. Only such cash flows describe the cash transactions, and measure the future benefits of a project in cash terms. Since evaluation of investment proposals is concerned with the determination of future profitability of the proposals to warrant the initial investment, only cash flow approach is appropriate for investment decision. Conversely, the accounting profit approach allocates the cost of investment over the economic useful life of the asset in the form of depreciation rather than at the time when costs at the time of investment as well as the actual size of net cash inflows or outflows in later years. Thus, cash flow approach of measuring the profitability of investment proposals is more appropriate for capital budgeting decisions.

(*ii*) ***Accounting Ambiguities:*** Accounting profit approach is full of ambiguities on account of different accounting policies and practices being followed are respect of valuation of inventory, allocation of costs, calculation of depreciation, and amortization of various other expenses. Obviously, the account of profit will differ under different accounting policies as practices. But there is no such difference in net profits under the cash flows approach as there is only one set of cash flows associated with a project. Thus, the cash flow approach is superior to the accounting project approach.

(*iii*) ***Time Value of Money:*** The cash inflow approach takes into consideration the time value of money while the accounting approach ignores it. Under the usual accounting practice, revenue is considered to be realized at the time of sale and not when cash is received. Similarly, expenditure is considered to be made at the time when it is incurred and not when the actual payment is made. The accounting profit approach cannot be relied upon as decision criteria in respect of capital expenditure management. Thus, the cash flows approach of evaluating the profitability investment proposals is better than the accounting approach. The data required for the purpose of estimating future benefits from investment proposals would be cash revenues and cash expenses.

2. **Incremental Cash Flows:** The second aspect of the data required for capital budgeting relates to the basis of cash flows. For purposes of estimating cash outflows and cash inflows associated with capital expenditure proposals only incremental costs and revenues are considered, *i.e.,* only those cash flows are taken into account which is directly attributable to the investment proposal. It is for this reason that fixed overhead

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costs, which remain constant irrespective of acceptance or rejection of the investment proposal, are not considered. However, any increase in fixed overhead costs on account of the new proposal must be considered.

3. **Opportunity Costs:** It plays a significant role in the capital budgeting decisions. Opportunity cost represents the loss of alternative income as a result of implementation of a specific investment proposal. For example, in the expansion of a project, the economic rather then the book value of the space required for expansion must be treated against a proposed investment. Similarly, in a replacement decision, the realizable value of the existing asset should be deducted from the estimated cost of replacement.
4. **Interest Cost:** The accounting approach gives recognition to contractual interest and ignores imputed interest on capital. Interest is often misunderstood as being the same as return on investment which includes two elements of interest and profit. The former represents the cost of capital while the latter represents the reward for risk and uncertainty. Interest cost constitutes the minimum acceptable rate of return on the capital investment. It is clear that a firm must recover at least the cost of capital before it can realize a profit on the investment. But the minimum acceptable rate of return can be considered as a reward for risk and uncertainty which varies with the nature of risk involved in a project.
5. **Depreciation:** Depreciation is another cost whose accounting treatment has close bearing on the earnings of firm. It is because a firm can legitimately deduct depreciation from its gross profit to arrive at the before tax income. Different methods of depreciation affect tax liability and hence the cash flow differently. It is for this reason that the effect of different depreciation methods must be analyzed and compared while making capital budgeting decisions. Generally, higher the rate of depreciation, the lower will be the tax liability or the greater will be the cash inflow and greater benefits to the firm, and vice-versa.
6. **Determination of Revenue:** Capital investment decisions are made in anticipation of increased revenue in future. This necessitates the estimation of the future revenues from the investment proposals while evaluating such proposals. There are two facts of this problem-capacity of the asset and marketability of increased output. Whereas the estimation of potential output of the asset is an engineering exercise and can be determined easily, the determination of marketability of increased output of the product is not so easy. It is because the demand for the firm's product will depend upon a multitude of factors such as-consumer's reactions, economic conditions, activities of competitors, etc. This calls for a formal market survey.
7. **Income Tax:** Where the investment proposal involves the replacement of an old asset by a new asset, the sale proceeds give rise to cash inflow and tax consideration. Payment of income tax results in cash outflow. Since capital investment decisions are based on cash flows, income tax constitutes an important element in capital investment decisions. The sale proceeds of an old asset minus taxes are deductible from the cost of the new asset. However, any loss sustained in respect of the sale of an old asset is first applied against any capital gain available, and any surplus being deductible in full from ordinary taxable income. Income tax have other effects on capital investment decisions. The tax laws permit carrying losses forward to be set off against future income. A careful study of tax effects cash flows should be made in case of firms incurring losses and consequently paying no tax. Keeping in view the complexities of tax laws it is desirable for a firm to have its own tax cell or tax consultant to participate in all major capital investment decisions.

2.10 CAPITAL EXPENDITURE CONTROL

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Capital expenditure is undertaken either for reducing current costs or for increasing the existing revenues. Capital expenditure may, therefore, be necessary for expansion of present production capacity, replacement of worn out or outdated assets, product diversification, discharging legal requirement of health, safety and employee welfare, research and development, etc. Effective control on capital expenditure has assumed greater significance in the contemporary industrial world. Heavy mechanization, automation, large scale production, technological advancements, tough competition have all contributed to escalated investments in fixed assets which affect the future profitability and survival of a firm, hence, the need for effective control on capital expenditure. In view of the increased significance of capital expenditure control, the management should devise and operate a system of capital expenditure control which have the following features:

1. **Search for New Methods, Processes and Products:** The main feature of a dynamic capital budgeting administration is a complete awareness on the part of all management personnel that capital expenditure constitute the basis of long-term profitability of the firm. This makes the management more vigilant in searching for new methods, processes and products.
2. **Comprehensive Planning:** Capital expenditure should be so planned as to ensure balanced development of each department of the firm. A sound organizational set up must be established for analyzing, screening, approving and implementing the capital investment proposals. A Capital Expenditure Committee may be set up for this purpose, and may be made responsible for the soundness of each capital expenditure proposal as well as for the balanced development of the enterprise. The techniques of PERT and CPM are very useful in planning capital expenditure to meet the above objective.
3. **Use of Capital Budgeting:** An effective system of budgetary cost control provides in itself an efficient control on capital expenditures. However, companies may not follow a complete system of budgetary control. Even then, a capital budget must be prepared for ensuring capital appropriations and capital payments.
4. **Rational Evaluation:** All capital expenditure proposals should be thoroughly analyzed and judged in the light of both the short-term situations and long-term plans of the firm in respect of the availability of required funds so that the available funds are employed in the best possible way to yield the maximum profits. The objective capital investment decisions can be made by using the systematic rational methods of ranking investment proposals.
5. **Progress Record:** An effective control of progress of capital expenditure projects is essential. A proper progress report in respect of each capital project should be maintained on a 'Capital Project Sheet'. The authorized and actual capital expenditure must be compared after a certain period and the variances should be corrected. Constant watch on expenditures in respect of each operation should be kept.
6. **Post-completion Audit:** This is an important phase of capital expenditure control. Post-completion audit of capital projects determines, whether the actual vale of the capital projects is in accordance with the value of the capital projects is in accordance with the value determined at the time of their authorization. A periodical audit of projects is of great importance in exercising effective control on capital expendi-ture.
7. **Forms and Procedures:** For effective capital expenditure control, there should be some set routine and procedure. A procedure is needed at every stage - request,

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authorization, progress and audit. Request for capital allocation is made periodically and they are reviewed as they pass upward through management level until they reach to Capital Investment Committee which shifts these projects and submit its recommendation to the Board of Directors. Usually big firms have a set of prescribed forms which can be completed and presented to management as and when required.

2.11 LIMITATIONS OF CAPITAL BUDGETING

Capital budgeting suffers from the following limitations:

1. **Accuracy of Estimates:** The estimates of profitability of investment proposals relate to some future period which is uncertain. Obviously, decisions involving uncertainty also involve an element of risk. Errors are likely to creep while estimating revenues, costs, economic life span of assets, etc. Inaccurate forecasts may lead to serious adverse effects on the growth and profitability of the firm, and may also endanger the very survival of the concern. Estimates of revenues from investment projects involve estimating the size of the market for a product and the expected share of the firm in it. These estimates depend on a variety of factors such as—price, advertising, sales promotion efforts, etc., which are not easy to forecast accurately. Similarly, accurate forecasting is also affected by shift in consumer preferences, the actions of competitors, technological developments and changes in economic conditions. Future uncertainties, therefore, affect the accuracy of data pertinent to capital budgeting decisions. Although the various methods of ranking investment proposal facilities a systematic analysis of the various alternative proposals and determining the most profitable project, but these techniques by themselves cannot ensure the best possible selection among the alternative capital projects, if the data required for capital investment are not accurate. Under such conditions of uncertainty, an experienced and skillful management is indispensable.
2. **Comparability of Costs and Benefits:** Capital investment decisions are based on estimates of future costs and benefits of the alternative investment proposals. But the costs incurred and benefits received from the capital investment proposals occur at different time periods, and hence are not logically comparable because of the time value of money.
3. **Quantification of Certain Costs and Benefits:** Capital budgeting decisions involves some considerations other than profitability such as—employees welfare, prestige of the firm, statutory obligations, etc. Although such considerations, may yield benefits or incur costs to the firm, but it is not often possible to calculate all the costs and benefits relevant to the particular project in quantitative terms. Infact, management exercises its judgment in respect of almost all the capital investment decisions. If the unquantifiable costs and benefits of a particular investment proposal are not carefully judged, the firm may suffer irreparable losses.

2.12 TECHNIQUES OF EVALUATING CAPITAL BUDGETING DECISIONS

There are several methods of Evaluating Ranking the capital investment Proposals. Most of these methods evaluate investment proposals on the basis of the desired rate of return. A management may have a number of other comparable capital budgeting criteria besides profitability like public image, future growth, price leadership, etc. The management has to strike a balance between

the profitability criterion and other compatible criteria by using its judgment. Project evaluation on profitability criterion helps this judgment. While evaluating the relative profitability of the acceptable investment proposals, it is assumed that: (*i*) all the alternative investment proposals are risk less or carry and equal amount of risk; (*ii*) cash inflows are net of corporate income-taxes; (*iii*) investment outlays are made at the beginning of the year and cash inflows are received at the end of the year. The commonly used methods of evaluating and ranking investment proposals are as follows:

2.12.1 Payback Period Method

Payback period refers to the time period during which a firm fully recovers its investment on a capital project. In other words, it is the time period during which capital investment pays off its full value. This method is also known as Payout or Pay-off Period Method. This is a widely used traditional method of capital budgeting. It represents the period, normally in number of years, required to get back the original cost of the project through annual earnings before charging interest and depreciation but after payment of tax. It is based on the assumption that every capital expenditure pays itself back over a period of time. The net annual cash inflows resulting from the proposed capital project are calculated by deducting operating costs exclusive of interest and depreciation and income tax from the sales revenue. The income so arrived is expressed as a percentage of initial investment outlay is called as "unadjusted rate of return". However, where income tax is taken into consideration, the amount of depreciation is first deducted as an operating overhead and then added to the net income after tax.

It becomes clear form the above discussion that under this method payback period of the concerned project is computed. For this purpose, following two information's are required:

1. Initial outplay of the project. (Generally, it is given in the question)
2. Expected Annual Cash-flow (ACF): It is also known as annual operating savings or annual cash inflow. The annual cash inflow is calculated by taking into account the amount of net income on account of the project before depreciation but after taxation. Annual cash inflow can be calculated in h follwing format:

	Rs.
Sales Revenue	…….....
(–) Operating Expenses including depreciation	…….....
Income before taxes	
(–) Income-Tax	…….....
	…….....
Income after taxes	
(+) Depreciation	…….....
	…….....
Annual Cash Inflow	

Computation of the Payback Period:

The payback period can be calculated in two different situations:

1. When annual cash inflows are equal,
2. When the annual cash inflows are unequal.

1. **When Annual Inflows are Equal:** When the cash inflows are uniform for each year of the project's life, the payback period can be computed by dividing the initial outlay of the project by the annual cash inflow. Symbolically:

$$\text{Pay-Back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Flow}} \quad \text{or} \quad \frac{\text{Net Investment}}{\text{Annual Operating Saving}}$$

See the following illustration for clarification.

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Example 2.1. *Rank the following investment proposals in order of their profitability accordin to Pay-Bck period:*

Project	*Initial Outlay (Rs.)*	*ACF (in Rs.)*	*Life (in Years)*
A	50,000	10,000	8
B	90,000	12,000	10
C	6,000	600	13
D	24,000	3,000	15
E	5,00,000	1,25,000	10

Solution.

Project	*Initial Outlay*	*ACF (in Rs.)*	*Pay-Back Period*	*Rank*
A	50,000	10,000	$\frac{50,000}{10,000}$ = 5 Years	II
B	90,000	12,000	$\frac{90,000}{12,000} = 7\frac{1}{2}$ Years	III
C	6,000	600	$\frac{6,000}{600}$ = 10 Years	V
D	24,000	3,000	$\frac{24,000}{3,000}$ = 8 Years	IV
E	5,00,000	1,25,000	$\frac{5,00,000}{1,25,000}$ = 4 Years	I

Example 2.2 *A company is considering whether to purchase some special machines. Management does not wish to buy the machines unless their cost can be recoverd in three years. The following information is available:*

(a) Cost of the machine Rs. 3,00,000

(b) Life of the machine 8 years.

(c) Sales revenue generated by the new machine Rs. 4,00,000 per annum,.

(d) Variable cost is 60% of sales.

(e) Annual fixed costs other than depreciation Rs. 15,000.

(f) Tax is at 50 percent.

Based on the criterion of three years recovery period, should the special machines be purchased? Support your answer with a computation of the period of time required for the investment of Rs. 3,00,000 to be recovered. The company has adopted straight line method of depreciation.

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Solution. **Calculation of Anal Cah Flow (ACF)**

			Rs.
Sales Revenue			4,00,000
(–) Variable Cost 60% $\left(4,00,000 \times \frac{60}{100}\right)$			(–) 2,40,000
	Contribution		1,60,000
(–) Fixed Cost		15,000	
Annual Depreciation $\left(\frac{3,00,000}{8}\right)$			
	Profit before tax	37,500	(–) 52,500
(+) Tax @ 50%			1,07,500
	Profit after tax		(–) 53,750
			53,750
(+) Annual Depreciation (as above)			37,500
	Annual Cash Flow		91,250

$$\text{Pay-Back Period} = \frac{\text{Initial Outlay}}{\text{ACF}} = \frac{3,00,000}{91,250} \quad 3 \text{ years } 105 \text{ days or } 3.29 \text{ years}$$

2. **Calculation of Pay-Back Period in case of Uneven Cash Inflows:** In case the cash inflows are not equal (uniform) and vary from year to year, 'the payback period can be calculated by cumulating the net cash inflows until the total becomes equal to the amount of initial outlay. A measurement problem may occur when the cumulative cash inflows do not exactly equal to proposal's cash outflow. In case no cumulative cash flow is exactly equal to the initial outlay, the following formula may be applied for the purpose:

$$\text{Pay-Back Period} = E + \frac{B}{C}$$

where, E stands for number of years immediately preceding the year of final recovery
B stands for the balance amount still to be recovered
C stands for cash flow during the year of final recovery.

See the following illustration for clarification.

Example 2.3. *Following information is given about two projects. Calculate the Pay-Back period and find whih poject is beter?*

	Project A Rs.	*Project B* Rs.
Cost of Project	1,60,000	2,00,000
Estimated residual value	16,000	24,000
Estimated Savings:		
First year	20,000	40,000
Second year	30,000	60,000
Third year	50,000	60,000
Fourth year	50,000	60,000
Fifth year	40,000	30,000
Sixth year	30,000	20,000
Seventh year	10,000	–

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Solution. **Table Showing Cumulative ah Flow of Projcts**

Year	*Project 'A'*		*Project 'B'*	
	Cash Flow Rs.	*Cumulative Cash Flow Rs.*	*Cash Flow Rs.*	*Cumulative Cash Flow Rs.*
1	20,000	20,000	40,000	40,000
2	30,000	50,000	60,000	1,00,000
3	50,000	1,00,000	60,000	1,60,000
4	50,000	1,50,000	60,000	2,20,000
5	40,000	1,90,000	30,000	2,50,000
6	30,000	2,20,000	44,000	2,94,000
7	26,000*	2,46,000	–	–

*Including the estimated scrap.

Calculation of Pay-back Period

	Project 'A'	*Project 'B'*
Pay-ack Period	$4 + \frac{1,60,000 - 1,50,000}{40,000}$ = 4 + years and 3 months	$3 + \frac{2,00,000 - 1,60,000}{60,000}$ = 3 + years and 8 months

Post Pay-Back Profitability

If other things remain constant then that project is to be prefered which has highest Post Pay-back Profitability. The post pay-back profitability can be calculated in two different situations:

(*a*) *When Annual Cash Inflows are Even for the Entire Period:*

= [ACF (Working Life – Pay-Back Period)] + Salvage Value (if any)

(*b*) *When Annual Cash Inflows are Unequal:*

Post Pay-Back Profitability:

= Total ACF including Salvage Value – Initial Outlay

For the sake of clarity in comparison, Post Pay-back Profitability Index can be calculated for it. It can be calculated by the following formula:

Post Pay-Back Pofitability Index

$$= \frac{\text{Post Pay-Back Profits}}{\text{Initial Outlay}} \times 100$$

Project having highest index is considered the best project. See the following illustration for clarification.

Example 2.4 *Monika Ltd. is considering three projects X, Y and Z. Following are the particular in respect of them:*

	Project 'X'	*Project 'Y'*	*Project 'Z'*
Cost (in Rs.)	1,00,000	1,40,000	1,40,000
Economic Life (in years)	10	10	10
Annual Savings (in Rs.)	16,000	25,000	20,000

Ignoring income tax recommend the best of these projects using:

(*i*) *Pay-Back Period,*

(*ii*) *Post Pay-Back Profit,*

(*iii*) *Index of Post Pay-Bak rofit.*

Solution.

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		Project 'X' *Rs.*	*Project 'Y'* *Rs.*	*Project 'Z'* *Rs.*
1.	Original Investment (OI)	1,00,000	1,40,000	1,40,000
2.	Annual Operating Savings (ACF)	16,000	25,000	20,000
3.	Annual Savings (in Rs.)	16,000	25,000	20,000
4.	Pay-Back Period (OI/ACF)	6.25 years	5.6 years	7 years
	(*i*) Ranking	II	I	III
5.	P.B.P. (in years)	6.25	5.6	7
6.	Surplus Life (in years)	3.75	4.4	3
7.	Post Pay-Back Profit (in Rs.) (ACF × Surplus Life)	60,000	1,10,000	60,000
	(*ii*) Ranking	II	I	III
8.	Index of Post-Pay Back Profit	$\frac{60,000 \times 100}{1,00,000}$ = 60%	$\frac{1,10,000 \times 100}{1,40,000}$ = 78.6%	$\frac{60,000 \times 100}{1,40,000}$ = 45.9%
	(*ii*) Ranking	II	I	III

Project 'Y' : I rank; Project 'X' : II rank; Project 'Z' : III rank.

Discounted Payback Period

This is an improvement over the pay back period method in the sense that it considers time value of money. Under this method, the cash inflows of the project are discounted at a given rate of interest. The discounted values of all inflows are cumulated in order of time. The time period at which the cumulated discounted value of cash inflows equals the present value of cash outflows is known as discounted pay-back period. thus discounted pay back period indicates that period within which the discounted cash inflows equal to the discounted cash inflows equal to the discounted cash outflows involved in a project. The project which gives a shorter discounted pay-back period is accepted. The method has been explained in example given below:

Example 2.4 *A project costs Rs. 50,000 and estimated to have a working life of 5 years. Annual cash inflows are estimated to be Rs. 16,000 and scrap value to be Rs. 5,000. Calculate discounted pay back period for the project assuming cost of capital to be 10%.*

Solution. Calculation of Disconted pay-Back Period

Year	*Annual Cash Flaw* *Rs.*	*P.V. Factor @ 10%*	*Present Values* *Rs.*	*Cumulative Present Value* *Rs.*
I	16,000	0.909	14,544	14,544
II	16,000	0.826	13,216	27,760
III	16,000	0.751	12,016	39,776
I V	16,000	0.683	10,928	50,704
V	16,000	0.621	9,936	60,640
Scap	5,000	0.621	3,105	63,745

Discounted Pay-Bac Period

$$= 3 \text{ years} + \left[\frac{(50,000 - 39,776)}{10,928}\right] = 3.935 \text{ years.}$$

Suitability of Payback Period Method:

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Payback period method of capital projects evaluation is suitable for firms which are subject to rapid technological changes such as pharmaceuticals, electronics and space industries, or to rapid consumer taste changes such as clothing industry. Since such firms have to make huge investments in research and development, production facilities and marketing, they are keen to recover it before their products become obsolete. Payback period is also suitable for firms when money market is tight, or when they have surplus cash resources available for a short period of time. This method recommends itself as primary criteria of evaluating capital projects for firms making investments in counties with high inflation rates, unstable governments, or other problems.

Merits of Payback Period Method:

The Payback Period Method has the following merits:

1. **Simplicity:** The most outstanding merit of the payback period method is that it is simple to understand and easy to work out.
2. **Liquidity:** This method measures the recovery period of the original investment involved in capital projects. It reflects the liquidity of a project, and hence the risk of recovering the original investment is taken into consideration. The more liquid an investment is, the less risky it is considered to be. The ranking part of this method gives priority to projects having shorter paybacks. Companies with tight cash position generally prefer quick payback projects. This method enables the management to know as how rapidly the capital investment may be recovered and when they should start paying dividends.
3. **Safety:** This method also minimizes the possibility of losses on account of obsolescence due to rapid technological changes or changes in consumer preferences. Rapid paybacks minimize the risk and increase the margin of safety from the possible loss through obsolescence.
4. **Reliability:** In case of projects with uncertain returns, this method of project evaluation is considered to be more reliable. This method merely considers the recovery of the original investment. In fact, returns beyond three or four years are so uncertain as to disregard them altogether in a planning decision. The payback period method does not take into consideration the cash inflows after the recovery of investment. Since it is possible to accurately forecast costs and sales on the short-run, more reliable conclusion may be drawn under this method.
5. **Calculations:** This method is an improvement over the urgency criterion of appraising investment proposals. It is also useful in making certain calculations. The internal rate of return can be easily computed from the payback period. This method is a good approximation of the internal rate of return which otherwise involves a trial and error exercise.

Demerits of Payback Period Method

Although this method occupies an important place as an investment criterion due to its wide usage, but it suffers from serious limitations. Its trial and drawbacks are as follows:

1. **Ignorance of Post-payback Cash Inflow:** The most obvious limitation of this method is that it completely ignores the post-payback surplus generating capacity of the alternative investment proposals. Since, projects with equal payback periods are given equal ranks irrespective of their post-payback profits, which is apparently incorrect. Thus, payback

period method cannot be regarded as a measure of profitability as it fails to consider the alternative investment proposals in terms of their relative total benefits over their respective lifespan.

2. **Disregard to the Time Value of Money:** The second major limitation of the payback method is that it does not measure even the streams of cash inflows expected within the payback period. It is because this method does not take into consideration the time value of money. It does not differentiate between the alternative investments projects in terms of the timing and magnitude of cash inflows. It does not discount the future cash inflows. All streams of cash inflows whether received now or after four years are treated equally valueable.
3. **Disregard to the Entire Lifespan of Projects:** This method does not take into account the entire lifespan of the investment projects during which the streams of cash inflows continue even in higher magnitude. Consequently, projects with large cash inflows in the latter part of their economic lives may be rejected in favour of less profitable projects which yield their highest returns in the initial part of their lives.
4. **Disregard to the Productivity of Capital:** This method is not an exact measurement of productivity of capital investment projects because it fails to measure the return on investment. In fact, it is measure of liquidity of investment projects rather than its profitability. It gives undue emphasis to quick recovery of funds. Over-emphasis on the liquidity of investment cannot be justifies in a number of situations.
5. **Disregard to the Cost of Capital:** This method also ignores the cost of capital which constitutes the basis for sound capital investment decisions.

Despite its limitations, the payback period method occupies an important place in any discussion of investment decision criteria, not because of its merits but due to its popularity and wide usage among businessmen. This method is very popular in American and British Industries for evaluating investment projects. A recent survey of the Machinery and Allied Products Institute of USA shows that 60% of the companies surveyed, used the payback method for evaluating the capital investment projects.

2.12.2 Average Rate of Return Method (ARR)

The Average Rate of Return (ARR) Method of evaluating investment proposals is also known as 'Accounting Rate of Return Method', or 'Unadjusted Rate of Return Method', or 'Financial Statement Method', or 'Return on Investment Method'. This method is based on accounting income instead of cash inflows. It attempts to measure the rate of return on investment on the basis of the accounting information contained in financial statements. Since there are a number of ways for calculating the ARR, there is no unanimity regarding the rate of return. The rate of return may be calculated on the basis of (*i*) income before taxes and depreciation, (*ii*) income after taxes but including depreciation, and (*iii*) income after taxes and after depreciation. Accordingly, the rate of return will also differ on account of the usage of original investment or average investment figures. Thus, this method provides different rates of return.

However, there are two main variants of this method – (*i*) original investment measure, and (*ii*) average investment measure. In case of original investment, the original earnings over the lifespan of the investment project are compared with the original investment. The average investment measure does not recognize that the investment gradually decreases whereas earnings may differ from year to year. On the other hand, in the average investment measure the average annual income from the project is divided by the average investment. The amount of average investment can be calculated by dividing the original investment by 2, or by a figure representing

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the mid-point between the original capital outlay and the salvage value of the asset. When initial investment is taken into account in calculating the rate of return, it is called the rate of return on investment (ROI), and when average investment is taken for the purpose of calculation, it is called the Average Rate of Return (ARR).

Rate of Return Method

1. **Average Rate of Return on Total Investment (ROI):** 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. In other words, it establishes the relationship between average annual profits to total investments Symbolically:

$$\text{ROI} = \frac{\text{Average Annual Income}}{\text{Initial Investment}} \times 100$$

The term 'Average Annual Income' is the average of the incomes (after depreciation and tax) over the whole of the economic life of the project. In other words, average annual income is determined by adding the after tax expected profits for each year of the life of the project and dividing the same by the number of years of the economic life of the project. Alternatively, it can also be calculated as follows :

Average Annual Income = Average ACF – Annual Depreciation

2. **Average Return on Average Investment (ARR):** This is the most appropriate method of rate of return on investment. Under this method, average profit after depreciation and taxes is divided by the average amount of investment. It is more rational to divide the average annual profits by the average investment rather than the total investment which goes on declining year after year due to depreciation. In brief, it may be calculated according to any of the following methods:

(*a*) **If Profits or Earnings after Depreciation and Tax have been given in the Question:**

$$\text{ARR} = \frac{\text{Average Annual Income After Tax and Depreciation}}{\text{Average Investment}} \times 100$$

(*b*) **If Annual Cash Inflows have been given n the Question:**

$$\text{ARR} = \frac{\text{Average Annual Cash Inflows} - \text{Annual Depreciation}}{\text{Average Investment}} \times 100$$

Workings:

(*i*) Annual Depreciation (Strightline Method)

$$= \frac{\text{Initial Investment} - \text{Scrap Value}}{\text{Economic Life of Project}}$$

(*ii*) Aerage Annual Income $= \dfrac{\text{Total Income}}{\text{No. of years}}$

(*iii* Average Investment $= \dfrac{\text{Initial Investment} + \text{Scrap Value}}{2}$

Example 2.5 *Following are the detais aout two projects:*

	Project 'A'	*Project 'B'*
Initial Investment	Rs. 4,00,000	Rs. 10,00,000
Economic Life	8-years	10 years
Annual Operating Savings	Rs. 80,000	Rs. 1,50,000

Calculate ROI and ARR on the basis of above particulars and point out which project is better ?

Solution.

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Project 'A':

$$\text{ROI} = \frac{80,000 - \left(\frac{4,00,000}{8}\right)}{4,00,000} \times 100 = 7.5\%$$

$$\text{ARR} = \frac{80,000 - \left(\frac{4,00,000}{8}\right)}{\frac{4,00,000}{2}} \times 100 = 15\%$$

Project 'B':

$$\text{ROI} = \frac{1,50,000 - \left(\frac{10,00,000}{10}\right)}{10,00,000} \times 100 = 5\%$$

$$\text{ARR} = \frac{1,50,000 - \left(\frac{10,00,000}{10}\right)}{\frac{10,00,000}{2}} \times 100 = 10\%$$

Thus Project 'A' is better because ROI and ARR both of this project are more than that of Project 'B'.

Example 2.6 *XYZ Co. is proposing to make a capital investment of Rs. 3,00,000 which is estimated to produce the following profit figures after allowing for depreciation over 5 years on straight line basis:*

Year 1	*Rs. 75,000*
Year 2	*Rs. 75,000*
Year 3	*Rs. 60,000*
Year 4	*Rs. 45,000*
Year 5	*Rs. 7,500*

To undertake this programme, the company will have to issue debentures at 10% per annum. Over the past few years, the company's profits have been of the order of 22% on shareholders equity.

You are required to prepare a report for management indicating profitability of the proposal, Ignore taxation.

Solution.

Total Profits of 5 years = 75,000 + 75,000 + 60,000 + 45,000 + 7,500
= Rs. 2,62,500

$$\text{Avrage Annual Profits} = \frac{2,62,500}{5} = \text{Rs. } 52.500$$

Initial Outlay = Rs. 3,00000

$$\text{Average Outlay} = \frac{\text{Initial Outlay}}{2} = \frac{3,00,000}{2} = \text{Rs. } 1,50,000$$

Rate of retur on verage Outlay

$$= \frac{\text{Average Annual Profit}}{\text{Average Outlay}} \times 100 = \frac{52,500}{1,50,000} \times 100 = 35\%$$

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Merits of the ARR Method

The advantages or merits of this method are as follows:

1. ***Simplicity:*** It is easy to understand and simple to work out.
2. ***Comparability:*** This method takes into account the savings of capital assets over their entire economic life, and hence provides better comparability criteria of the projects than the payback period method.
3. ***Net Earnings Concept:*** This method duty recognizes the concept of new earnings while appraising capital investment projects, which is absent in case of all other methods. The concept of net earnings is considered to be a significant factor in evaluating capital investment proposals.
4. ***Profitability:*** It gives due weightage to the profitability of the alternative projects, which is a vital factor of evaluating and selecting the most profitable investment proposals.

Demerits of the ARR Method

Limitations of ARR method are as follows:

1. ***Disregard to Time Value of Money:*** This method of project evaluation also does not take into account the time value of money like the payback period method. It does not differentiate between projects in terms of the timing or magnitude of cash inflows. It does not discount the future cash inflows. It treats all the streams of cash-inflow to have the same value whether received now or after two year or ten years. Thus, the ARR method fails to consider the pattern of cash inflows and ignores the time value of money.
2. ***Fear of Over-valuation:*** It does not reveal a true and fair view of long-term investment, as there is always a chance of over-valuation of assets may creep in an account of the fact that under this method no time allowance is provided for investments made at different time intervals and receipt of income at different time intervals.
3. ***Accounting Income:*** This method is based on accounting income rather than cash flows. It treats depreciation as a deduction before arriving at the additional net income, whereas it is only a book entry and does not involves any cash outflow. This shortcoming of the ARR method can be removed by using net cash inflows in place of additional income, *i.e*., accounting income.
4. ***Disregard as to the Size of Investment:*** This method does not differentiate the alternative investment proposals in terms of their magnitude of investments. Obviously, the competing projects may have the same ARR but may differ in respects of average investments depending upon their respective magnitudes of investment. In such a situation, this method becomes useless for the firm to firmly decide upon the implementation of a particular project.
5. ***Diverse Concept:*** The diverse concepts of 'investments' and 'earnings' leads to different variants of the ARR, each of which produces a different rate of return for a specific investment proposal. This reduces the reliability of the method.
6. ***Determination of the Minimum Rate of Return:*** Determination of the minimum acceptable rate of return is another problem associated with this method. Generally, an arbitrary minimum rate of return on investment is fixed by the management as it is very difficult to determine a reasonable rate of return. Investment projects are accepted or rejected with reference to this arbitrary rate of return, which is irrational.

7. ***Disregard to Incremental Cash-outflows:*** The method ignores the benefits accruing to the firm from the sale or abandonment of the old equipment which is replaced by the new one. It considers only the net investment, where as an investment proposal should be evaluated in terms of incremental cash outflow, *i.e.,* new investment minus sale proceed of the old asset, in order to arrive at a correct financial decision.

2.12.3 Discounted Cash Flow Method

In view of the significance of capital budgeting decisions, it is imperative to determine and choose the most profitable investment opportunities. So far we have discussed different unsophisticated traditional methods of evaluating capital investment proposals. The Average Rate of Return (ARR) and Payback Period Methods suffer from a number of shortcomings. Recently, the Time adjusted for Discounted Cash Flow Techniques of evaluating investment proposals have come to be recognized as the most meaningful tool of financial decision-making because these methods provide a more objective basis and theoretical accuracy than the traditional method.

The Discounted Cash Flow Methods or Time-adjusted Methods of evaluating capital projects take into account the time value of money, interest factor (*i.e.,* cost of capital) and all costs and benefits occurring during the entire life period of the project. The sophisticated or time-adjusted methods of evaluating capital expenditure proposals include:

1. **Present Value Method**

   The Preset Value Method is one of the Discounted Cash Flow (DCF) or Time-Adjusted Methods. It is also known as 'Discounted Benefit-Cost Ratio Method'. This method takes into account the time value of money and all cash flows are expressed in terms of their present value. It also takes into account all the benefits and costs occurring throughout the useful life time of a project. This method is based on the assumption that the value of present investments cannot be equal to future amounts of cash inflows from this investment. Converting the future amounts of earnings to their present values can solve this problem. This will make the values of investment and earnings comparable. Thus, the present value method is based on a comparison of present value of an investment with the present value of the streams of its cash inflows. Present values of investments may be calculated at a discount rate which may be equal to the cost of capital of the form or the rate of return desired by the firm on its investment. With the help of the discount rate, the future cash inflows and cash outflows are converted into present values. For capital budgeting purposes, the cash inflows are calculated on the basis of cash inflows after taxes, and are inclusive of depreciation. The cash inflows are assumed to occur at the end of each year. If the capital assets acquired for the capital project have any salvage value, its present value is set off against the present value of the cash outlay. The working capital released at the end of the projects life is included in cash inflow. In case of replacement decisions, an adjustment in respect of tax factor and sale proceeds of the existing asset made in the initial cash outlay. The steps involved in computing the present values of investment outlays and cash inflows are recapitulated as follows:

   (*a*) Determination of the rate of discount *i.e*., cut-off rate. This discount rate is the cost of capital of the firm or the rate of return desired by the firm on its investment.

   (*b*) Determination of cash outlays, both initial and subsequent, and cash inflows for different years. Computation of the present value of cash outlays of the project by discounting future cash outlays at the predetermined discount rate. In case, the capital asset has any salvage value, its present value has to be deducted for the present value or the cash outlays.

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(*c*) Determination of the present value of the cash inflows expected to be generated by the investment outlays. In determining the cash inflow after tax (CFAT), all direct and indirect costs including operational and maintenance costs are deducted from the total cash receipts. Depreciation is disregarded as a cost under this method. With the help of the pre-determined discount rate, present values of cash inflows after tax at different periods may be computed either by calculating the present factor as mentioned above or by taking the Present Value Factor (PAF) from the Annuity Tables.

(*d*) The present values of all cash inflows and outflow for different periods are determined as under :

PV = Actual Cash flow x PVF

Present values of all cash inflows and cash outflows are added together respectively, which serve as an accept-reject criterion. In case the present value of cash inflows is more than the present value of cash outflow, the present will be accepted, otherwise rejected. Symbolically, the accept-reject criterion can be put as follows :

PV > 7 C accept the proposal

PV < C reject the proposal

Where PV is the present value of cash inflows and C is the present value of cash outflows or outlays.

The traditional methods do not take into consideration the time value of money and give equal weight to present and future flow of income, but it is essential to consider the timing of return on investment in evaluating investment proposals. The present value method is free from this limitation and time value of money is taken into consideration in this method. Under this method future cash flow are discounted at a given rate of return and compare it with initial investment.

For computing the present value of cash flows at different periods, present value factor may be calculated by thefollowing formula:

$$PV = \frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2} + \frac{C_3}{(1+r)^3} + \ldots \frac{C_n}{(1+r)^n}$$

where PV = Present Value of Future Cash Inflows

C = Cash Inflows

r = Rate of Interest or Required Earning Rate or Discount Rate

n = Number of Years

However, as n becomes large, the calculation of $(1 + r)^n$ becomes difficult. Present value can also be found by the use of Present Value Tables.

2. **Net Present Value Method**

The Net Present Value (NPV) Method is generally considered to be the best method of evaluating capital investment proposals. This method is a variant of the present value decision criterion.

It is also called the 'Excess Present Value' or 'Net Gain' Method.

The Net Present Value is the difference between the present value of the future cash inflows after tax and the present value of cash outlays.

The steps involved in computing the present values of investment outlays and cash inflows are the same as for present value method discussed above. The decision criteria for accepting or rejecting a project are as follows;

NPV > Zero (Accept the Proposal)

NPV < Zero (Reject the Proposal)

In other, words, if the NPV is positive (*i.e.,* the present value of cash inflows is more than the present value of cash outflows or investment outlays, the project should be accepted, otherwise rejected. The accept/reject criterion under the NPV method can also be put as under:

Where, PV > C Accept the Proposal

PV < C Reject the Proposal

PV = Total Present Values of Cash Inflows

C = Total Present Value of Cash Outlays.

Zero NPV implies a situation where the firm can only recover the original investments. In case of mutually exclusive projects, the project with the highest NPV is preferred and accepted. In practice, the NPV of cash flows is determined with the help of Present Value Tables, prepared for this purpose.

When Cash Flow are Even

Example 2.7 *A project costing Rs. 100 lakhs has a life of 10 years at the end of which its scrap value is likely to be Rs. 10 lakhs. The firm's cut-off rate is 12%. The project is expected to yield an annual profit after tax of Rs. 10 lakhs, depreciation being charged on straight line basis. At 12% per annum the present value of one rupee received annually for 10 years is Rs. 5.650 and the value of one rupee received at the end of the 10th years is Re. 0.322.*

Ascertain the net present value of the project and state whether we should go in for the project.

Solution.

Calculation of Annual Cash Inflow i.e., profit-after ta ut beore depreciation:

	Rs.
Profit after tax given in the problem is	10,00,000
Depreciation (R. 100 lakh - Rs. 10 lakhs/10years)	9,00,000
Annul Cash Inflow	9,00,000
Present value of annual cash inflow of Rs. 19,00,000 for	Rs.
10 years @ the present value factor of 5.650	
= 19,00,000 × 5.650	
Present value of the scrap value of Rs. 10 lakhs at the	1,10,57,000
of 10th year @ the present value factor of 0.322	
= 10,0,000 × 0.322	3,22,000
Total pesent value	1,13,79,000
Total Cash Outflow	1,00,00,000
The present value of the futurecash inflow	1,13,79,000
Net present value of inflows	13,79,000

NOTES

When Cash Flows are Uneven:

Example 2.8 *Mehta Co. Ltd. is considering the purchase of a machine. Two machines, X and Y, are available each costing Rs. 50,000. Earnings after taxation are epectedto be as folows:*

Year	*Cash Flow*	
	Machine X Rs.	*Machine Y* Rs.
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

Evaluate the both alternatives according to Net Present Value Method. A discount rate of 10% is to be used.

Solution.

Calculation of Preen Value of ash Inflows

Year	*Discount Factor at 10%*	*Machine X* Rs.		*Machine Y* Rs.	
		Cash Flow Rs.	*Present Value* Rs.	*Cash Flow* Rs.	*Present Value* Rs
1	0.909	15,000	13,635	5,000	4,545
2	0.826	20,000	16,520	15,000	12,390
3	0.751	25,000	18,775	20,000	15,020
4	0.683	15,000	10,245	30,000	20,490
5	0.621	1,000	6,210	20,000	12,420
		85,000	65,385	90,000	64,865

Net Present Value = Present Value – Investment

Machine X = Rs. 65,385 – 50,000 = Rs. 15,385

Machine Y = Rs. 64,865 – 50,000 = Rs. 14,865

Hence, Machine X should be preferred.

Working Notes:

Present Value = Discount Factor × Cash Flow

Merits of the NPV Method

The NPV technique of evaluating investment opportunities has the following merits :

1. **Recognition to the Value of Money:** This method explicitly recognizes the time value of money, which is inevitable for making meaningful financial decisions.
2. **Consideration to Total Cash Inflows:** The NPV method considers the total cash inflows of investment opportunities over the entire life-time of the project unlike the payback period method.
3. **Best Decision Criteria for Mutually Exclusive Projects:** This method is particularly useful for the selection of mutually exclusive projects. It serves as the best decision criteria for mutually exclusive choice problems.

NOTES

4. **Changing Discount Rate:** Since discounting rate changes due to time variations in cash inflows, a changing discount rate can be used for the NPV calculations by altering the denominator.
5. **Maximization of the Shareholders' Wealth:** Finally, the NPV method is instrumental in achieving the objective of the maximization of the shareholders wealth. This method is logically consistent with the company's objective of maximizing share-holders' wealth in terms of maximizing market price of shares, and theoretically correct for the selection of investment proposals.

Demerits of NPV Method

The NPV method suffers from the following limitations or weaknesses:

1. **Cumbersome Calculation:** This method is difficult to understand and use as it involves cumbersome calculation in comparison to the payback period method and the ARR method. This drawback of the NPV method is, of course, due to unfamiliarity rather than its complexity.
2. **Determination of Desired Rate of Return:** This Method does not indicate the expected rate of return on investment. It involves the calculation of the required rate of return of discount the cash flows.
3. **Static Method and Unrealistic Calculations:** Another drawback of the NPV method is that it is static like other methods of evaluating capital projects in so far as it freezes the situation at a point of time. In fact, business situations are dynamic, and to that extent all calculations may be unrealistic.
4. **Undependable Results:** The NPV method is an absolute measure of selecting the projects on the basis of their net present values. It prefers the project having a larger present value, although it may also involve a larger initial outlay. Since this method does not tell us the rate of return on alternative investment projects, it fails to provide a basis of comparability in terms of their profitability. This method, therefore, fails to give satisfactory and dependable results where the alternative investment projects involve different investment outlays.
5. **Determination of Economic Life Periods:** This method may also fail to give satisfactory results in case of projects involving different economic life periods. It is very difficult to forecast the economic life-periods of the projects under consideration. Moreover, the net present values of alternative investment projects may not reflect their real worth. In general, the project with a shorter economic life is preferable because short-run forecasts are more dependable and provide for risk and uncertainty. The NPV method does not take into account the life of investment projects as it favours the project with a higher present value which may also have a larger economic life. Thus, NPV method may not reflect the real worth of the alternative investment proposals.

12.12.4 Profitability Index (PI)

PI method is also known as Benefit-Cost Ratio (B/C Ratio). This time-adjusted capital budgeting technique is a refinement of the net present value method. It is also called 'Net Present Value Index' or 'Desirability Factor'. The present value of cash inflows under the NPV method is not comparable unless the investments are of the same size. The profitability index (PI) provides a solution to this problem. Dividing the present value of future cash inflows by the present value of cash outlays does this. Profitability index approach measures the present value of earnings per rupee invested hence it is relative measure. This approach is also known as benefit-cost ratio because the numerator measures benefits and the denominator measures costs.

NOTES

The accept/Reject rule under this method is as follows:

PI > 1 (Accept the Project)

PI < 1 (Reject the Project)

If Profitability index is equal to 1, the firm is indifferent to the project. In case of mutually exclusive projects, the project with the highest PI will be given the first rank, followed by others in the same order.

Though the profitability index is commonly defined as the ratio of PV of cash inflows divided by the PV of cash outflows, the PI may also be measured on the basis of the net present value of a project against its initial outlay. This aspect becomes more important in situations of capital rationing. In this situation, the decision rule would be to accept the project having a positive PI and reject the project if the PI is negative.

The profitability index or benefit-cost ratio is expressed either in rupee or in percentage. It may be expressed as follos:

$$\text{P.V. Index (on Re. 1)} = \frac{\text{Present Value of Cash Inflows}}{\text{Cost of Investment}}$$

In can also be expressed in percentage. In such a case, the formula used is +as given below

$$\text{P.V. Index (Percentage)} = \frac{\text{Present Value of Cash Inflows}}{\text{Cost of Investment}} \times 100$$

This method is also known as benefit-cost ratio because the numerator measures the benefits and the denominator the costs. The proposal is accepted if the present value index is more than one and is rejected in case the present value index is less than one. The selection of the projects with the help of 'Present Value Index Method' can also be affected on the basis of raking.

Example 2.9 *Rank the following investment proposals in orders of their profitability according to Present Value Index Method.The cost f capital is 10%*

Project	*Initial Outlay Rs.*	*Annul Cash Flow Rs.*	*Life in Years*
A	60,000	8,000	15
B	25,000	3,000	10
C	3,000	1,000	5
D	2,150	1,000	3
E	20,000	4,000	10
F	40,000	8,000	8

Solution. Ranking of the Project under th PesntValue ndx Method

Project	*Initial Outlay Rs.*	*Life in Years*	*P.V Factor at 10%*	*Annual Cash Flow Rs.*	*Present Value of Total ACF*	*Present Value Index*	*Rank*
A	60,000	15	7.606	8,000	60,848	1.014	5
B	25,000	10	6.145	3,000	18,435	0.737	Rejected
C	3,000	5	3.791	1,000	3,791	1.263	1
D	2,150	3	2.487	1,000	2,487	1.156	3
E	20,000	10	6.145	4,000	24,580	1.229	2
F	40,000	8	5.335	8,000	42,680	1.067	4

$$\text{Present Value of Total ACF} = \text{P.V. Factor} \times \text{ACF}$$

$$\text{Present Value Index} = \frac{\text{Present Value of Total ACF}}{\text{Initial outlay}}$$

NOTES

Merit of Profitability Index (PI)

The merits of this method are as follows:

1. **Superior to the NPV Method:** The profitability index technique of appraising capital projects is superior to the NPV method as the former evaluates the worth of projects in terms of their relative rather than absolute magnitudes. However, in case of certain mutually exclusive projects, the NPV method would be superior to the PI method as it always gives a better mutually inclusive choice.
2. **Effective Tool of Ranking Alternative Projects:** The profitability index serves as an effective tool of ranking the alternative investment projects and provides a sound basis for selection of the most profitable project. Since benefit-cost ratio indicate the per rupee return from a project, the PI method provides the most useful tool of ranking the mutually exclusive projects in a situation of capital rationing.
3. **Consideration of Time Value:** It also gives due consideration to the time value of cash flows over the entire economic life-period of a project.

Demerits of Profitability Index (PI)

The PI method of evaluating investment proposals suffers from the following limitations:

1. **Difficult Method:** This method is more difficult to understand and involves more calculation than the traditional methods but less that the Internal Rate of Return Method.
2. **Mutually Exclusive Projects:** In some cases of mutually exclusive projects, the NPV method would gives the best choice than the PI method.

2.12.5 Internal Rate of Return (IRR) Method

The IRR Method of project evaluation is also known as 'Time Adjusted Rate of Return Method', 'Discounted Cash Flow Rate of Return Method', 'Yield Rate Method', Marginal Efficiency of Capital Method', or Marginal Productivity of Capital Method'. This discounted cash flow method, like the NPV method, also considers the time value of money by discounting the cash flow streams. However, the basis of discount factor is different in both the cases. In case of the present value method, the discounting rate is a predetermined rate of return which is usually the cost of capital or the desired rate of return. Thus, the determinants of the discounting rate are external the present value method. Conversely, the discounting rate under the IRR Method is based on the basis of IRR method, the discount rate at which the present value of investment outlays and cash inflows is equal is found by trial and error. The IRR is, therefore, the rate of return which equates the aggregate present value of investment outlays with the aggregate present value of the net cash inflows (CFAT) of a project. In a nutshell, the IRR is the rate which gives the zero NPV to the project. This method is used when investment outlays and annual cash inflows are known but discount rate is unknown.

The IRR or the discount rate at which the present values of investment outlays and inflows are equal is found by trial and error. The technique of computing the IRR can be examined under two heads – (*a*) Conventional or Uniform Inflows, and (*b*) Unconventional or uneven Cash Inflows.

(*a*) **When Cash Inflows are Uniform for all the Years :** When cash inflows are uniform over the entire economic life span of the project, the IRR can be easily computed by the following steps :

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Internal Rate of Return Method

(*i*) Calculate Present Value Factor by applying the following formula:

$$\text{PresentValue Factor (P.V. Factor)} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$$

(*ii*) Look at Present Value Table of Re. 1 received annually for 'N' years and pick out the line representing the number of years corresponding to the estimated useful life of the project.

(*iii*) Move across this line until a figure is found nearly equal to the 'P.V. Factor' calculated in (*i*) above. The relevant percentage of the discount indicated by this column is the IRR.

The present value factor calculated in (i) above, does not necessarily occur in the present value table. It may exist between any two present value factors of the present value table. In such a situation, the IRR is determined on the basis of the figure closest to factor ascertained in (*i*) above. The exact IRR can be calculated by using the interpolation method. The actual IRR can be iterpolated as follows :

$$r = r_1 + \frac{V_1 - V}{V_1 - V_2}(r_2 - r_1)$$

Where,

r = rate of return to be determined

r_1 = lower rate of return

r_2 = higher rate of return

V_1 = P.V. Factor at lower rate of return

V_2 = P.V. Factor at higher rate of return

V = PV Factor fore which r is to be interpolated

(*b*) **When Cash Inflows are not Uniform for all the Years:** When cash inflows are not uniform over the economic life of the project, the IRR can be calculated by the Trial and Error Method. In the process of computing the IRR which equates the PV of cash inflows with the PV of investment outlays, the cash inflows are discounted by a number of trial discount rates.

The first trial rate may be calculated on the basis of the same formula which is used for determining the internal rate of return when cash inflows are uniform, as explained above. However, in this case, initial investment is divided by 'annual average cash inflow', in place of 'annual cash inflow'. If the present value of cash inflows of several years is equal to the total resent value of cash outflows then the above first trial rate is known as IR.

$$\text{Average Annual Cash Flow} = \left(\frac{\text{Total Cash Flow + Scrap Value}}{\text{Number of years related to Working Life of Project}} \right)$$

When the total resent value of the cash inflows is generator or less than the total present value of cash outflows, then the second trial rate is determined. If the calculated present value of the expected cash inflows is lower than the present value of cash outflows, a lower rate should be attempted. On the other hand, a higher rate should be attempted if the present value of cash inflows is higher than the present value of cash outflows. This process will be repeated unit the net present value becomes zero. The exact IRR can be calculated by using the interpolation method.

Example 2.10 *A project required an initial outlay of Rs. 32,500. Its estimated economic life is 3 years. The cash streams generated by it ar expeced to be as follows*

NOTES

Year	*Estimated Annual Cash Flows Rs.*
1	17, 000
2	13,000
3	12,000

Compute its IRR.

Solution.

Total Cash Inflows of 3 years = Rs. 42,000

$$\text{Average Annual Cash Inflow} = \frac{42,000}{3} = \text{Rs. } 14,000$$

$$\therefore \quad \text{Present Value Factor} = \frac{32,500}{14,000} = 2.321$$

On the line corresponding to 3rd year in Present Value Table, the P.V. factor 2.321 falls at 14%. Hence, IRR is 14%.

The PVF thus, calculated is located in the Annuity Table across the line representing the number of years for which the cash inflows will generate. The PVF closest to the above calculated factor, will indicate the approximate RR in that column. If the total present value of cash inflows at this rate is higher than the present value of investment outlays, a trial rate should be used. Conversely, if the total present value of cash inflows is less than the investment outlays, the second trial rate applied to cash inflows will be lower than the first trial rate.

Example 2.11 *It is proposed to purchase an equipment costing Rs. 56,000 which will cause an excess of receipts over disbursements of Rs. 9,000 per year for 10 years, after which the equipment will have Zero salvage value. Find the rate of return:*

(PWF – 10 – 8%) = 6.710; (PWF – 10 – 10%) = 6.144

Solution.

Given: First Cost of Equipment = Rs. 56,000

Annual Saving for 10 years = Rs. 9,000

Salvage Value = Nil (Zero)

$r_1 = 8\%$; $r_2 = 10\%$;

$V = 56,000/9,000 = 6.222$;

$V_1 = .710$; $V_2 = 6.144$

$$r = r_1 + \frac{V_1 - V}{V_1 - V_2}(r_2 - r_1)$$

$$= 8 + \frac{6.710 - 6.222}{6.710 - 6.144}(10 - 8)$$

$$= 8 + \left(\frac{0.488}{0.566} \times 2\right) = 8 + 1.724 = 9.72\%$$

$\therefore$ Prospective rate of return = 9.72%

where, V_1 = P.V. Factor at lower rate of return,

V_2 = P.V. Factor at higher rate of return,

r_1 = lower rate of return

r_2 = higher rate of return

V = P.V. Factor for which r is to be interpolated

NOTES

Merit of the IRR Method

The merits of this method may be enumerated as follows:

1. **Easier to Understand:** This method is easier to understand by business executives and non-technical people because the concept of IRR is readily understandable than the concept of NPV. It will be easier to understand a project in terms of rate of return on investment. For example, business executive can easily understand a project if told that IRR of project A is 22% and cost of capital is 10% instead of saying that the NPV of project A is Rs.39, 681.
2. **Consideration to Time Value of Money:** This method considers the time value of money like the NPV method. It is, thus, conceptually better than the 'Payback Period' and 'Average Rate of Return' techniques of project evaluation.
3. **Consideration to Total Cash Flows:** The IRR method takes into account all cash inflows and cash outflows over the entire economic life of project. Conversely, in case of other technique of project evaluation such as 'Payback Period' and 'Accounting Rate of Return', the total quantum of cash inflows is either ignored or simply their averages are taken.
4. **Objectivity:** This method is more objective because the IRR is not directly influenced by decisions regarding depreciation methods, capitalization versus expenses decisions and conservatism.
5. **Provision for Risk and Uncertainty:** This method automatically gives more weight to more value which are nearer to the present period than those which are distant from it. Conversely, in case of other methods like 'Payback Period' and 'Accounting Rate of Return', all money units are given the same weight which is unrealistic. Thus, the IRR is more realistic method of project evaluation and explicitly provides for risk and uncertainty by recognizing the time factor of cash inflows. This improves the quality of estimates reducing the uncertainty to minimum.
6. **Comparison of Projects with Different Timings and Magnitudes:** This method enables a ready comparison between projects having different lives, requiring different investment outlays and having different timings of cash inflows, because the discounting of all cash inflows allows a quick and safe comparison of projects at a particular point of time by comparing rates of return.
7. **Elimination of Pre-determined Discount Rate:** Unlike the NPV method, the IRR method eliminates the use of the concept of required rate of return which is usually a pre-determined rate of cost of capital for discounting the cash flow steams. The IRR method itself provides a rate of return which is more realistic and consistent with the cost of capital. The IRR is therefore, a more reliable measure of the profitability of investment proposals under consideration.
8. **Objective of Maximizing Shareholders' Wealth:** The IRR method is consistent with the over-all objective of the financial management, *i.e*., objective of maximizing shareholders' wealth. If the IRR is equal to the rate expected by investors, the share prices will remain stable. Since only those projects are accepted under method which have IRR greater than the rate expected by the investors the share prices will increase. This will, of course, lead to the maximization of the shareholders' wealth.

Demerits of the IRR Method

Notwithstanding its theoretical soundness, the IRR method suffers form serious limita-tions as follows:

NOTES

1. **Difficult and Complicated Method:** The IRR method is more complicated and difficult to understand and work out as compared to other methods of ranking and evaluation of investment proposals. The IRR method involves tedious and complicated calculations as it is to be computed by the trial and error method. It becomes even more complex in case of projects involving investment outlays over a period of time and the capital assets have a salvage value. However, in such cases the IRR method can be used with the help of computer.
2. **Reinvestment Rate Assumption:** Under this method, it is assumed that all intermediate cash inflows are re-invested at the internal rate of return (IRR). However, this assumption does not always hold good because investment opportunities are not always equal to the IRR taking into account the actual reinvestment opportunity rate of return. Moreover, it is not always safe to assume that intermediate cash inflows from the project will be reinvested at all. A portion of the intermediate cash inflows may be paid out as dividends or it may be tied up in inventories. Thus, the reinvestment rate assumption under the IRR Method fails to present a realistic picture of capital project to the firm.
3. **Multiple Rates:** Another drawback of this method is that it may be indeterminate and give multiple internal rates of return in case of projects involving non-conventional cash flow patterns. This unnecessarily creates confusion as to which rate should be used for decision-making purposes. This kind of problem does not arise in case the NPV method is used.
4. **Inconsistent with Accounting Concepts:** This method also does not correspond to accounting concept for recording cost and revenues. It considers only the cash inflows for purposes of capital investment decisions. However, the profitability of a project can only be judged with reference to the net income from operations rather than the cash inflows. This calls for a special analysis for capital investment decision.
5. **Problem of Ranking Projects:** In evaluating mutually exclusive proposal, this method fails to select the most profitable project which is consistent the objective of maximization of shareholders' wealth. Usually, the project with the highest IRR is selected to the exclusion of all others. However, practically it may not be the most profitable and consistent with the over all objective of the firm, *i.e.,* the maximization of shareholders' wealth.
6. **Uncertain Estimates:** Another deficiency of this method relates to a number of refined estimates about cash inflows, economic lifespan of projects, etc. Since estimates of cash inflows are based on sales forecast, they cannot be correct the realistic as sales forecasts in them suffer from lack of absolute accuracy. Moreover, it is very difficult to forecast the economic life of an investment proposal exactly. Uncertainty in estimates, thus, affects the accuracy and reliability of the results obtained under this method.

2.12.6 Terminal Value (TV) Method

The re-investment assumption under the IRR method is unrealistic as it is unlikely to reinvest all the intermediate cash inflows at the IRR or at all. In order to have a correct and reliable picture of the capital project, the reinvestment of all intermediate cash inflows should be based on reliable interest rate. The Terminal Value (TV) approach takes care of this aspect.

The terminal value method is based on the assumption that operating income or cash inflow of each year is reinvested in another asset at a certain rate of return from the moment of its receipt until the expiry of the project's economic life.

NOTES

The total sum of compounded cash inflows for different years are treated to have been received at the termination of the project and hence discounted back to the present values on the basis of the given discount rate or cost of capital. The present value of the total compounded sum of cash inflows is then compared with the present value of the cash outflows. If the present value of the sum of total compounded reinvested cash inflows is greater than the present value of cash outflows or investment outlays, the proposed project is accepted otherwise rejected. The firm would be indifferent if both the values are equal. Like NPV we can also complete Net Terminal Value (NTV) by deducting the net present value of investment outlays from the present value of the sum total of the compounded reinvested cash inflows. In this case, if the NTV is positive, the project is accepted, if the NTV is negative the project is rejected.

The NTV approach is similar to the NVP method excepting that the former involves compounding of cash inflows whereas the latter they are discounted. Both the methods will give the same results if the figures and discounting rate remain the same.

Merits of Terminal Value Method

The 'Terminal Value' or 'Net Terminal Value' Method has the following advantages:

1. **Easy to Understand and Calculate:** This method is mathematically easier than the IRR method and makes the process of evaluating the real worth of alternative investment projects simple. Since the 'compounding' technique is more appealing than the 'discounting' technique, this method is easier to understand for business executives who are not trained in accountancy or economics.
2. **Cash Inflows Unaffected by Cost of Capital:** This method explicitly incorporates the assumption about the way in which cash inflows are reinvested after they are received. Thus, it avoids any influence of the cost of capital on cash inflows.
3. **Suitable for Cash Budgeting:** This method is more suitable for cash budgeting requirements as it considers both net cash inflows from operations as well as cash inflows in respect of interest earnings of the intermediate reinvested cash inflows. Conversely, the NPV method does not explicitly show all cash inflows as it ignores cash inflows in respect of interest earnings.

Demerits of the Terminal Value Method

Notwithstanding its theoretical soundness, the NTV or TV method suffers from the following serious limitations:

1. **Determination of Reinvestment Rates:** The major limitation of this method lies in projecting the future rates of interest at which the intermediate cash inflows received from the operations will be reinvested.
2. **Comparison of Mutually Exclusive Projects:** This method also fails to make a realistic Comparative evaluation of two or more mutually exclusive capital projects.

2.13 CAPITAL RATIONING

Normally, a firm should accept and implement all such capital projects which ensure a desired rate of return on investments. However, in practice' business enterprises do not have unlimited funds, and cannot accept all projects which are expected to increase its present value. Depending upon the availability of funds, the top management of the firm fixes the limit of its capital expenditure budget. The constraint leading to a fixed capital budget may arise due to market conditions or may

be self-imposed. Firms may limit their capital budgets for keeping their growth within a limit or they may prefer safety and control as against profit. Having a fixed capital expenditure budget, the firm must ratio the available funds. In such an event, the firm has to select the projects in a manner as to maximize its long-term return. A cut-off point is determined for this purpose. The cut-off point refers to the minimum acceptable Rate of Return or Payback Period below which a project will be rejected. It is determined in view of the number of projects, objectives of the firm and the availability of funds to finance the projects.

Thus, Capital Rationing refers to the situation in which the firm has more acceptable investment proposals requiring greater amount of finance than is available with the firm. Weston and Brighan define Capital Rationing as "a situation where a constraint is placed on the total size of capital investment during a particular period". Capital Rationing is concerned with the selection of a combination of investment proposals out of the many acceptable investment proposals that provide the highest rate of return. For this purpose, projects are ranked in accordance with their profitability or rate or return. The project with the highest rate of return is ranked first and the project with the minimum acceptable rate of return is ranked last. The acceptable projects are ranked in the descending order of the rate of return. Obviously, these projects are exclusive of those projects which are adopted because of their urgency or legal requirements.

2.14 RISK ASSOCIATED CAPITAL BUDGETING TECHNIQUES

Risk involves situations in which the probabilities of an event is due to repetitive nature of the event. Under such situation frequency distribution of the event is used to study the future probabilities. Uncertainty is a situation where probabilities of an event cannot be drawn form frequency distribution. Under such a situation, a decision-maker does not know at the time of decision what will be the exact outcomes of alternative course of action.

The quantification of risk is not an easy task. However, the following two techniques are commonly used to measure the risk in capital project:

1. Standard Deviation Method;
2. Coefficient of Variation Method.

1. Standard Deviation Method

The amount of dispersion in an action's possible outcomes can be expressed in terms of the standard deviation. This is calculated as the square root of the sum of the products of the probability of each outcome and the square deviation of each outcome from the value of the average outcome. Standard deviation measures the deviation or variance about the expected cash flow of each of the possible cash flows. The technique of standard deviation can be better used to assess the profitability of such projects that have similar cost and net present value. The higher standard deviation would indicate high risk. Thus, projects with the minimum risk would be preferred as compared to others. The following formula is used to measure the standard deviation:

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{fd^2}{n}}$$

Example. *The following are the possible cash inflow with associated probabilities for two project:*

NOTES

Year	Cash Inflow.		Probability	
	Project A (Rs.)	Project B (Rs.)	Project A	Project B
1	4,000	5,000	.1	.2
2	6,000	7,000	.2	.1
3	10,000	8,000	.1	.2
4	5,000	7,000	.4	.2
5	5,000	8,000	.2	.3

Measure the risk of the project by using standard deviation.

Solution. Calculation of Standard Deviation Project A

Cash Inflows (1)	Deviation From Mean d = 6000 (2)	Square of Deviation (d^2) (3)	Probability (f) (4)	Weighted Square (fd^2) = (3 × 4) (5)
4,000	– 2,000	40,00,000	.1	4,00,000
6,000	0	0	.2	0
10,000	+ 4,000	160,00,000	.1	16,00,000
5,000	– 1,000	10,00,000	.4	4,00,000
5,00	1,000	10,00,000	.2	2,00,000
			$n = 1$	Σfd^2 26,00,000

$$\text{Standard deviation } (\sigma) = \sqrt{\Sigma fd^2 / n}$$

$$(\sigma = \sqrt{26,00,000/1}$$

$$(\sigma) = \sqrt{26,00,000} = 1,612$$

Project B

Cash Inflows (1)	Deviation From Mean d = 7000 (2)	Square of Deviation (d^2) (3)	Probability (f) (4)	Weighted Square Deviation (fd^2) = (3 × 4) (5)
5,000	– 2,000	40,00,000	.2	8,00,000
7,000	-	0	.1	0
8,000	+ 1,000	10,00,000	.2	2,00,000
7,000	0	0	.2	0
8,000	+ 1,000	10,00,000	.3	3,00,000
			$n = 1$	Σfd^2 13,00,000

$$\text{Standard deviation } (\sigma) = \sqrt{\Sigma fd^2 / n}$$

$$(\sigma = \sqrt{13,00,000/1}$$

$$(\sigma) = \sqrt{13,00,000} = 1,140$$

Comments

The calculations of standard deviation clearly shows that project A is risky as it has a higher standard deviation.

NOTES

2. Coefficient of Variation Method

The application of standard deviation by itself is not always a reliable basis to compare and evaluate alternative actions. However, it can prove powerful and more effective if used together with other measurements of outcomes, especially the expected value (mean). Suppose a firm is considering two proposals, each with a standard deviation of 1,300. The expected value of one proposal is Rs. 40,000 while the other has an expected value of Rs. 15,000. It is clear from above statistics of the project that the standard deviation cannot help management to form any opinion as being identical for the both projects. To deal with such a situation, it will be appropriate to measure the relative dispersion rather than the total dispersion of the outcomes of an action. This can be done by the application of the coefficient of variation.

Coefficient of variation is the standard deviation of the probability distribution divided by its expected value. It is the ratio between standard deviation and expected value or mean. This technique is appropriate method of evaluating such projects that have similar cost with varied net present values. The following formula is used to measure the risk under coefficient of variation approch.

$$\text{Coefficient of variation} = \frac{\text{Standard deviation}}{\text{Mean}} \times 100$$

$$\text{or} \qquad = \frac{\sigma}{x} \times 100$$

Coefficient of variation indicates the relative risk associated with the possible outcomes of a particular action. The higher ratio of variation would mean higher degree of risk.

Example 2.13 *Using figures of previous example 12.1 compute coefficient of variation and suggest which project should be preferred.*

Solution.

Coefficient of variation

$$\text{For product A} = \frac{1,612}{6,000} \times 100 = 27 \text{ per cent}$$

$$\text{For product B} = \frac{1,140}{7,000} \times 100 = 16 \text{ per cent}$$

Comments

The application of coefficient of variation also reveals that project A is more risky than project B because project A has a coefficient of variation of 27 per cent while as the same is 16 per cent for project B. Hence project Y should be preferred.

2.15 TECHNIQUES OF ADJUSTING RISK

Number of techniques have been evolved to account for risk in capital investments. These techniques can be classified into following two groups:

A. Traditional methods

1. Less payback period
2. Risk-adjusted discount rate
3. Certainty-equivalent approach

NOTES

B. Modern methods

1. Sensitivity analysis
2. Probability technique
3. Decision tree analysis

A. Traditional methods

1. Less Payback period

Firms believe that projects with long payback period involves a high degree of risk than those with the shorter payback period.. This technique can give better results if used in combination with a cut-off period. * The application of this technique is demonstrated with the help of the following example.

Example 2.14 *There are three projects-X, Y and Z. Each project requires an investment of Rs. 40,000. You are required to advise the management as to which project is preferable under risky situation based on payback period from the below mentioned information. The standard cut-off period for the firm is five years.*

Net Profit before Depreciation after Tax

Year	*X*	Projects *Y* *In Rupees*	*Z*
1st	5,000	3,000	2,000
2nd	9,000	5,000	4,000
3rd	12,000	8,000	6,000
4th	14,000	10,000	8,000
5th	16,000	14,000	10,000
5th	16,000	14,000	10,000

Solution.

$$\text{Payback period} = \frac{\text{Project X}}{4 \text{ years}} \quad \frac{\text{Project Y}}{5 \text{ years}} \quad \frac{\text{Project Z}}{6 \text{ years}}$$

Working:

Calculation of Payback Period

Project	*Cash Inflows (Rs)*	*Cost of Project (Rs)*	*Payback Period*
X	5,000 + 9,000 + 12,000 + 14,000 = 40,000	40,000	4 years
Y	3,000 + 5,000 + 8,000 + 10,000 + 14,000 = 40,000	40,000	5 years
Z	2,000 + 4,000 + 6,000 + 8,000 + 10,000 + 10,000 = 40,000	40,000	6 years

Comments

The payback period of the project X, Y and Z is 4 years, 5 years, and 6 years respectively. Out of these 3 projects, project X will be preferred because of its shorter payback period as compared to others. since the cut-off period is 5 years, therefore, only z project will be rejected as its payback period is more than cut-off period. However, if cut-off period is used in combination with shorter payback period technique then only project X can qualify.

NOTES

2. Risk-adjusted Discount Rate

The technique of risk-adjusted discount rate suggests the variation of discount rate in correspondence with change in the amount of risks. This technique aims to discount risky projects with higher rate as compared to less risky projects.

Example 2.15 *STAR Ltd. is considering two mutually exclusive projects. The expected investment out lay of these projects is Rs. 40,000, net cash inflows information for both projects are given as under:*

Year	*Project A*	*Project B*
	(Amount in Rupees)	
1	4,000	20,000
2	5,000	18,000
3	8,000	15,000
4	10,000	12,000
5	12,000	10,000
6	15,000	8,000
7	20,000	5,000

The management desired to have a minimum rate of return of 10 per cent. Risk premium rates are 2 per cent and 5 per cent respectively for investment A and B. Which investment should be preferred?

Solution. Under normal conditions for economic evaluation of the projects, the cash inflows of project A and B would be discounted at 10 per cent rate. Since the projects are risky, therefore, the normal rate of discount would be increased by risk premium rate which is 2 per cent and 5 per cent for Project A and B respectively. Thus, the discounting rate for Project A and B would be 12 per cent and 15 per cent respectively. Accordingly the profitability of both the projets will be calculated as below:

		Project A			*Project B*	
Year	*Cash In-flow*	*Discount Factor (10 + 2% = 12%)*	*Present Value (Rs.)*	*Cash In-flow (Rs.)*	*Discount Factor (10 + 5% = 15%)*	*Present Value (Rs.)*
1	4,000	0.893	3,572	20,000	0.869	17,380
2	5,000	0.797	3,985	18,000	0.756	13.608
3	8,000	0.712	5,696	15,000	0.657	9,855
4	10,000	0.635	6,350	12,000	0.572	6,864
5	12,000	0.567	6,804	10,000	0.497	4,970
6	15,000	0.506	7,590	8,000	0.432	3,456
7	20,000	0.452	9,040	5,000	0.376	1,880
	Total		43,037			58,013

Net Pesent Value = Present Value – cost of Project

for A = 43037 – 40000 = 3,037

for B = 58013 – 40000 = 18,013

NOTES

Comments

The above analysis shows that Project B, even at a higher discount rate is with highest net present value of Rs. 18,013 and, therefore, must be preferred over project A where net present value is Rs. 3,037 only. It means that the value of the company would increase by Rs. 18,013 if it accepts projects B but only by Rs. 3,037 if it accepts project A.

Thus, the technique of adjusting discount rate, serves useful purpose by adjusting discount rates in relation to degree of risk. However, the major drawback of this technique is the difficulty to determine the risk premium rate appropriately in relation to the variation in degree of risk.

3. Certainty-equivalent Approach

Certainty equivalent approach suggests to counter the risk of the projects in terms of certainty equivalents. The certainty equivalent for an uncertain event is that certain value which a decision-maker is first willing to accept in lieu of the gamble represented by the uncertain event. It is a value acceptable to the investor in the lieu of some future uncertain value. This method reduces expected cash flows by certain amounts. This is done by employing initiative correction factor or certainty equivalent coefficient. The higher the degree of risk of a project, the lower would be the coefficient. This technique involves the following steps:

(*i*) Measurement of risk inherent in the cash flows with the help of standard deviation/ coefficient of variation.

(*ii*) Computation of certainty equivalent coefficient of the cash flow which can be found by using the following formula:

$$\text{Certainty equivalent coefficient} = \frac{\text{Desirable (certain) cashflow}}{\text{Expected/estimated(risky) cash flows}}$$

For example, if the expected value of cash flow of a project in a period "*n*" was Rs. 60,000 and the desirable/certain cash flow for the same is Rs. 40,000 then certainty equivalent coefficient would be 0.67.

$$= \frac{40{,}000}{60{,}000}$$

Accordingly, the coefficient is calculated for each cash flow.

(*iii*) Adjustment of cash flows in the light of certainty equivalent coefficient; and

(*iv*) Compute present value of adjusted cash flow as computed in step (*iii*) by employing the risk free discount rate.

The below mentioned Illustration 12.5 will display the technique of certainty equivalent.

Example 2.16 *LAXMI Ltd is considering two projects - A and B. Out of them only one project is to be selected. The initial investment cost of each of the project is Rs. 30,000. The estimated cash flows and certainty coefficient are given in the following table:*

Year	*Project A*		*Project B*	
	Estimated Cash Inflows (Rs.)	*Certainty Coefficient*	*Estimated Cash Inflows (Rs.)*	*Certainty Coefficient*
1	10,000	.6	12,000	.7
2	12,000	.8	18,000	.8
3	15,000	.7	20,000	. 6
4	20,000	.6	10,000	.6
5	20,000	.6	12,000	.7

Evaluate the projects when risk free cut-off rate is 12 per cent.

Solution. In this problem, the evaluation of projects will be made on the basis of net present values of desirable (certain) cash inflows. Accordingly, first desirable cash inflows will be calculated and then present value of the desirable cash inflows shall be computed.

Calculation of Desirable (Certain) Cash Inflows

Project A				*Project B*		
Year	*Estimated Cash Inflow (Rs.)*	*Certainty Co-efficient*	*Desirable (Certain) Cash Inflows (Rs.) (2 × 3)*	*Cash Cash Inflows (Rs.)*	*Certainty Co-efficient*	*Desirable Cash Inflow (Rs.)*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
1	10,000	.6	6, 000	12,000	.7	8,400
2	12,000	.8	9,600	18,000	.8	14,400
3	15,000	.7	10,500	20,000	.6	12,000
4	20,000	.6	12,000	10,000	.6	6.000
5	20,000	.6	12,000	12,000	.7	8,400

Calculation of Present Value of Desirable (Certain) Cash Inflows

		Project A		*Project B*	
Year	*Discount Factor @ 12%*	*Desirable Cash Inflow (Rs.)*	*Present Value (2 × 3) (Rs.)*	*Desirable Cash Inflow (Rs.)*	*Present Value (Rs.)*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1	0.893	6,000	5,358	8,400	7,501
2	0.797	9,600	7,651	14,400	11,477
3	0.712	10,500	7,475	12,000	8,544
4	0.635	12,000	7,620	6,000	3,810
5	0.567	12,000	6,804	8,400	4,762
			34,908		36,094

Net present value = Present value – Cost of project
NPV for project A = Rs. 34,908 – Rs. 30,000 = Rs. 4,908

NPV for project B = Rs. 36,094 – Rs. 30,000 = Rs. 6,094.

Comments

The net present value of Project B is more than Project A by Rs. 1,186 (6,094 – 4,908). Therefore, project B should be preferred.

B. MODERN METHODS

1. Sensitivity Analysis

Sensitivity analysis evaluates the responsiveness of capital investment variables to changes in parameter value. It is a technique to study the changing behaviour of net present value with a change in key variable. The key variables are price, economic life, cost, competition, inflationary rates etc. The actual outcome of an investment decision depends upon what happens to these variables. The following steps are taken to compensate for risk under the sensitivity analysis.

NOTES

(*i*) Identification of key variables in the project;

(*ii*) Selection of variables from identified variables step (*i*) that are uncertain as regards to their estimated value; and

(*iii*) Calculation of the effect on present value of the project due to different levels of uncertainty.

The effective application of sensitivity analysis can offer the following benefits:

(*i*) Improvement in managerial decisions.

(*ii*) Identification of critical variables and assumptions.

(*iii*) Helps management in directing its efforts towards focal areas of business.

(*iv*) Encourages executives at different levels to accept the challenges of risky and uncertain business world.

Example 2.17 *Surya Ltd. is contemplating the purchase of a machine. The Machines "X" and "Y" are available each costing Rs. 1,20,000. The company uses discount rate of 8% for comparing profitability of projects. Earning after taxation and before depreciation are expected to be as below:*

Year	*Machine X (Rs.)*	*Machine Y (Rs.)*
1st	30,000	20,000
2nd	40,000	50,000
3rd	40,000	40,000
4th	30,000	40,000
5th	20,000	10,000

Ascertain the probability of the projects and calculate the effect on net present value due to 5% increase in cost variable of the project.

Solution.

Calculation of reset Value of Machine X an Y

		Machine X		*Machine Y*	
Year	*Discount Factor 8%*	*Desirable Cash Inflow*	*Present Value*	*Desirable Cash Inflow*	*Present Value*
1st	0.926	30,000	27,780	20,000	18,520
2nd	0.857	40,000	34,280	50,000	42,850
3rd	0.794	40,000	31,760	40,000	31,760
4th	0.735	30,000	22,050	40,000	29,400
5th	0.681	20,000	13,620	10,000	6,810
		Total	1,29,490	Total	1,29,340

* *Cash inflow Descanting factor*

Net present value of machines under normal conditions:

Machine X = Present value – cost of machine

= Rs. 1,29,490 – 1,20,000

= Rs. 9,490

Machine Y = Rs. 1,29,340 – 1,20,000

= Rs. 9,340

Now by employing sensitivity analysis, we will change one key variable of the project *i.e.,* cost (increase by 5%) and will find its effect on net present value of the project.

NOTES

Net present value of machine

X = Present value – cost of machine

= Rs. 1,29,490 – 1,26,000*

= Rs. 3,490

Net present value of machine

Y = Rs. 1,29,340 – 1,26,000 = Rs. 3,340

Comment

The above analysis clearly reveals that machine X should be preferred as it has maximum net present value among the alternatives. At the same time, we also observed a change of 5 percent increase in cost of machines decreased the net present value of machines by Rs. 6,000. This behaviour is the application of sensitivity analysis.

2. Probability Technique

Probability is the method of establishing the predictability of events from the known occurrence of past events. In capital investment planning this concept refers to the estimation of cash flows form a given project. The technique attempts to measure the probable changes of an event (cash flows). Probability technique involves the following steps for evaluating capital investments:

(*i*) Estimation of cash inflows and their respective probabilities;

(*ii*) Multiplication of cash inflow with the probability assigned; and

(*iii*) Calculation of net present value of monetary value of the inflows (step ii) at the given rate of discount.

Example 2.18 *The MOON Co. Ltd. is considering the purchase of a new machine. Two mutually exclusive models are being considered, each costing Rs. 15,000. Earning after taxation and their respective probability are expected to be as follows:*

Year	*Model A*	*Cash Flows: Prob.* *(In Ruppes)*	*Model B*	*Prob.*
1st	8,000	.2	6,000	.1
2nd	10,000	.1	15,000	.2
3rd	20,000	.3	25,000	.2
4th	32,000	.2	40,000	.3
5th	48,000	.2	30,000	.2

The company has a target of return on capital of 10 per cent,

NOTES

Solution.

Calculation of Net Present Value of the Two Models

Year (1)	Discount Factor@ 10% (2)	Cash Inflows (3)	Prob-abil-ity (4)	Monetary Value (3 × 4) (5)	Present-Value (2 × 5) (6)	Cash Inflows (7)	Pro babil-ity (8)	Monetary Value (7 × 8) (9)	Monetary Value (2 × 9) (10)
1st	0.909	8,000	.2	1,600	1,454	6,000	.1	600	545
2nd	0.826	10,000	.1	1,000	826	15,000	.2	3,000	2,478
3rd	0.758	20,000	.3	6,000	4,548	25,000	.2	5,000	3,790
4th	0.683	32,000	.2	6,400	4,371	40,000	.3	12,000	8,196
5th	0.621	48,000	.2	9,600	5961	0,000	.2	6,000	3,726
				Total	17,160			Total	18,735

Net present value = Present value – Cost of Mach

for Model A = 17,160 – 15,000 = 2,160

for Model B = 18,735 – 15,000 = 3,735.

Comments

From the above analysis. it is evident that model "B" is more profitable investment as its net present value is more by Rs. 1,575 (18,735 – 17,160) as compared to model "A" even after taking into consideration the profitabilties of cash inflows.

3. Decision-Tree Analysis

"A decision-tree is a graphic display of the relationship between a present decision and future events, future decision and their consequences. The sequence of events is mapped out over time in a format similar to the branches of a tree". Decision-tree analysis is an analytical technique to handle the sequential decisions in capital expenditure planning. When decisions must be in sequence, with each decision involving independently distributed outcomes of alternative actions, such a situation can be handled by employing decision tree. Thus, a decision tree technique permits a convenient graphic representation of the possible outcomes. These possible outcomes are determined by the uncertain events and available alternatives. The power of the procedures lies in simplicity and intuitive appeal. The techniques of decision-tree involves the following major steps:

(*i*) Analysis of investment decision;

(*ii*) Identification of decision alternatives;

(*iii*) Display of decision points, chance events and other data;

(*iv*) Assigning a probability to each alternative commonly known as branching of probabilities;

(*v*) Estimation of present values of cash flows;

(*vi*) Computation of expected values of present values;

(*vii*) Computation of profitability index of each project/decision; and

(*viii*) Selection of alternative with highest profitability index.

NOTES

Example 2.19 *Projects X, Y and Z cost ROSHAN Ltd. Rs. 25,000, Rs. 12,000 and Rs. 8,000 respectively. Their cash flow and respective probabilities re given below:*

Alternatives	*Cash Flows (Rs.)*	*Profitability*
Project X:		
High Demand (HD)	20,000	0.5
Medium Demand (MD)	30,000	0.3
Low Demand (LD)	40,000	0.2
Project Y:		
High Demand (HD)	15,000	0.2
Medium Demand (MD)	12,000	0.2
Low Demand (LD)	8,000	0.6
Project Z:		
High Demand (HD)	12,000	0.5
Medium Demand (MD)	8,000	0.3
Low Demand (LD)	6,000	0.2

Using 10 per cent as the rate of return ascertain the probability and acceptability of the projects.

Solution. 1**Decision-tree**

Action	*Demand*	*Cash Flows (Rs.)*	*Dis-count Factor @ 10%*	*Present Values (3 × 4) (Rs.)*	*Prob-ability*	*Expected Values (EV) of Present Value (5 ×6) (Rs)*
(1)	*(2)*	*(3)*	(4)	(5)	(6)	(7)
Project - X → Rs. 25,000	High	20,000	0.992	19,840	0.5	9,920
	Medium	30,000	0.992	29,760	0.3	8,928
	Low	40,00	0.992	39,680	0.2	7,936
					Total	26,784
Decision point → Project -Y → Rs. 12,000	High	15,000	0.992	14,880	0.2	2,976
	Medium	12,000	0.992	11,904	0.2	2,381
	Low	8,00	0.992	7,936	0.6	4,762
					Total	10,119
Project - Z → Rs. 8,000	High	12,000	0.992	11,904	0.5	5,952
	Medium	8,000	0.992	7,936	0.3	2,381
	Low	6,000	0.992	5,952	0.2	1,190
					Total	9,523

$$\text{Profitability Index (PI) of project} = \frac{\text{Fixed values}}{\text{Initial ivestments}}$$

$$\text{PI of X} = \frac{26,784}{25,000} = 1.071$$

$$\text{PI of Y} = \frac{10,119}{12,000} = 0.843$$

$$\text{PI of Z} = \frac{9,523}{8,000} = 1.190$$

Comments

NOTES

The decision-tree, therefore, suggests the following priority of the projects.

(*i*) Project Z

(*ii*) Project X

(*iii*) Project Y

Project Z is with highest profitability index of 1.190 followed by project X and Y with a profitability index of 1.071 and 0.843 respectively. Therefore, project Z may be accepted.

2.10 SUMMARY

- The term 'Capital Budgeting' refers to long-term planning for making and financing proposed capital outlays. Capital Budgeting, thus, includes both raising of long-term funds and their optimum utilization. Thus, Capital Budgeting is the firm's formal process for the acquisition and investment of capital
- Capital Budgeting is, thus, a broader term and includes not only investment decisions but also the exploration of profitable investment opportunities, marketing and engineering investigation of these opportunities and financial analysis as to their future profitability
- Capital expenditure decisions are of paramount significance to the firm as the future success and growth of the firm hinges heavily upon them.
- Capital investment involves a business unit's decision to invest its current funds for adoption, disposition, modification and replacement of fixed assets, whose returns would be available only after a period of time longer than one year, hence involves an element of risk and uncertainty of returns. The basic features of capital budgeting are (a) potentiality of large anticipated profits, (b) relatively high degree of risk and uncertainty, (c) longer gestation period between the initial outlay and the anticipated returns.
- Capital expenditure is undertaken either for reducing current costs or for increasing the existing revenues. Capital expenditure may, therefore, be necessary for expansion of present production capacity, replacement of worn out or outdated assets, product diversification, discharging legal requirement of health, safety and employee welfare, research and development.
- Payback period refers to the time period during which a firm fully recovers its investment on a capital project. In other words, it is the time period during which capital investment pays off its full value.
- The Average Rate of Return (ARR) Method of evaluating investment proposals is also known as 'Accounting Rate of Return Method', or 'Unadjusted Rate of Return Method', or 'Financial Statement Method', or 'Return on Investment Method'. This method is based on accounting income instead of cash inflows
- The Discounted Cash Flow Methods or Time-adjusted Methods of evaluating capital projects take into account the time value of money, interest factor (*i.e.,* cost of capital) and all costs and benefits occurring during the entire life period of the project

- PI method is also known as Benefit-Cost Ratio (B/C Ratio). This time-adjusted capital budgeting technique is a refinement of the net present value method. It is also called 'Net Present Value Index' or 'Desirability Factor'
- Capital Rationing refers to the situation in which the firm has more acceptable investment proposals requiring greater amount of finance than is available with the firm. Weston and Brighan define Capital Rationing as "a situation where a constraint is placed on the total size of capital investment during a particular period".

2.11 REVIEW QUESTIONS

1. What is the meaning of capital Budgeting Explain the need for capital Budgeting?
2. What are the kinds of capital Budgeting decisions? What are the factors affecting capital budgeting decisions?
3. What are the essential components of capital Budgeting Analysis?
4. Discuss capital expenditure control?
5. Discuss in detail the techniques of Evaluating capital Budgeting decisions.
6. What are the directives of capital Budgeting
7. What is Capital Rationing
8. What are the risks associated with capital Budgeting Techniques?
9. What are the techniques of adjusting risks?

UNIT 3: CAPITAL STRUCTURE

NOTES

Structure

3.1 CAPITAL STRUCTURE: MEANING

Capital structure of a company refers to the composition of long-term sources of funds, such as-ordinary shares, preference shares, debentures, bonds, long-term debts etc. It refers to the kind and proportion of securities for raising long-term funds and implies the determination of form or make-up of a company's capitalization. Some authors use capitalization and capital structure interchangeably. However, capitalization merely refers to the determination of the amount of capital needed for successful business operations, whereas capital structure is concerned with the determination of proportion of different sources of long-term funds in the capitalization of a company. It is, therefore, evident that 'capital structure' are the two different aspects of financial planning.

Some definitions of 'capital structure' are as follows :

C.W. Gerstenberg, *"Capital structure refers to the kind of securities that make up the capita-lization".*

I.M.Pandey, *"Capital structure refers to the composition of long-term sources of funds such as debentures, long-term debt, preference share capital and ordinary share capital including reserves and surpluses (retained earnings)."*

NOTES

3.2 CAPITAL, ASSETS AND FINANCIAL STRUCTURE

In the words of **Weston and Brigham,** *"Capital structure is the permanent financing of the firm, represented by long-term debt, preferred stock and net worth and financial structure refers to the way the firm's assets are financed. It is the entire right hand side of the balance sheet."* Thus, it becomes clear to us that capital structure refers to the make up of the total long-term capital while financial structure studies the total finance mix of the firm. It includes all types of resources whether long-term, medium-term or short-term. Thus, its scope is very wide in comparison to capital structure. On the other hand, the asset structure shows the make up of assets, *i.e.,* utilisation aspect of finance. In nutshell, we can conclude that the assets structure shows the business risk while the financial structure indictes the financial risk. To understand these three concepts thoroughly, we consider the following Balance Sheet and calculate these values as follows :

Balance Sheet of Archna Ltd. as on 31-12-200

Liabilities	*Amount*	*Asset*	*Amount*
Share Capital :		Fixed Assets :	
1,000 Equity Shares of Rs. 10		Buildings	1,00,000
each fully paid	10,000	Plant & Machinery	80,000
500 11% Preference Shares of Rs.		Current Assets :	
100 each fully paid	50,000	Cash in hand	2,000
Reserves & Surplus :	10,000	Cash, at Bank	14,000
General Reserve		Bank Sundry	18,000
Liabilities :		Debtors Inventories	
1,000 5% Debentures of Rs. 100			
each fully paid	1,00,000		
Sundry Creditors	30,000		
Bank Overdraft	20,000		
Bills Payable	10,000		
	2,30,000		2,30,000

Capital Structure = Equity Share Capital + Preference Share Capital + Reserves + Debentures = Rs. 1,70,000

Financial Structure = Capital Structure + Current Liabilities, i.e., Rs. 1,70,000 + Rs. 60,000 = Rs. 2,30,000

Asset Structure = Fixed Assets + Current Assets = Rs. 2,30,000

3.3 DETERMINANTS OF CAPITAL STRUCTURE

NOTES

The following factors must be considered while determining the capital structure of a company:

3.3.1 Internal Factors

1. **Nature of Business:** Capital structure of a company is considerably affected by the nature of its business. Public utilities, extractive, financing and merchandising enterprises are more stable in their earnings and enjoy greater degree of freedom from competition than industrial concerns. Thus, companies having stable earnings can afford to raise funds through sources involving fixed charges, while other companies have to rely heavily on equity share-capital.
2. **Regularity and Certainty of Income:** Capital structure is also affected by the regularity and certainly of income. If company expects sufficient regular income in future, debentures and bonds should be issued. Preference shares may be issued if company does not expect regular income but it is hopeful that its average earnings for a few years may be equal to or in excess of the amount of dividend to be paid on such preference shares. If company does not expect any regular income in future, it should never issue any type of securities other than equity shares.
3. **Desire to Control the Business:** The shareholders' or promoters' desire to control the affairs of the company directly affects its capital structure. If the control of the company is to be retained within few hands, a large proportion of funds are raised by issuance of non-voting right securities, such as debentures and preference shares. Thus, majority of funds are raised from public retaining the control of the company with the promoters or the existing shareholders.
4. **Future plans:** Capital structure of a company is also affected by its development and expansion programs in future. For the purpose, the amount of authorized capital is kept higher so that the requisite amount may be raised at the time of need. At the outset, the company collects capital by issuing shares. Thereafter, capital structure is devised in accordance with the future development and expansion programs and the requisite capital is raised by issuing preference shares and debentures.
5. **Purpose of Finance:** An important factor determining the type of capital to eraised is the purpose for which capital is required. If funds are needed for some productive activity which will directly add to the profitability of the company, capital may be raised by issuing securities bearing fixed charges like preference share and debentures. Conversely, if funds are needed for such purposes as betterment, maintenance, etc., which does not directly add to the earnings of the company, retained earnings or equity share capital will be the better source of financing.
6. **Attitude of Management:** Capital structure of a company is also affected by the attitude of the management. Management varies in relation to skill, judgment, experience, temperament and motivation. It evaluates the same risks differently and its willingness to employ debt-capital also differ. The capital structure is, therefore, equally influenced by the age, experience, ambition, confidence and conservativeness of the management.
7. **Trading on Equity:** Trading on equity refers to the regular use of borrowed capital as well as equity capital in the conduct of a companies business. In other words, when a company employs borrowed capital including preference share capital in such a way as to increase the rate of return on equity shares, it is said to be trading on equity. Obviously, if the fixed rate of interest on borrowed capital or dividend on preference

shares is lower than the general rate of earnings of the company, the equity shareholders will have an advantage in the form of additional dividend. Trading on equity, therefore, implies the presence of a favorable financial leverage in the company's capital structure. Thus, a company would prefer to issue debentures or preference shares having a rate of interest or dividend lower than the general rate of its earnings.

8. **Debt Capacity and Extent of Risk:** The use of borrowed capital becomes risky for the company after a certain extent because if would lead to increase the fixed liability of interest payment adversely affecting the company's income and reducing its liquidity. In the long-run, excessive use of borrowed funds also endanger the solvency of the company. High debt equity ratio is particularly risky for the companies with uncertain, irregular and inadequate earnings. So, the determination of debt-equity ratio of such companies should be in accordance with their debt capacity.
9. **Cost of Capital:** Cost of capital is an important determinant of capital structure of a company. Since cost of capital directly influences the profitability and general rate of earnings, a company must select such sources of finance as would entail the incurrence of the least cost. Generally, a company must raise capital funds by borrowings when rate of interest is low, and by issuing equity shares when rate of earnings and share prices are high.
10. **Capital Gearing Ratio:** Equity shares are the foundation of capital of a company. The ratio of equity share capital to the total capital is called 'Capital Gearing'. When the ratio of equity shares is low in the total capital structure, it is called 'High Gearing'. Conversely, when the ratio of equity shares in the total capital structure of a company is high, it is called 'Low Gearing'. Stability in equity share price and goodwill of company depends on adequate capital gearing. A high capital gearing ratio encourages speculation in shares of such a company and market price of shares continues to fluctuate.
11. **Timing and Duration of Finance:** If capital funds are needs for short-term, they must be arranged through borrowings. Funds raised by issuing fixed cost securities (debentures and redeemable preference shares) can be repaid as soon as company's financial position becomes strong, however, equity share capital cannot be repaid until the company survives. On the other hand, long-term capital funds must be raised by issuing equity shares.
12. **Flexibility and Simplicity:** The capital structure must be flexible as to increase or decrease the funds as per requirements of the enterprise. Excessive dependence on fixed cost securities make the capital structure rigid because of fixed payment of interest or divi-dend. Thus, these sources should be kept in reserve for emergency and expansion pur-poses. The capital structure must also be simple, so that financial crisis may be avoided.

3.2.2 External Factors

1. **Nature and Kind of Investors:** The success of capital structure largely depends upon the psychological conditions of different types of investors. An ideal capital structure is one which suits the needs of different types of customers. Some investors prefer security of investment and stability of income, while others prefer higher income and capital appreciation. Thus, shares and debentures should be issued in accordance with the tastes and preferences of all types of customers. A company should issue different types of securities with different denominations to suit the financial status of various sections of the society.

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2. **State of Capital Market:** Conditions of capital market have a direct bearing on the capital structure of a company. In times of depression, the rate of dividend on equity shares comes down and the possibilities of profit are the least. In such a situation the investors would prefer to invest in debentures and not in equity shares. Thus, debentures should be issued in times of depression. Conversely, during boom period when people have sufficient funds, any type of security can be issued to raise the requisite funds. Hence, equity shares should be issued during boom period.
3. **Cost of Capital Issue:** Capital structure of a company is also affected by the cost of capital issue. The capital structure should, therefore, be designed in such a way as to minimize the commission payable to brokers, middlemen and underwriters or the discount payable on issue of debentures and bonds. Thus, a company should raise funds by issuing different types of securities in such a way as would minimize the cost of capital issue.
4. **Present Statues and Rules:** Capital structure is also influenced by the statutes and rules prevailing in the country. For example, Banking Companies Act restricts a banking company from issuing any type of securities other than equity shares. Similarly, Control of Capital Issues Act has fixed 4 : 1 ratio debt and equity, and 3 : 1 ratio between equity and preference share capital. Besides complying the legal restrictions, a company's capital structure is also influenced by possible changes in the law of the country. For instance, if company's income is taxed at a higher rate then directors would prefer to issue debentures because the amount of interest payable to debenture holders is deducted while computing the company's total income. It is a statutory deduction whereas dividend is not an accepted deduction.

3.4 OPTIMUM CAPITAL STRUCTURE

It is often suggested that the financial manager should attempt to achieve an optimal capital structure in order to minimize the shareholder's wealth. Balanced or optimum capital structure refers to an ideal combination of various sources of long-term funds in such a way as to minimize the overall cost of capital and maximize the market value per share. The optimal capital structure could only be achieved when the marginal cost of each source of finance is the same. However, it is incorrect to form an opinion that there exists an ideal mix of debt and equity capital which will produce an optimum capital structure leading to the maximization of market price per share. In real life, there is no single optimal capital structure for all firms, or for the same firm from time to time depending upon a multitude of factors. The financial manager should, therefore, attempt to develop an appropriate capital structure for his firm instead of trying for an optimum 'optimal Capital Structure'.

3.4.1 Characteristics of a Optimum Capital Structure

1. **Simplicity:** A sound capital structure is one which is kept simple in the initial stage by limiting the number of issues and types securities. If the capital structure is complicated from the very beginning by issuing different types of securities, the investors hesitate to venture their investments in such a company and the company may also face difficulties in the raising additional capital structure, it is advisable to issue equity and preference shares only. Debentures and bonds should be reserved for future financial requirements of the company.
2. **Minimum Cost:** A sound capital structure should attempt to establish the security mix in such a way as to raise the requisite funds at the lowest possible cost. The cost

of various sources of capital is not equal in all circumstances. Thus, the cost of every source of finance should be ascertained on the basis of weighted average cost of capital. The management should also aim at keeping the expenses of issue and fixed annual payments at a minimum to maximize the return to equity shareholders.

3. **Maximum Return:** A balanced capital structure should be devised in such a way as to maximize the profits of the corporation. With a view to maximization of return on investments the company should follow a proper policy of trading on equity so as to minimize the cost of capital.
4. **Minimum Risk:** An ideal capital structure should also possess the quality of minimum risk. Business involves various risks, such as – increase in taxes, rates of interest, costs etc., and decrease in prices and value of shares as well as natural calamities, all of which adversely affect the company's earnings. Thus, the corporation's capital structure should be devised in such a way as to enable it to afford the burden of these risks easily.
5. **Maximum Control:** A sound capital structure has also the quality of retaining the control of the existing shareholders on the affairs of the company. Generally, the ultimate control of a company exists with the equity shareholders who have the right to elect directors. Thus, while deciding the issue of securities due consideration needs to be given to the question of control in management. If a large number of equity shares are issued, the existing shareholders may not be able to retain control. The company should, therefore, issue preference shares or debentures to the public instead of equity shares because preference shares carry limited voting rights and debentures do not have any voting rights. Thus, the capital structure of a company should not be changed in such a way which would adversely affect the voting structure of the existing shareholders, dilute their control on the company's affairs.
6. **Flexibility:** An optimum capital should also have the quality of flexibility in it. A flexible capital structure enables the company to make the necessary changes in it according to the changing conditions. In other words, under flexible capital structure it is possible to procure more capital whenever required, or redeem the surplus capital.
7. **Proper-Liquidity:** Liquidity is necessary for the solvency of a corporation. All such debts should, therefore, be avoided which threaten the solvency of the company. Thus, a proper balance between fixed assets and current assets should be maintained. The ratio of fixed and liquid assets depends upon the nature and size of business.
8. **Conservatism:** A company should follow the policy of conservatism in devising the capital structure. This would help in maintaining the debt capacity of the company even in unfavourable circumstances.
9. **Full Utilization:** A balance capital structure is necessary for the optimum structure of a company. Both, under capitalization and over capitalization are injurious to the financial interests of a company. Thus, there should be a proper co-ordination between the quantum of capital and the financial needs of the corporation. A fair capitalization enables a company to make full utilization of the available capital at minimum cost.
10. **Balanced Leverage:** A sound capital structure should attempt to secure a balanced leverage by issuing both types of securities, *i.e.,* ownership securities and creditorship securities. Normally, shares are issued when the rate of capitalization is high, and debentures are issued when rate of interest is low.

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3.4.2 Objectives and Importance of Optimum Capital Structure

1. **Minimization of Cost:** The primary objective of a company is to maximize the shareholders' wealth. In this direction, a well-devised capital structure enables a company to raise the requisite funds from various sources at the lowest possible cost in terms of market rate of interest, earnings rate expected by prospective investors, expenses of issue etc. Minimum average cost of capital maximizes the returns to the equity shareholders as well as the market value of shares held by them.
2. **Maximization of Return:** A primary aim of every corporation is to promote the shareholders' interests. A balanced capital structure enables a company to provide maximum return to the equity shareholders of the company by raising the requisite capital funds at the minimum cost.
3. **Minimization of Risks:** A sound capital structure serves as an insurance against various business risks, such as—increase in costs, interest rates, taxes and reduction in prices. These risks are minimized by making suitable adjustments in the components of capital structure. A balanced capital structure also enables the company to meet the business risks by employing its retained earnings for the smooth business operations.
4. **Retention of Control:** The management of a company is in the hands of directors. But indirectly, a company is controlled by equity shareholders who have right to elect directors. Since preference shares carry limited voting rights and debentures do not have any voting rights, a well – devised capital structure ensures the retention of control over the affairs of the company within the hands of the existing equity shareholders by maintaining a proper balance between voting right and non-voting right capital.
5. **Adequate Liquidity:** One of the objectives of a balanced capital structure is to maintain proper liquidity which is necessary for the solvency of the company. A sound capital structure enables a company to maintain a proper balance between fixed and liquid assets, and avoid the various financial and managerial difficulties of the company.
6. **Full Utilization:** Optimum utilization of the available financial resources is another important objective of a balanced financial structure. An ideal financial structure enables the company to make full utilization of available capital by establishing a proper co-ordination between the quantum of capital and the financial requirements of the business. Thus, a balanced capital structure helps a company in eliminating both the states of over-capitalization and under capitalization which are harmful to the financial interests of the company.
7. **Other Objectives:** In addition to the above, a balanced capital structure has also the following objectives:
   (*i*) ***Simplicity:*** A balanced capital structure is aimed at limiting the number of issues and types of securities, thus, making the capital structure as simple as possible.
   (*ii*) ***Flexibility:*** A balanced capital structure is devised in such a way as to make the necessary changes in it according to the changing conditions. Flexibility of capital structure enables the company to raise additional capital at the time of need, or redeem the surplus capital. Thus, the flexibility in capital structure not only helps in fuller utilization of the available capital but also eliminates the two undesirable states of over-capitalization and under capitalization.

3.5 CHANGES IN CAPITAL STRUCTURE

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Generally, the capital structure of a company is considered as permanent and static in nature. But change in capital structure becomes inevitable due to changes in economic trends. Thus, change in capital structure may be sought by the management as a means of easing tension and giving corporation a better opportunity to pursue its purposes. Following are the important reasons responsible for readjustment in the capital structure of a business corporation.

1. **Legal Requirements:** Sometimes, changes in the statutes in force make it obligatory on the part of corporations to effect the requisite changes in their existing capital structure. For instance, the Indian Companies Act, 1956 abolished the deferred shares and required the companies to have only and preference shares. Thus, companies were found to make the necessary changes in their capital structure by converting deferred shares into equity shares.
2. **Attracting Investors:** In order to make the shares more attractive and popular amount investors, especially when the company's shares have very limited market due to high face-value subject to wide price fluctuations, the company may split its shares of high face-value into low face-value. Generally, investors prefer to invest in low face-value shares. Thus, a company has to make the necessary changes in the face-value of its shares for raising substantial share capital.
3. **Capitalization of Retained Earnings:** With the progress of a company its earnings also increase, which creates the state of under-capitalization, the company has to capitalize its reserves and surpluses by issuing bonus shares to the existing shareholders. This leads to changes in capital structure.
4. **Combination and Amalgamation:** In order to simplify the merger and amalgamation, the concerned companies are required to readjust their capital structure. In this case, the intrinsic value of shares of the concerned corporation is equalized. Obviously, this would lead to change in the capital structure of the companies.
5. **Writing-off of Assets:** Sometimes, current assets of a company are deranged due to continuous heavy losses. Similarly, the value of fixed assets comes down due to heavy reduction in their values. Under such circumstances, the company's balance sheet will display a deficit requiring adjustment of liabilities to offset the deficit of assets. This calls for an adjustment in the company's capital structure by reducing the value of shares to the real worth of the company's assets.
6. **Simplifying the Capital Structure:** Sometimes, corporations have issue a verity of securities to accommodate their development programs. As and when market conditions are favourable, the corporations consolidate such securities in order to simplify the capital structure. This results in change in capital structure.
7. **Restoration of Balance in the Financial Plan:** Where a company has excessively issued fixed cost structure *i.e.*, debentures and preference shares which have strained the financial position of the company, the management may redeem such securities out of the proceeds of issue of equity shares as and when the market conditions are favourable. Such readjustment may restore the balance in the financial plan and reduce the strain on the financial position of the company. Thus, restoration of balance in the financial plan may also serve as a means of easing tension and giving a better opportunity to the corporation to pursue its purposes.
8. **Avoidance of Default on Debentures:** Sometimes, a company is unable to pay-off interest on debentures or principal amount on due dates. This compels the company

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to make certain arrangements with its bankers or debenture holders to avoid the dissolution of the company resulting from the default on debentures. Thus, change in capital structure may also be sought as a means of avoidance of default on debenture which may lead to the dissolution of the company.

9. **Funding the Accumulated Dividend:** Where a company has large accumulated dividend on preference share, it may enter into an agreement with the preference shareholders either to accept bonds or equity shares or new preference shares along with cash bonus against their claim in the accumulated balance of dividend. In accordance with the favourable market conditions, many companies reduce the rate of dividend on preference shares either by calling the old shares or issuing new shares for cash to redeem the old ones.

3.5.1 Modes of Changes in Capital Structure

The changes in capital structure of a company may be either voluntary or compulsory. Voluntary changes in capital structure are undertaken when with the expansion of business the financial requirements of the company increase. In such a situation recapitalization or readjustment or re-construction of the company is desirable. Compulsory changes in the capital structure are made in fulfillment of the legal requirements. A brief description of the three modes of changes in capital structure is as follows:

1. **Re-capitalization:** If a company increases or decreases its capital or brings any short of changes therein, it is known as re-capitalization. Re-capitalization is also known as re-organization. Re-capitalization may be effected by increasing or decreasing the existing capital.
2. **Re-adjustment:** Under re-adjustment, major changes in the composition of the financial plan are made. It includes change of short-term debts into long-term debts, change in rates of interest, change in the face-value of shares, capitalization of accumulated reserves, etc. Such changes in the capital structure are made by a company in order to overcome the financial difficulties and attain its objectives.
3. **Re-construction:** Re-construction implies the elimination of fictitious assets including accumulated losses and allocation thereof between various categories of shareholders and creditors, re-organization of share and debt capitals, an raising of additional funds specially for working capital. Re-construction may be internal or external. In case of external re-construction the assts of the old company are taken over by the new company in such a way as would equitably affect the interests of all the concerned parties. Based on the honest estimates of future earnings, the re-construction scheme should be fair and equitable to safeguard the interest of all the concerned parties. In the process of re-construction the entire capital structure of the existing or new company is changed. Re-construction, scheme is undertaken in order to strengthen the deteriorating financial position of the company and give it a better opportunity to pursue its purposes instead of winding up its business.

3.6 APPROACHES OF CAPITAL STRUCTURE

Different kinds of approaches are as follows:

1. Net income approach
2. Net operating income approach
3. The traditional approach

4. Modiglliani-Millar approach

We will discuss here one-by-one:

1. **Net Income Approach**

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This approach has been suggested by **Durand.** According to this approach, a firm can minimise the overall cost of capital and increase the value of the firm as well as market price of equity shares by using debt financing to the maximum possible extent. This theory states that weighted average cost of capital decreases with every increase in proportion of debt in capital structure as debt is less expensive source of financing. This theory is based on the following assumptions :

(*i*) Debt is always cheaper to equity.

(*ii*) There are no corporate taxes.

(*iii*) The risk perception of investors is not changed by the use of debt.

The reasons for presuming debt as less expensive source of financing are:

(*a*) Interest rates are usually lower than dividend rates and

(*b*) Interest is a deductible expense for computing taxable income while dividend is not.

According to this approach, overall cost of capital will decrease and the value of the firm as well as the market price of its shares will increase if the amount of equity is decreased by the issue of debentures, bonds etc. to equity shareholders. Similarly, overall cost of capital will increase and the value of the firm as well as the market price of its shares will decrease, if the amount of debt is decreased by issuing additional equity shares.

Example 3.1 *Mira Ltd. is expecting an annual EBIT of Rs. 10,00,000. The company has Rs. 40,00,000 in 10% debentures. The equity capitalization rate is 12.5%. The company decides to raise Rs. 10,00,000 by issue of 10% debentures and use the proceeds thereof to buy back and cancel the equity shares.*

You are required to calculate:

(*i*) *The total value of the firm,*

(*ii*) *The overall cost of capital before and after the issue of fresh debentures for redeeming equity shares.*

Solution.

Statement Showing Value of the Firm

	Before Rs.	*After* Rs.
EBIT	10,00,000	10,00,000
Less interest on Debentures at 10%	4,00,000	5,0,000
	6,00,000	5,0,000
Market value of Equity at 12.5%	$\frac{6,00,000 \times 100}{12.5}$ = 48,00,000	$\frac{5,00,000 \times 100}{12.5}$ = 40,00,000
Market Value of Debt	40,00,000	50,0,000
Total Value of Firm	88,00,000	90,0,000
Overall Cost of Capital	$\frac{10,00,000}{88,00,000} \times 100$ = 11.36%	$\frac{10,00,000}{90,00,000} \times 100$ = 11.1%

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The above table shows that issuing debentures and using its proceeds in redeeming equity shares has increased the total value of the firm and reduced the overall cost of capital.

2. **Net Operating Income Approach**

This approach has also been suggested by **Durand.** This is just opposite of Net Income Approach. According to this approach, change in the capital structure of a company does not affect the market value of the company and overall cost of capital. It implies that whether the debt equity ratio is 50 : 50, or 25 : 75 or 75 : 25 or there is 100% equity or 100% debt, the overall cost of capital remains the same. Hence, there is nothing like optimum capital structure and every capital structure is the optimum capital structure. This theory is based on the following assumptions:

(*i*) The market capitalises the value of the firm as a whole.

(*ii*) The overall cost of capital remains constant at every level of debt-equity mix.

(*iii*) There are not corporate taxes.

Example 3.2 *Ranjan Ltd. has an EBIT of Rs. 10,00,000. The company has Rs 40,00,000 in 10% debentures. The overall capitalization rate is 12.5%. The company decides the raise a sum of Rs. 10,00,000 through debt at 10% and uses the proceeds to pay off equity shareholders.*

Calculate total value of the firm and the equity capitalization rate and prove that overall cost of capital remains unaffected by the change in debt-equity mix.

Solution.

Statement Showing Value of the Firm

	Before increase Rs.	*After increase* Rs.
EBIT	10,00,000	10,00,000
Overall Capitalisation Rate	12.5%	12.5
Market value of the firm at 12.5%	$\frac{10,00,000}{12.5} \times 100$	$\frac{10,00,000}{12.5} \times 100$
	= 80,00,000	= 80,00,000
	40,00,000	50,0,000
Total Value of Debt	40,00,000	50,0,000
	40,00,000	30,0,000
Equity Capitalisation Rate	$\frac{10,00,000 - 4,00,000}{40,00,000} \times 100$	$\frac{10,00,000 - 5,00,000}{30,00,000} \times 100$
$\frac{\text{EBIT} - \text{Interest}}{\text{Market Value of Equity}}$	= 15%	= 16.67%

Verification of Overall Cost of Capital

$$\text{Overall Cost of Capital} = \text{Cost of Debt} \times \ + \text{Cost of Equity}$$

$$\text{Capital} \times \frac{\text{Market Value of Equity}}{\text{Total Value of the Firm}}$$

(*i*) ***Before increase in debt equity mix***

$$\text{Overall Cost of Capital} = 10\% \times \frac{40,00,000}{80,00,000} + 15\% \times \frac{40,00,000}{80,00,000}$$

$$= 5\% + 7.5\% = 12.5\%$$

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(*ii*) ***After increase in debt-equity mix***

$$\text{Overall Cost of Capital} = 10\% \times \frac{50,00,000}{80,00,000} + 16.67\% \times \frac{30,00,000}{80,00,000}$$

$$= 6.25\% + 6.25\% = 12.5\%$$

3. **The Traditional approach.**

The traditional approach is a compromise between the two extremes of net income approach and net operating income approach. It is also known as 'Intermediate Approach'. Initially, the value of the firm can be increased or cost of capital can be decreased by increasing debt content of capital structure as debt is a cheaper source of funds than equity. Beyond a particular point, the cost of equity increases because increasing proportion of debt increases the financial risk of equity shareholders. The advantage of cheaper debt is thus offset by increased cost of equity. Later, the debt also becomes costly due to increasing financial risk and in this way a point comes when the increased cost of equity can not be offset by the advantage of low cost debt and the overall cost of capital increases.

The essence of the Traditional Approach is that in the beginning with the increase in debt funds, overall cost of capital decreases up to a particular point, after that decreasing trend of overall cost of capital stops and remains constant before going up, which can be called as the optimum capital structure, giving the minimum cost of capital.

The validity of the traditional approach has been criticised that the market value of the firm depends upon its net operating income and risk attached to it. The financing mix can neither change the net operating income nor the risk attached to it. It only changes the way in which the income of the firm is distributed between debt-holders and equity-holders. Hence, the firms with similar net operating income and risk but differing in their debt-equity mix should have the same total value.

Example 3.2 *Compute the market value of the firm, value of shares and the average cost of capital from the following information:*

Net Operating Income
Rs. 2,00,000

Total Investment
Rs. 10,00,000

Equity Capitalisation Rate :

(*a*) *If the firm uses no debt 10%*

(*b*) *If the firm uses Rs. 4,00,000 debt 11%*

(*c*) *If the firm uses Rs. 6,00,000 debt 12%*

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.

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Solution.

Computation of Market Value of Firm, Value of Shares and the Average Cost of Capital.

	(a)No Debt	*(b) Rs. ,00,000 5% Debentures*	(c) Rs. ,00,000 6% Debentures
Net Operative Income	Rs. 2,00,000	Rs. 2,00,000	Rs. 2,00,000
Less Interest	—	20,000	36,000
Earnings Available to equity shareholders	Rs. 2,00,000	Rs. 1,80,000	Rs. 1,64,000
Equity Capitalisation Rate	10%	11%	12%
Market Value of Shares	Rs. 20,00,000	Rs. 16,36,363	Rs. 13,66,667
Market Value of Debentures	—	Rs. 4,00,000	Rs. 6,0,000
Market Value of the Firm	Rs. 20,00,00	Rs. 20,36,363	Rs. 19,6,667
Average Cost of	$\frac{2,00,000}{20,00,000}\times 100$ = 10%	$\frac{2,00,000}{20,36,363}\times 100$ = 9.8%	$\frac{2,00,000}{19,66,667}\times 100$ = 10.17%

Comment: As is clear from the above calculations, Rs. 4,00,000 Debt is an optimum debt-equity mix because at this stage, the value of the firm increases and overall cost of capital decreases. If Rs. 6,00,000 Debentures are issued, the value of the firm decrease and overall cost of capital increase due to higher rate of interest on debentures and higher equity capitalization rate.

4. **Modigiliani-Millar (M-M) Approach.**

Modigiliani-Miller (MM) Approach is similar to the Net Operating Income Approach if taxes does not exist. The NOI approach is purely conceptual and does not provide operational justification for irrelevance of the capital structure in the valuation of the firm. On the other hand, M-M in their article in 1958, provide analytical sound and logically consistent behavioural justification for their hypothesis. If corporate taxes are assumed to exist, M-M hypothesis is similar to Net Income Approach.

(*a*) **In the absence of taxes:** The theory proves that the cost of capital is not affected by the changes in capital structure. The reason is that though debt is cheaper to equity but with increased use of debt, cost of equity capital increases due to increased financial risk and the advantage of low-cost debt is offset equally by the increased cost of equity. The theory further propounds that beyond a certain limit of debt, the cost of debt increases but the cost of equity increases at a decreasing rate. Here again the two costs are balanced and the over all cost of capital remains the same.

Assumptions: The M-M approach is based on the following assumptions:

1. **Perfect Capital Markets:** This means:
   (*a*) The investors are free to buy and sell securities.
   (*b*) The investors can borrow on the same terms on which the firm can borrow.
   (*c*) The investors are well informed and they behave rationally.
   (*d*) There is no transaction cost.
2. **Homogeneous Risk Classes:** The firms can be classified into homogeneous risk classes and all firms within the same class will have the same degree of business risk.
3. **Risk:** The expected earnings of all the firms have identical risk characteristics.

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4. **No Taxes:** In the original formulation of their hypothesis in 1958, M-M assume that no corporate taxes exist.
5. **Full Pay-out:** All earnings are distributed to the shareholders.
6. **Cut-off Point:** The cut-off point of investment in a firm is capitalisation rate.

Arbitrage Process: The 'arbitrage process' is the operational justification of M-M hypothesis. The term "arbitrage" implies an act of buying an asset or security in one market having lower price and selling it in another market at a higher price. M-M argue that two identical firms in all respects except in their capital structures cannot for long remain different in different markets because arbitrage will take place and the investors will engage in 'personal or home-made leverage' *i.e.,* they will buy equity of the under valued company by selling equity of the overvalued company as against the 'corporate leverage' and this will render the two firms to have the same total value.

Example 3.4 *The following is the data regarding two companies 'X' and 'Y' belonging to the same equivalent risk calss :*

	Company X	*Company Y*
Number of Equity Shares	1,00,000	1,50,000
8% Debentures	50,000	—
Market Price per share	Rs. 1.30	Rs. 1.00
Profit before interest	Rs. 20,000	Rs. 20,000

Assuming 100% payout, you are required to explain how under Modigiliani and Miller approach, an investor. A holding 10% of shares in company 'X' will be better off in switching his holding to company 'Y'.

Solution.

According to M-M approach, two identical firms can not have different market values. If it exists, arbitrage process will take place and the investors will engage in personal leverage as against corporate leverage. In the given problem, arbitrage process will be as follows:

1. A will sell in the market 10% of shares in company X for

$$\frac{10}{100} \times 1,00,000 \times 1.30 = \text{Rs. } 13,000.$$

2. He will raise a loan of Rs. $\frac{10}{100} \times 50,000$ = Rs. 5,000 to take advantage of personal leverage as against corporate leverage as company Y is not using debt in its capital structure.
3. With his total amount of Rs. 13,000 + Rs. 5,000 = Rs. 18,000, A will buy 18,000 shares in company.

Calculation of A's gain by switching his holding

	Rs.
Present Income of A in Company X:	
Profit before interest	20,000
Less Interest on Debentures	4000
Profit available to Equity Shareholders	16000
Income of A after switching his holding to Company Y:	
Profit before interest in Company Y	*Rs*
Share of A 20,000 ×	20000
Less Interest paid on loan 8% of Rs. 5,000	2,400
Net Income of the Investor A	400
	2,000

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Investor's gain in switching = Rs. 2,000 – Rs. 1,600 = Rs. 400

Note: The above analysis shows that A will gain by swithching his holding from Company X to Company Y. Other investors will also follow the same process. As a result there will be an increase in demand for the securities of Company Y which will lead to incr-ease in market price of its securities. On the other hand, price of the shares of Company X will decline as a result of selling pressure of its securities. This process will continue till the total value of the two companies as well as their overall cost of capital becomes the same.

(*b*) **When corporate taxes exist:** M-M recognised In their article of 1963, that the value of firm will increase or overall cost of capital will decrease with the use of debt on account of deductibility of interest charges for tax purposes. The market value of a levered firm will be greater than an unlevered firm. It will exceed by an amount equal to the levered firm's debt multiplied by the tax rate it can be expressed as follows :

$$V_l = V_u + B_t$$

where

V_1 = Value of a levered firm

V_u = Value of an unlevered firm

B = Amount of Debt

t = Tax rate

The market value of an unlevered firm will be equal to the market value of its shares, *i.e,*

$$V_u = \frac{\text{Profit available for equity shareholders, } i.e., \text{ EBT } (L - t)}{\text{Equity Capitalisation Rate}}$$

Thus, the optimum capital structure can be achieved by maximising debt content in the capital structure. However, if the cost of debt increases due to market imperfections, the debt should be used within limits.

Example 3.5 *Two firms A and B are identical in all respects except the degree of leverage. Firm A has 6% Debentures of Rs. 30,00,000 while firm B has no debt. EBT of both firms is Rs. 12,00,000. The equity capitalisation rate is 10% and the corporate tax is 50%.*

Compute the market value of the two firms.

Solution.

Value of levered Firm B

$$V_u = \frac{\text{Profits available for Equity Shareholders}}{\text{Equity Capitalisation Rate}}$$

$$= \frac{12,00,000 \times 1 - 0.5}{10\%} = \text{Rs. } 60,00,000$$

Value of Levered Firm A

$$V_1 = V_u + B_t$$

$$= 60,00,000 + (30,00,000 \times 0.50)$$

$$= 60,00,000 + 15,00,000 = \text{Rs. } 75,00,000$$

Limitations of M-M Hypothesis

The Limitations of M-M Approach are as follows:

1. Rates of interest are not the same for the individuals and the firms because firms have the higher credit standing as compared to individuals.
2. Home made leverage is not perfect substitute for corporate leverage. The risk exposure to the investor is usually greater than the company because of his unlimited liability character.

3. Buying and selling of securities involve transaction costs. Hence, to earn the same return, the investor will have to invest a larger amount than his present investment.
4. The switching option for unlevered to levered firm and vice-versa is not available to all investors, particularly institutional investors, *viz.,* L.I.C., U.T.I., etc.

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3.7 READJUSTMENTS IN CAPITAL STRUCTURE

As it has been said, the changes in capital structure may be sought as a means of easing tension and the giving corporation a better opportunity to pursue its purposes. The following are the main reasons for adjustments in capital structures :

1. **To Simplify the Capital Structure:** If various issues of securities have been made at different times and it may have loaded the firm with tough terms and conditions of financing. So, to simplify the capital structure, its revision may be a necessity.
2. **To Capitalize the Retained Earnings:** If the corporation is using cost free reserves and surpluses and it has resulted into capitalisation, the management may take steps to make them a part of equity share capital.
3. **To Reduce the Cost Burden:** If corporation has become heavy with fixed cost bearing securities resulting into a great strain on the finances of the company. The management may think it fit to redeem such debentures and preference shares and issue the equity shares in place of them. Such rearrangement can reduce the fixed obligations and make capital structure more serviceable.
4. **Making the Shares more Attractive:** The split of shares may sometimes, take place in order to make them more attractive. Investors prefer to purchase 100 shares of Rs. 10 each rather than I share of Rs. 1,000 each, though the amount of investment is the same.
5 **To Extinguish Deficit Balance of B/S:** Often, the changes in capital structure may be sought as means to extinguish the deficit balances against share capital. It may require reduction in the value of shares or any other arrangement.
6. **To Meet Certain Legal Requirements:** Sometimes, due to changes in financial statues or the Companies Act, the management may be compelled to make changes in capital structures. For example, in India when deferred shares were abolished by the Companies Act, 1956, the companies changed their capital structure and deferred shares were generally converted into equity shares.
7. **To Facilitate Mergers and Integrations:** Before going to the actual marger, the different intending corporations may be required to make certain adjustment in their capital structure in order to pave the way of merger or integration.

   Readjustment is considered to be a major change in composition of the financial plan whereas recapitalisation is interpreted as a single amendment of the original plan such as changing the amount of started capitalisation.

3.8 MEANING & DEFINITIONS OF LEVERAGES

The term 'Leverage' is used to describe the company's ability to use the fixed cost assets or funds to magnify the return to its owners. Some important definitions of 'leverage' are given below:

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Ezra Soloman, *"Leverage is the ratio of net returns on shareholders' equity and the net rate of return on total capitalization."*

J.E. Walter, *"Leverage may be defined as percentage return on equity to percentage return on capitalization."*

It may be noted from the above definitions that fixed cost or return is the fulcrum of leverage. If a company is not required to pay fixed cost or return, there will be no leverage. It may also be noted that leverage is the result of the employment of an asset or funds having a fixed cost or return. The former may be termed as "fixed operating cost" whereas the later may be termed as "fixed financial cost."

Since fixed cost or return has to be paid irrespective of the volume of production or sales, the extent of such fixed cost of return has considerable influence on the amount of profit available for the equity shareholders. If the volume of sales changes, leverage helps in increasing the firms profits. A high degree of leverage implies that there will be a large change in profits as a result of a relatively small change in sales and vice versa. Thus, a high degree of leverage implies higher degree of uncertainty or return and risk, and at the same time higher expected returns. The risk refers to the degree of uncertainty associated with the company's ability to pay a fixed cost or fixed return for employing funds.

3.9 TYPES OF LEVERAGES

There are three types of leverages in which third leverage is a combination of remaining two. So leverages can be broadly classified into two part.

3.9.1 Operating Leverage

The operating leverage may be defined as the tendency of the operating profit to change disproportionately with sales. The company is said to have a higher degree of operating leverage if it employs a greater amount of fixed costs and a small amount of variable costs. On the contrary if the company employs a greater amount of variable costs and a smaller amount of fixed costs, it is said to have a low operating leverage. The degree of operating leverage will, therefore, depend upon and amount of fixed element in the operating cost structure of the company. Thus, there will be no operating leverage in the absence of fixed operating costs. The operating leverage is calculated for studying the effects on company's income at different levels of sales.

Computation of Operating Leverage:

The operating leverage can be calculated by the following formula with the assistance of break-even technique:

$$\text{Operating Leverage (OL)} = \frac{\text{Contribution}}{\text{Operating Profit}} \text{ or } \frac{C}{\text{EBIT or OP}}$$

Where, Contribution = Sales – Variable Cost

Operating Profit = Contribution – Fixed Cost

Favourable and Unfavourable Operating Leverage: Operating leverage may be favourable or unfavourable. In case the contribution exceeds the fixed cost, there is favourable operating leverage. In a reverse case the operating leverage will be termed as unfavourable. Thus, operating leverage results when fluctuations in sales revenue produce wide fluctuations in operating profit.

Operating leverage may be high or low. High operating leverage involves a very risky situation because margin of safety is very low. A low operating leverage, on the other hand, gives enough

cushion to the management providing a high margin of safety against the fluctuations in sales.

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Computation of Degree of Operating Leverage: The degree of operating leverage may be defined as percentage change in the operating profits resulting from a percentage change in the sales. It may be put in the form of following formula :

$$\text{Degree of Operating Leverage} = \frac{\text{Percentage Change in OP or EBIT}}{\text{Percentage Change in Sales}}$$

The above formula is used when any two out of three factors, *i.e.,* DOL, Percentage Change in Operating Profit and Percentage Change in Sales, are given, and the third one is to be known.

Utility of Operating Leverage: The operating leverage shows the impact of change in sales on the operating profits. If a company has a high degree of operating leverage, a small change in sales will bring a large change in operating profits. Operating profit here means "Earnings before Interest and Tax' (EBIT). Thus, the operating profits of a company having a high degree of operating leverage will increase at a faster rate than the increase in sales. Likewise, the operating profits of such a company will also fall at a faster rate than the decrease in its sales.

Generally companies do not like to operate under conditions of a high degree of operating leverage. This is a very risky situation because a small decrease in sales can excessively damage the company's efforts to increase its profits.

3.9.2 Financial Leverage

The financial leverage is also known as 'trading on equity'. It is the ratio of long-term debt to total funds employed. Financial leverage indicates the change in taxable income as a consequence of change in operating profit. It signifies the presence of fixed cost capital (debentures and preference shares) in the total capital structure of the company. Thus, the use of fixed interest bearing debts and fixed dividend bearing preference share capital along with the equity share capital in total capital structure of the company is described as financial leverage. Higher the amount of fixed interest' dividend bearing securities, higher will be financial leverage and vice versa.

Computation of Financial Leverage

It takes place as follows:

(*i*) **Where capital structure consists of equity shares and debt:** In such a case, the following formula is used to calculate financial leverage :

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBIT} - \text{INT}} \text{ or } \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{OP}}{\text{EBT or PBT}}$$

Where,

FL = Financial Leverage

OP = Operating Profits (G.P. – Operating Expenses)

EBIT = Earnings Before Interest and Tax

INT = Interest

EBT = Earnings Before Tax

PBT = Profit Before Tax

Favourable and Unfavourable Financial Leverage: Financial leverage may be favourable or unfavourable. The leverage will be considered as favourable for shareholders so long as the company earns more on the assets purchased the funds as compared to the fixed cost paid for their use. On the other hand, unfavourable leverage occurs when the company does not earn as much as the funds cost. Thus, financial leverage may have favourable or unfavourable effect on the company's total earnings before interest and taxes (EBIT) as well as on earnings per share

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(EPS). It proves a blessing when company's earnings increase and a curse when company's earnings are insufficient to meet the debt obligations.

Degree of Financial Leverage

The degree of financial leverage indicates the percentage change in taxable profit (*i.e.*, PBT) as a result of percentage change in operating profit (*i.e.*, EBIT).

This may be put in the form of following formula also:

$$\text{DFL} = \frac{\text{Percentage change in taxable income}}{\text{Percentage change in operating income}}$$

$$\text{FL} = \frac{\text{EBIT}}{\text{EBIT} - \text{INT} - \left(\text{PD} \times \frac{1}{1-t}\right)}$$

Example 3.6 *A company has the following capital structure:*

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

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

Solution.

Computation of Financial Leverage

		Rs.
Operating Profit (OP)		50,000
Less Interest on Debentures @ 8%	10,000	
Preference Dividend (Pre-tax basis)	20,000	30,000
Profit before tax (PBT)		20,000
Financial Leverage = $\frac{\text{OP}}{\text{PBT}}$		$\frac{50,000}{20,000} = 25$

By Formula—

$$\text{FL} = \frac{\text{EBIT}}{\text{EBIT} - \text{INT} - \left(\text{PD} \times \frac{1}{1-t}\right)}$$

$$= \frac{50,000}{50,000 - 10,000 - \left(10,000 \times \frac{1}{1-0.5}\right)}$$

$$= \frac{50,000}{50,000 - 10,000 - 20,000} = \frac{50,000}{20,000} = 2.5$$

3.9.3 Composite leverage

Operating leverage measures percentage change in operating profit as a result of percentage change in sales, and financial leverage measures percentage change in taxable profit or earnings per share (EPS) due to percentage change in operating profit *i.e.,* EBIT. Whereas operating leverage explains the degree of operating risk, financial leverage indicates the degree of financial risk. Since both these leverages are closely concerned with the company's capacity to meet its fixed cost obligation, their combined effect will measure the company's financial strength. Composite

leverage will, therefore, express the relationship between sales revenue and taxable income or EBT. It helps the management in finding out the percentage change in taxable income as a result of percentage change in sales.

Composite leverage thus expresses the relationship between revenue on account of sales (*i.e.,* contribution or sales less variable cost) and the taxable income. It helps in finding out the resulting percentage change in taxable income on account of percentage change in sales. This can be computed as follows:

$$\text{Combined Leverage} = \text{Financial Leverage} \times \text{Operating Leverage}$$

$$= \frac{\text{Operating profit}}{\text{Profit before tax}} \times \frac{\text{Contribution}}{\text{Operating Profit}}$$

$$= \frac{OP}{PBT} \times \frac{C}{OP}$$

$$= \frac{\text{Contribution}}{\text{Profit Before Tax}} = \frac{C}{PBT}$$

Where, C = contribution (*i.e.,* sales – variable cost)

OP = Operating Profit or Earning before Interest and Tax

PBT = Profit before Tax but after interest.

Degree of Composite Leverage

The following formula may be used for calculating degree of financial risk:

$$\text{DTL or DCL} = \text{DFL} \times \text{DOL}$$

$$= \frac{\%\text{ Change in Taxable income}}{\%\text{ Change in EBIT or OP}} \times \frac{\%\text{ Change in EBIT or OP}}{\%\text{ Change in Sales}}$$

$$= \frac{\%\text{ Change in Taxable Income}\left(\text{EBT.}\right)}{\%\text{ Change in Sales}}$$

Income Statement Showing Relationship of Leverages

	Sales Revenue (R)	Operating Leverage (OL)	Combined/Total Leverage = OL × FL
Less :	Variable Costs		
Equals :	Contribution (C)		
Less :	Fixed Costs		
Equals :	Earning before interest and taxes (EBIT)		
Less :	Interest	Financia Leverage (FL)	
Equals :	Earning before tax (EBT)		
Less :	Taxes		
Equals :	Net Income		
Less :	Preference share dividend		
Equals :	Earning available for Equity Shares or Earning per share (EPS)		

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Explanation of Earning per share (EPS) : Owners and management of every business unit are interested in the financial soundness of the concern and side by side they are also interested to know the profitability of the firm so as to ensure its operating efficiency and adequate rate of return of investments. Profitability also indicate public acceptance of the unit's products and its competitive position in the industry. A lower profitability indicates poor operating performance, poor sales, lack of control over expenses and poor profits. Conversely, a higher profitability indicates more sales, effective control over expenses, more profits and fair operating efficiency of the firm.

Profitability ratio in relation to investments includes (*i*) return on assets, (*ii*) return on capital employed and (*iii*) return on shareholders' equity.

The EPS ratio is widely used in analyzing the effect of a change in the leverage on the net operating profits available to the equity shareholders. As a measure of a firm's profitability from the shareholders' point of view, this ratio should be used cautiously as it does not recognize the retention of earnings. This ratio can be used in drawing conclusions on the basis of its comparison with the EPS of other similar units, industry average and its trend over a period of time. The EPS is also helpful in determining the market price of a company's equity shares. It also helps in deciding the effective use of ownership capital by a company through a comparison of its EPS with other similar companies. The EPS is also useful in estimating a firm's capacity to pay reasonable dividend to its owners.

Example 3.7

	Rs. 2003	*Rs. 2004*
Sales	7,50,000	9,00,000
Less Variable Operating Cost	3,00,000	3,60,000
Contribution	4,50,000	5,40,000
Less Fixed Operating Cost	2,50,000	2,50,000
Earnings before interest and taxes	2,00,000	2,90,000
Less interest	80,000	80,000
Earnings before tax	1,20,000	2,10,000
Less Tax @ 50%	60,000	1,05,000
Earnings after tax	60,000	1,05,000
Less Preference Dividend	40,000	40,000
Earnings available for equity shareholders	20,000	65,000
Earnings Per Share (EPS)	$= \frac{20,000}{20,000}$	$= \frac{65,000}{20,000}$
	= 1.00	= 3.25

Calculate operating, financial and composite leverages for the year 2003 *and* 2004 *and also calculate the degree of operating, financial and composite (or total) leverage on the basis of changes between two years.*

Solution.

$$OL = \frac{C}{EBIT}$$

2003:

$$OL = \frac{4,50,000}{2,00,000} = 2.25$$

2004:

$$OL = \frac{5,40,000}{2,90,000} = 1.86$$

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$$FL = \frac{EBIT}{EBIT - INT - \left(PD \times \frac{1}{1-t}\right)}$$

2003:

$$FL = \frac{2,00,000}{2,00,000 - 80,000 - \left(40,000 \times \frac{1}{1-0.5}\right)}$$

2004:

$$FL = \frac{2,90,000}{2,90,000 - 80,000 - \left(40,000 \times \frac{1}{1-0.5}\right)}$$

$$= \frac{2,00,000}{2,00,000 - 80,000 - 80,000} \qquad = \frac{2,90,000}{2,90,000 - 80,000 - 80,000}$$

$$= \frac{2,00,000}{40,000} = 5 \qquad = \frac{2,90,000}{1,30,000} = 2.23$$

$$CL = FL \times OL$$

2003: **2004:**

$CL = 5 \times 2.25 = 11.25$ $CL = 2.23 \times 1.86 = 4.15$

or $CL = \frac{C}{\text{Profit Before Tax}}$ or $\frac{C}{EBIT - INT - \left(PD \times \frac{1}{1-t}\right)}$

2003: **2004:**

$CL = \frac{4,50,000}{40,000} = 11.25$ $CL = \frac{5,40,000}{1,30,000} = 4.15$

Calculation of Degree of Operating, Financial and Combined/Total Leverages:

$$\% \text{ Change in Sales} = \frac{\text{Change in Sales}}{\text{Sales in 2003}} \times 100$$

$$= \frac{9,00,000 - 7,50,000}{7,50,000} \times 100 = \frac{1,50,000}{7,50,000} \times 100$$

$$= 20\%$$

$$\% \text{ Change in EBIT} = \frac{\text{Change in EBIT}}{\text{EBIT in 2003}} \times 100$$

$$= \frac{2,90,000 - 2,00,000}{2,00,000} \times 100 = \frac{90,000}{2,00,000} \times 100$$

$$= + 45\%$$

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

$$= \frac{3.25 - 1.00}{1.00} \times 100 = \frac{2.25}{1.00} \times 100 = + 225\%$$

$$DOL = \frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales}} = \frac{45\%}{20\%} = 2.25$$

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$$\text{DFL} = \frac{\%\ \text{Change in EPS}}{\%\ \text{Change in EBIT}} = \frac{225\%}{45\%} = 5$$

$$\text{DCL/DTL} = \text{DFL} \times \text{DOL}$$

$$= 5 \times 2.25 = 11.25$$

or

$$= \frac{\%\ \text{Change in EPS}}{\%\ \text{Change in Sales}} = \frac{225\%}{20\%} = 11.25$$

3.10 SIGNIFICANCE OF LEVERAGES

3.10.1 Financial Leverages

The financial leverage is considered superior as it indicates the market price of the shares. The management is always anxious to increase the market price of shares by increasing the net worth of the company. For this purpose the management resorts to 'trading on equity' that helps in increasing the company's operating profits, and at the same time in increasing the market prices of its shares. However, a company can not go indefinitely in raising the fixed cost capital. If a company goes on employing greater proportion of debt capital, the marginal cost of each subsequent debt will also go on increasing because each subsequent leader will demand higher rate of interest. Further, the company's inability to offer sufficient assets and security to each subsequent lender will also pose a serious limitation before the management to employ further debt capital. Furthermore, a company with widely fluctuating income can not afford to employ greater proportion of debt capital or a high degree of financial leverage.

A proper combination of operating and financial leverages is a blessing for the company's growth. Although a right combination of these leverages is a very big challenge for the management, but a company should strive to have a balance of these leverages as they have tremendous acceleration and deceleration effect on its operating profit (EBIT) and earning per share (EPS).

3.10.2 Operating Leverages

A high degree of operating leverage accompanied by a high degree of financial leverage makes the position of the company very risky. This risky position is the result of the employ-ment of excessive assets by the company for which it has to use a large sum of debt capital and incur high fixed costs. Greater fluctuations in earnings may be the result of a high degree of operating leverage. A high degree of financial leverage will also lead to wide fluctuations in shareholders earnings. a high degree of financial leverage will result in more than proportionate change in operating profits (*i.e*. EBIT) even due to small change in sales, while a high degree of financial leverage will result in a more than proportionate change in earnings per share (EPS), even on account of a minor change in operating profits (EBIT).

Thus, a company with a high degree of financial leverage and a high degree of operating leverage will ultimately face the problems of inadequate liquidity or insolvency. This does not, however, suggests that a company should opt for a low degree of operating or financial leverage. Although a low degree operating and financial leverages is an indicative of the caution policy followed by the management, but the company will be losing many profit earning opportunities. Thus, a company should make all possible efforts to combine the operating and financial leverages in such a way as would suit its risk bearing capacity. This would constitute an ideal situation.

It may be concluded from the above discussion that a company with high operating leverage should have a low financial leverage instead of high financial leverage. Likewise, a firm with low operating leverage should have a high financial leverage provided it has ample opportunities

for the profitable employment to the borrowed funds. Nevertheless, a low operating leverage followed by a high financial leverage is considered to be an ideal situation for the maximization of the company's profits with minimum risk.

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3.11 SUMMARY

- Capital structure of a company refers to the composition of long-term sources of funds, such as-ordinary shares, preference shares, debentures, bonds, long-term debts etc. It refers to the kind and proportion of securities for raising long-term funds and implies the determination of form or make-up of a company's capitalization.
- Balanced or optimum capital structure refers to an ideal combination of various sources of long-term funds in such a way as to minimize the overall cost of capital and maximize the market value per share.
- The changes in capital structure of a company may be either voluntary or compulsory. Voluntary changes in capital structure are undertaken when with the expansion of business the financial requirements of the company increase
- The term 'Leverage' is used to describe the company's ability to use the fixed cost assets or funds to magnify the return to its owners
- Leverage may be defined as percentage return on equity to percentage return on capitalization.
- The financial leverage is also known as 'trading on equity'. It is the ratio of long-term debt to total funds employed. Financial leverage indicates the change in taxable income as a consequence of change in operating profit. It signifies the presence of fixed cost capital (debentures and preference shares) in the total capital structure of the company
- Operating leverage measures percentage change in operating profit as a result of percentage change in sales, and financial leverage measures percentage change in taxable profit or earnings per share (EPS) due to percentage change in operating profit *i.e.,* EBIT.
- The financial leverage is considered superior as it indicates the market price of the shares. The management is always anxious to increase the market price of shares by increasing the net worth of the company. For this purpose the management resorts to 'trading on equity' that helps in increasing the company's operating profits, and at the same time in increasing the market prices of its shares.
- A proper combination of operating and financial leverages is a blessing for the company's growth

3.12 REVIEW QUESTIONS

1. What is the meaning of capital Budgeting Explain the need for capital Budgeting?
2. What are the kinds of capital Budgeting decisions? What are the factors affecting capital budgeting decisions?
3. What are the essential components of capital Budgeting Analysis?
4. Discuss capital expenditure control?
5. Discuss in detail the techniques of Evaluating capital Budgeting decisions.

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6. What are the directives of capital Budgeting
7. What is Capital Rationing
8. What are the risks associated with capital Budgeting Techniques?
9. What are the techniques of adjusting risks?

UNIT 4: DIVIDEND POLICY

NOTES

Structure

4.1 DIVIDEND

The term 'dividend' refers to that part of divisible profits of a company, which is distributed among its shareholders. In other words, dividend is that portion of company's profit, which is distributed among its shareholders as percentage of par value of share or at a fixed rate per share according to the decision of its board of directors.

According to **Hunt,** *"Dividend is the income received by the owners of corporation which they receive in the capacity of its owners."*

Although entire profit of the company belongs to its shareholders but equity shareholders cannot force the company to declare dividend out of the residual income left after payment of dividend to preference shareholders at a fixed rate. If additional finance is required by company for its future programmes than its board of directors can retain entire or a portion of profits for the purpose of reinvestment. In such a situation either dividend will not be declare at all or it will be declared at a very low rate. While declaring the dividend Board should keep following in mind:

Shareholders expect reasonable return in the form of dividend on their investment in shares. Reasonable rate of dividend enhance goodwill, market price of shares of and future possibilities of investment in the company. Any decrease in dividend rate adversely affects the goodwill, market price of shares of company and shareholders also feel dissatisfied.

Financial needs of company should be considered before declaring dividend. If additional finance is required in future for the expansion and modernization programmes then dividend should be declare at a lower rate. Further to strengthen the financial position of the company, the Board should follow conservative dividend policy.

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4.2 FORMS OF DIVIDEND

Dividend can be classified on the basis of distribution method. Different forms of dividend are as follows:

1. **Cash Dividend:** The company whose liquidation position is sound also prefer distribution of cash dividend, it is traditional, simple and very popular form. According to section 205 of Companies Act 1956, Indian companies cannot declare dividend expect in cash, although stock dividend is an exception to it.
2. **Stock Dividend:** Stock dividend can be distributed when the company does not have enough cash resources for dividend payment. In this case company does not distribute dividend incase rather it allots new shares to shareholders for an amount equal to dividend declared without payment being received in cash. Such shares are known as bonus shares. Further, a company may make its partly paid shares fully paid without payment being received in cash in lieu of dividend declared.
3. **Bond Dividend:** A company can also distribute dividend in the form of bond or debentures. These bonds are long term. Such type of dividend is distributed only when the company is capable of bearing the increased burden of interest on bonds, debentures. Sometimes promissory notes are given in lieu of dividend and interest may also pay on such notes. This is known as scrip dividend. Scrips are usually short-term. Usually such scrips are of short period, payable generally with in a period of six months.
4. **Property Dividend:** Dividend can also be paid in the form of property instead of cash. Securities of other companies and government can also be distributed as dividend among the shareholders. This form of dividend payment is rarely opted by companies because this form of dividend is usually uncomfortable to the shareholders.
5. **Composite Dividend:** When the dividend is paid partly in cash and partly in the form of property then it is known as composite dividend.
6. **Optional Dividend:** Instead of paying composite dividend, if the company gives option to its shareholders either for cash dividend or for property dividend then it is called optional dividend. Usually shareholders prefer cash dividend.
7. **Interim Dividend:** Usually the company declares dividend at the end of financial year. In such a case it is called regular dividend. A company pays interim dividend for the current year before the accounts for that period have been closed. Such dividend is paid when the company has heavy earnings during the year. Sometimes such dividend is declared to affect favorably the total conditions of capital market. Interim dividend can be paid if authorized by the Articles. It is to be noted that the directors have the right to cancel the declared interim dividend before it is actually paid off.
8. **Extra or Special Dividend:** When the management of company do not want to make frequent changes in the regular rate of dividend but company is having good amount of profits or undistributed reserves then they can declare extra or special dividend. This dividend is usually paid separately with the regular dividend. Thus, special dividend is an abnormal and non-recurring form of dividend payment.

   Special Note: sec 205 (3) of Companies Act 1956 prohibit payment of dividend in any form other than cash. But distribution of dividend by issue of bonus shares by capitalization of profits is an exception to it.

4.3 DIVIDEND POLICY

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The term Dividend Policy refers to the policy regarding quantum of profits to be distributed as dividend. Dividend is that part of a company's divisible profits which is distributed among its shareholders as they return on their shareholdings. The concept of dividend policy implies that companies through their Board of Directors evolve a pattern of dividend payment which has a bearing on future action.

4.3.1 Objectives and Importance of Dividend Policy

Dividend Decisions are of crucial significance to the maximization of shareholders' wealth and the firm. The most important aspect of dividend policy is to determine the amount of profit to be distributed among shareholders and the amount of profit to be retained in the business for financing its long-term financing and the wealth of shareholders as there is a reciprocal relationship between the cash dividend and retained, earnings. Thus, while evolving a Dividend Policy, the Corporate Management will be guided by the following three Objectives:

1. **Adequate Provision of Funds:** Since dividend policy has a direct bearing on retained earning of a company, the first objective of its divided policy should be to ensure that retained earnings are sufficient enough to finance the investment requirements of the company.
2. **Return to Shareholders:** The record objective of dividend policy should be to ensure a reasonable rate of return to shareholders on their shareholders in the form of dividend in order to satisfy their desire for current income and develop their confidence in the company's successful operations.
3. **Maximization of Shareholders Wealth:** The third objective of a company's dividend policy should be to maximize the shareholders' wealth in the long-run through retention of earnings and their investment in profitable projects.

4.3.2 Factors Affecting Dividend Policy

The management of every company attempts to distribute a reasonable dividend to the shareholders. But they are not successful in doing so, because a number of factors may restrict them from regular payment of dividend at a reasonable rate to the shareholders. The various internal and external factors affecting the Dividend Policy of a company are as follows:

Internal Factors

1. **Nature of Business:** The nature of a company's business affects its dividend policy. Companies with regular and definite earnings such as public utilities can follow a stable dividend policy. On the other hand, companies with fluctuating earnings can not follow a stable dividend policy.
2. **Age of Company:** Dividend Policy is also influenced by the age of a Corporation. A newly established company may require much of its earnings for its expansion and development purposes and cannot distribute reasonable dividend to the shareholders regularly. Thus, they may follow a rigid dividend policy. On the other hand, well established old companies may regularly distribute a reasonable dividend to the shareholders by adopting a stable Dividend Policy.
3. **Liquidity Position:** Liquidity Position of the company is also an important determinant of the Dividend Policy to be followed by the management, because the payment of dividends results in cash outflow from the company. Companies with insufficient cash resources

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and unsatisfactory overall liquidity position cannot pay dividend in cash or at a higher rate. Conversely, companies with sufficient cash resources and strong liquidity position can pay cash dividend to the shareholders at a reasonable rate.

4. **Need for Additional Capital:** Financial needs of the company also affect its dividend policy because a part of its divisible profits may be retained for strengthening the financial position of the company. Of course, the financial needs of the may be indirect conflict with the desire of the shareholders to receive large dividends, but it is prudent to retain a large part of divisible profits for meeting the current financial requirements of the company than the desire of the shareholders. In order to maximize the shareholders' wealth, it is desirable to retain earnings in the business only when profitable investment opportunities exist. Thus, companies requiring more additional working capital for expansion and development programs, a rigid dividend policy will be adopted. Small and new companies find it difficult to raise additional working capital, and so they retain a big part to their profits and distribute dividends at low rates.
5. **Desire of Shareholders:** Although the directors have considerable liberty in respect of the disposal of the company's divisible profits for various purposes, but they can not overlook the desire of shareholders while deciding about the dividend policy. The shareholders expect a reasonable return on investment regularly and an increase in the market value of shares held by them. If the management does not distribute dividends to respect the desire of shareholders, it will be difficult for the company to raise additional capital in future. Thus, shareholders desire influence the Dividend Policy.
6. **Nature of Ownership:** The nature of ownership also influences the dividend decisions. A closely held company with ownership in the hands of a limited number of persons may adopt a conservative dividend policy with the assent of the shareholders because ploughing back of a large part of profits will ultimately increase the benefits of the existing shareholders only. But, if the number of shareholders of a company is very large and widely scattered, the company will face a great difficulty in securing such assets as they may insist on the distribution of higher dividend in cash immediately. In this case, the company will have to adopt a liberal Dividend Policy.
7. **Desire of Control:** Dividend Policy is also affected by the desire of shareholders or the management to retain control over the company. Issue of new shares for procuring additional funds will inevitably dilute the control of the existing shareholders over the company. In case of strong desire for control, the additional funds for profitable investment opportunities shall be mobilized by retaining sufficient earnings, and the company will follow a rigid Dividend Policy.
8. **Dividend Policies of Other Companies:** Dividend Policy of a company is also influenced by the dividend policies of the competing companies. The current rate of dividend should be around the average past rate of dividend. Other thing being equal, a company would never like to pay dividends at a lower rate than that paid by the rival companies.
9. **Redemption of Debts:** Company can redeem its part debts either by taking fresh loans or by retention of its earnings at a high rate. If the second alternative is adopted by the management, a large part of company's divisible profits will have to be retained for this purpose. Obviously, it will lower down the rate of dividend and the company will have to adopt a rigid dividend policy. Sometimes, the creditors may also restrict the company from the dividend distribution so long as their loan is outstanding.
10. **Access to the Capital Market:** Where the liquidity position of a company is not good still it can distribute dividends if it has access to the capital market for raising additional funds. Well established large firms usually have better access to the capital market and

can adopt a liberal and stable dividend policy. Small and new companies, on the other hand, depend on their internal resources, *i.e.,* retained earnings, as they find it difficult to raise the additional funds from external sources.

11. **Investment Opportunities:** The dividend policy has the affect of dividing a company's divisible profits into two parts, namely, retained earnings and dividends. Retained earnings provide funds for financing the company's long-term growth whereas cash dividends involve the use of available funds of the company. Since retaining of divisible profits belonging to the shareholders has cost equal to the external sources of financing, the management retains a large part of it so long as sufficient profitable investment opportunities are available. Where the company has no profitable investment opportunities, it distributes the divisible profits and retained earnings by way of cash dividends. Thus, availability of profitable investment opportunities also influences the dividend policy.
12. **Financing Policy of the Company:** Dividend Policy is also influenced by the Financing Policy of the company. If the company decides to finance the development and expansion program through retention of earnings, it will have to pay lower dividend. However, if the company feels that external borrowing is cheaper than internal financing, it may decide to pay higher dividends. Thus, financing policy of the company determines its dividend policy.

External Factors

1. **General State Economy:** The general economic conditions of the economy affect significantly the management decision to retain or distribute the company's earnings. In case of uncertain economic and business conditions, the management may retain the whole or a large part of the companies' profits to build up reserves to absorb shock in future. Similarly, the management may also retain a large part of its earnings in period of depression in order to preserve the company's liquidity position. The management may also not be liberal in dividend payments in periods of prosperity when the earning power of the company warrants it because of a availability of larger profitable investment opportunities. In periods of inflation, the management may also withhold dividend payments in order to retain a large part of the earnings for replace-ment of worn-out assets.
2. **Legal Restrictions:** The dividend policy of companies is also conditioned by the provisions of the Companies Act which puts several restriction regarding payments and declaration of dividends. Moreover, companies are required to provide for depreciation on assets and transfer a certain prescribed percentage of net profits to the reserves before declaring dividend on shares. It is provided that dividends can only be paid out of current and accumulated profits of the company. Likewise, the Indian Income Tax Act also lays down certain restrictions on payment of dividends. The management has to take into consideration all the legal restrictions while determining the dividend policy of the company otherwise it may be declared as ultra virus.
3. **State of Capital Market:** In case of favorable capital market conditions when funds may be raised from different sources without much difficulty, the management of company may follow a liberal dividend policy. However, if capital market conditions are unfavourable for raising funds, the management should follow a conservative Dividend Policy.
4. **Change in Government Policies:** The Profit earning capacity of companies are widely affected by the change in fiscal, industrial, labour, control and other Government

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Policies. Sometimes, Government restricts the distribution for divided beyond a certain percentage in a particular industry as was done by the Government of India in July 1974.

5. **Taxation Policy:** The tax policy followed by the Government also affects the dividend policy. High taxation reduces the earnings of companies as a result of which the rate of dividend is lowered down. Sometimes, Government levies dividend tax on distribution of dividend a certain limit. Likewise, the Government may give tax incentives to companies retaining a large part of their profits. In such a case, the management may be inclined to retain a large part of profit's and follow a conservative Dividend Policy.
6. **Contractual Responsibility:** Sometimes dividend policy is also influenced by the contractility of the company in respect of loans taken from financial agencies. The tenders of the company generally put restrictions on dividend payments to protect their, interests in case the firm is experiencing liquidity or profitability problems. The loan agreement may restrict the company from declaring dividend until a certain level of earnings has been achieved, or paying cash dividends beyond a certain amount or percentage of profits until the entire amount of loan is refunded.
7. **Public Opinion:** Public Opinion also affects the dividends policy. Companies which distribute dividends at a very high rate are generally criticized in all sections of the society. Consumers demand for curtailment in price of goods produced by the company and employees of the company demand for increased wages and salaries. Thus, the management has also to consider the public opinion while determining the dividend policy of the company.

4.4 THEORIES OF DIVIDEND DECISION

4.4.1 Theory of Irrelevance

According to this approach the retained earnings can be used only when sufficient opportunities are available for investments or distribute the entire profits to equity shareholders. Therefore, it is a financial decision and does not influence the market value of the shares. Thus, the decision to pay dividends to retain the earnings may be taken as a residual decisions.

Modigliani and Miller Approach (MM Approach)

According to Modigliani and Miller, dividends are irrelevant to the value of shares (and firm) because it does not affect the wealth of shareholders. The value of the firm depends on the firm's earnings from its investment policy. The dividend decision is of no significance in determining the value of the firm.

1. **Assumption:** There is a perfect capital market in which all investors are rational. Information is available to all free of cost. There are not transaction costs. Securities are infinitely divisible. No investor is large enough to influence the market price of securities. There are no flotation costs.
2. **No Taxes:** There are no taxes or there are no differences in tax rates applicable to capital gains and dividends.
3. **Fixed Investment Policy:** Every firm has a given (fixed) investment policy which does not change. Financing of new investments out of retained earnings will not change the business risk complexion of the firm and therefore, is no change in the required rate of return.

4. **Perfect Knowledge:** There is perfect knowledge with every investor as to future investments and profits of the firm. They are able to fore cast future prices and dividends with certainty.

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The Arbitrate Factors

The crux of MM theory is the arbitrate argument. Arbitrate refers to entering simulta-neously into two transactions which balance or completely offset each other. These are the acts of paying out dividends and raising external funds to finance investment programs. Between dividend and retention of earnings, the investors would be indifferent mainly due to the balancing nature of internal financing (retained earnings) and external financing (raising of funds externally) consequent upon distribution of earnings to finance investment programmes.

This can be expressed symbolically as follows:

$$P_0 = \frac{D_1 + P_1}{(1 + K_e)}$$

where :

P_0 = Prevailing market rice of a share or market price per share
at the beginning of the period.

K_e = Cost of equity capital or rate of capitalisation

D_1 = Dividend per share at the end of period one

P_1 = Market price of a share at the end of period one.

The following equation can be derived for determining the value of P_1.

$$P_1 = P_0(1 + K_e) - D_1$$

Computation of the Number of New Shares to be Issued

The investment programme of a firm, in a given period of time, can be financed either by retained earnings or by issue of new shares or both. The number of new shares to be issued can be determined by the following equation:

$$m = \frac{I - (X - {}_nD_1)}{P_1}$$

where,

m = Number of new shares to be issued

P_1 = Price at which new issue is to be made

I = Amount of investment required

X = Total net profit of the firm during period

nD_1 = Total dividends paid during the period.

Calculation of Value of Firm According to M.M. Model

The value of the firm can be ascertained with the help of the following formula :

$$nP_0 = \frac{(n + m)P_1 - (I - X)}{1 + K_e}$$

Where,

m = Number of shares to be issued.

I = Investment required.

X = 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.

nP_0 = Value of the firm.

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According to M.M. Model, the dividend policy of a firm is irrelevant as it does not affect the value of the firm.

Example 4.1 *A company belongs to a risk class for which the capitalisation rate is 25%. Its total number of existing shares are 1,00,000 at selling price of Rs. 40 each. The company is thinking to declare dividend of Rs. 2.50 per share at the end of the current year. Using the Modigliani and Miller Model and assuming no taxes, answer the market price of equity share at the end of the year, when*

(i) Dividend is declared and

(ii) Dividend is not declared. Explain that whether dividend is paid or not, the wealth of equity shareholder is equal.

Solution. Given: P_0 = Rs. 40. D_1 = Rs. 2.50, K*e* = 25% or 0.25, P_1 = ?

(i) If dividend is declared:

$$P_1 = P_0 (1 + K_e) - D_1$$
$$= 40 (1 + 0.25) - 2.50 = 50 - 2.50 = 47.50$$

(ii) If dividend is not declared :

$$P1 = P0 (1 + Ke) - D1$$
$$= 40 (1 + 0.25) - 0 = 50 - 0 = \text{Rs. } 50$$

Conclusion: It can be observed that whether dividend is paid or not the wealth of equity shareholders is equal as under.

(i) When dividend is paid: Equity shareholders will get Rs. 47.50 from share's price & Rs. 2.50 as dividend i.e., = Rs. (47.50 + 2.50) = Rs. 50

(ii) When dividend is not paid: Equity shareholders will get Rs. 50 from share's market price & gets no dividend i.e., = Rs. (50 + 0) = Rs. 50

Example 4.2 *Meerut Syntex Limited belongs to a risk class for which the appropriate capitalisation rate is 10%. It currently has outstanding 50,000 shares of Rs. 10 each. The firm is contemplating the declaration of dividend at Rs. 0.60 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 M.M. 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

$$P_1 = P_0 (1 + Ke) - D_1$$
$$= 10 (1 + 0.10) - 0.60$$
$$= (10 \times 1.10) - 0.60$$
$$= \text{Rs. } 10.40$$

(ii) Number of shares to be issued

$$m = \frac{I - (X - nD_1)}{P_1}$$

$$= \frac{1,00,000 - \left[(50,000)\right] - (50,000 \times 0.60)}{10.40}$$

$$= \frac{80,000}{10.40} = 7,700 \text{ (Approx)}$$

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(iii) Value of the firm

$$nP_0 = \frac{(n+m)P_1 - (I - X)}{1 + K_e}$$

$$= \frac{\left(50,000 + \frac{80,000}{10.40}\right) \times 10.40 - (1,00,000 - 50,000)}{1 + 0.10}$$

$$= \frac{(5,20,000 + 80,000) - (50,000)}{1 + 0.10}$$

$$= \frac{6,00,000 - 50,000}{1.10} = \frac{5,50,000}{1.10}$$

= Rs. 5,00,000

(B) **Value of the firm when dividend are not paid**

(*i*) Price per share at the end of current financial year

$$P_1 = P_0 (1 + K_e) - D_1$$
$$= 10 (1 + 0.10) - 0$$
$$= 10 \times 1.10 = \text{Rs. } 11$$

(*ii*) Number of shares to be issued

$$m = \frac{I - (X - nD_1)}{P_1}$$

$$= \frac{1,00,000 - (50,000 - 0)}{11}$$

$$= \frac{50,000}{11} = 4,545 \text{ (Approx)}$$

(iii) Value of the firm

$$nP_0 = \frac{(n+m)P_1 - (I - X)}{1 + K_e}$$

$$= \frac{\left(50,000 + \frac{50,000}{11}\right) \times 11 - (1,00,000 - 50,000)}{1 + 0.10}$$

$$= \frac{(5,50,000 + 50,000) - (50,000)}{1 + 0.10}$$

$$= \frac{5,50,000}{1.10} = \text{Rs. } 5,00,000$$

Since the value of the firm in both the cases (*i.e.,* when dividends are not paid and when paid) is Rs. 5,00,000. It can be concluded that the payment of dividend does not affect the value of the firm.

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Criticism

M.M's Hypothesis assumptions are unrealistic. Its validity is open to question on two counts:

(i) Imperfection of capital market, and

(ii) Resolution of uncertainty. It is wrong to presume that there are no taxes, flotation costs do not exist and that there is absence of transaction costs.

4.4.2 Theory of Relevance

According to this theory, the dividend decision directly influences the value of the firm. If a firm has higher returns that the cost of equity, then it has the opportunity of investing finance for expansion and diversification, can keep certain amount of profits in the form of retained earnings. This method of financing increases the value of the firm or increases earnings per share.

If a firm's returns are equal to the cost of funds which are also known as normal firms, the dividend decisions and the decisions as the retained earnings does not have any bearing as the market value of shares.

If the firm's returns are less than the cost of funds, the dividend pay out ratio should be more to gain higher market value of shares otherwise, investors may prefer to have their investments on same other opportunities which would directly affect the EPS.

1. Walter's Model

Walter's model supports the theory that dividends are relevant. The choice of dividend policies affects the value of enterprise because it maximizes the wealth of shareholders. The investment policy of a firm can not be separated from its dividend policy and both are, inter linked. The choice of an appropriate dividend policy affects the value of an enterprise.

Assumptions

1. All the financing is dome through retained earnings and external sources of funds like debt or new equity capital are not used.
2. With additional investments undertaken, the firm's business risk does not change. It implies that firm's internal rate of return 'R' and its cost of capital 'K' are constant.
3. The firm has a very long or perpetual life.
4. All earnings are either distributed as dividends or internally retained.
5. There is no change in the key variables, namely beginning earnings per share (E) and dividend per share (D).

The Key Arguments

The key argument in support of this model is the relationship between the return on a firm's investment of its internal rate of return (r) and its cost of capital or the required rate of return (K). The firm would have an optimum dividend policy which will be determined by the relationship of r and k. If the return on investments exceeds the cost of capital, the firm should retain the earnings. On the contrary, It should distribute the earnings to the shareholders if the required rate of return exceeds the expected return on the firm's investments. If a firm has adequate profitable investment opportunities, it will be able to earn more than what the investors expect so that $r > K$. Such firms are called 'growth firms' who should plough back the entire earnings with in the firm. If a firm does not have profitable investment opportunities (When $r < k$) the entire earnings should be distributed as dividend.

Walter's view on the optimum dividend payout ratio can be summarised as follows:

(*i*) *Growth Firm: Internal Rate more than Opportunity Cost of Capital (r > c):* Growth firms are those firms which expand rapidly because of ample investment opportunities yielding returns higher than the opportunity cost of capital. These firms are able to reinvest earnings at a rate (*r*) which is higher than the rate expected by shareholders (*c*). They will maximise the value per share if they follow a policy of retaining all earnings for internal investment. In other words, in such a case optimum pay-out ratio would be zero.

(*ii*) *Declining Firms : Internal Rate less than Opportunity Cost of Capital (r < c):* On the contrary, when $r < c$, it indicates that a firm does not have profitable investment opportunities to invest their earnings. They are known as declining firms. In this case, rate of return from new investment (*r*) is less than the required rate of return or opportunity cost of capital (*c*), and as such, retention is not at all profitable. The investors will be better-off if earnings are paid to them by way of dividend and they will earn a higher rate of return by investing such amounts elsewhere. For such firms the optimum pay out ratio would be 100% and the firms should distribute the.

(*iii*) *Normal Firms : Internal Rate Equals Opportunity Cost of Capital:* Most of the firms do not have unlimited surplus-generating investment opportunities, yielding returns higher than the opportunity cost of capital. After exhausting super profitable opportunities, these firms earn on their investments a rate of return that is equal to the cost of capital *i.e.,* $r = c$. Such firms are termed as normal firms.

Walter's Formula for Determining the Value of a Share

Prof. Walter has given the following formula to ascertain the market price of share:

$$P = \frac{DPS + \frac{r}{c}(EPS - DPS)}{c}$$

Where,

P - Theoretical market value of the company's equity shares

DPS- Dividend per share

r - Internal rate of return on investment

c - Rate of capitalization in the market

EPS - Earning per share

Example 4.3 *From the following information supplied to you, ascertain whether the firm's dividend payout ratio is optimal according to walter. The firm was started a year ago with an equity capital of Rs. 10 lakh.*

Earnings of the firm	Rs. 1,00,000
Dividend Paid	Rs. 75,000
Price-earnings ratio	12.5

Equity Share Capital : 10,000 shares @ Rs. 100.

The firm is expected to maintain its current rate of earnings on investment.

(ii) What should be the price-earnings ratio at which the dividend payout ratio will have no effect on the value of the share?

(iii) Will your decision be changed if the P/E ratio is 8, instead of 12.5?

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Solution.

EPS = Rs. 1,00,000/10,000 shares = Rs. 10

We know that P/E Ratio = $\frac{\text{Market Price}}{\text{EPS}}$

$\therefore$ Market Price = P/E Ratio × EPS

= 12.5 × 10 = Rs. 125

$\therefore$ Rate of Capitalisation in the market (C) :

$$= \frac{\text{EPS}}{\text{Market Price}} \times 100 = \frac{10}{125} \times 100 = 8\%$$

Internal rate of return on investment (r) :

$$= \frac{1,00,000}{10,00,000} \times 100 = 10\%$$

Dividend Payout Ratio $= \frac{75,000}{1,00,000} \times 100 = 75\%$

Market Price per share when D/P ratio is 75%.

$$p = \frac{\text{DPS} + \frac{r}{C}(\text{EPS} - \text{DPS})}{C}$$

$$= \frac{(75\% \text{ of Rs. } 10) + \frac{10\%}{8\%}(10 - 7.50)}{8\%}$$

$$= \frac{(7.50) + (1.25)(2.50)}{8\%}$$

$$= \frac{7.50 + 3.125}{8\%} = \frac{10.625}{8\%} = \frac{10.625 \times 100}{8} = \text{Rs. } 132.81$$

In this problem $r > c$, 75% dividend payout ratio is not optimal. The zero percent dividend payout ratio would be optimum, as at this payout ratio, the value of the share would be maximum This is shown in the following calculations :

$$P = \frac{0 + \frac{10\%}{8\%}(\text{Rs. } 10 - 0)}{8\%} = \frac{(1.25 \times 10) \times 100}{8}$$

= Rs. 156.25

(ii) According to Walter if r = c then there will be no effect on the value of the share.

As r = 10%, so P/E Ratio of 100/10 = 10 times would have no effect on the value of the share.

(iii) If P/E Ratio = 8

$\therefore$ Rate of capitalisation in the market (C) = $\frac{1}{8} \times 100 = 12.5\%$

In this situation C (12.5%) > r (10%), the 100% dividend payout ratio would maximise the value of the share. It is evident from the following:

$$P = \frac{\text{Rs. } 10 + \frac{10\%}{12.5\%}(\text{Rs. } 10 - \text{Rs. } 10)}{12.5\%} = \frac{10 \times 100}{12.5} = \text{Rs. } 80$$

Weaknesses

Though Walter's model of share valuation is useful in explaining the effect of dividend policy on value of shares under different circumstances and assumptions, it has the followings weaknesses:

1. That '*r*' is constant is not a realistic assumption because when increased investments are made by the firm, *r* also changes. Thus, this model becomes in-operative.
2. By assuming *k* to be constant, it ignores the effect of risk on the value of the firm.
3. The Firm's investments are financed exclusively by retained earnings and no external financing is used. It is an unrealistic assumption.

Conclusion

If the cost of funds is less than Rate of Return, firm should retain its profit for further investments of growth. As the growth firm can exploit more returns and provide these value to shareholders.

If the cost of funds is higher than Rate of Return, firm should declare high dividend to maintain high returns to equity shareholders.

If the cost of funds is equal to Rate of Return, dividend payout dies not affect the market values of shares.

2. Gordon's Model

According to Gordon's Model dividends are relevant and dividend policy affect's the value of the firm. The financial manager can use the relationship of dividend policy and the market value of the firm to determine how should be retained or paid out and can also ascertain its subsequent effect on market price.

Assumptions

1. The firms are in all equity firm. No external financing is used and investment programmes are financed exclusively by retained earnings.
2. The internal rate of return r and appropriate discount rate k for the firm are constant.
3. The firm has perpetual life and its stream of earnings is perpetual.
4. The corporate taxes do not exist.
5. The retention ratio, once decided upon, is constant. Thus, (g – br) the growth rate is also constant.
6. K < br. If this condition is not fulfilled, the firm cannot get a meaningful value for the share.

Comparison to Water's Model

Gordon's model contents that dividend policy of the firm is relevant and that investors put a positive premium on current incomes/dividends. He argues that dividend policy affects the value of shares even in a situation in which the return on investments of a firm is equal to the required/capitalization rate (i.e., = Ke). On the other hand, Walter's model is of the view that the investors are indifferent between dividend and retention.

Crux of Arguments

The crux of Gordon's arguments is that investors are risk aversive and they put a premium on a certain return and discount/penalize uncertain returns. The investors are rational and on the want to avoid risk which means the possibility of not getting a return on investment the payment of

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current dividends which removes any chance of risk. If the firm retains the earnings and current dividends are withheld the investors can expect to get a dividend in future. Both with respect to the amount as well as the timing the future dividend is uncertain. The national investors can be expected to prefer current dividend and discount future dividends. As compared to current dividend they would place less importance on future dividends. If the earnings are retained, the market price of the shares would be advisedly affected.

Bird in the House Argument

The above argument under Gordon's model of dividend relevance has been described as a bird in the hand argument. It is based on the logic that what is available at present is preferable to what may be available in the future. Basing his model on this argument, Gordon argues that the future is uncertain and the more distant the future, the more uncertain it is likely to be. If current dividends are withheld to retain profits it is uncertain whether the investor would at all receive them later. Investors would naturally like to avoid uncertainty. They would be inclined to pay a higher price for shares on which current dividends are paid. Conversely, they would discount the value of shares of a firm which postpones dividends. The discount rate changes with the retention rate or the level of retained earnings.

According to Gordon, the market value of a share is equal to the present value of future streams of dividends.

Gorden's formula for Determining the Value of a Share at the beginning of year:

$$P = \frac{E(1-b)}{(k-br)}$$

where,
- P - Value of equity shares
- E - Earning per share
- b - Retention Ratio Or Percentage of Earnings Retained
- $(1-b)$ = D/P ratio *i.e.,* percentage of earnings distributed as dividend
- r = Rate of return earned on investments made by the firm
- br - Growth rate of earnings and dividends
- k - Cost of Capital Or Capitalisation Rate Or Rate of Return required by shareholders

Implications of Gordon's model

1. When the rate of return of firm on its investment is greater than the required rate of return, i.e., when r > k, the price per share increases as the dividend payout ratio decreases. Thus, growing firm should distribute smaller dividends and should retain maximum earnings.
2. When the rate of return is equal to the required rate of return, i.e., 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 the rate of return is less than the required rate of return, i.e., when $r < k$, the price per share decreases 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 pay out would be 100%.

Example 4.4 *The following information is given about Vishank Ltd.*:

EPS (Earning Per Share)	Rs. 8.00
Rate of return required by shareholders	16%

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Assuming that Gorden Valuation Model holds, what rate of return should be earned on investments to ensure that the market price is Rs. 50 when the dividend payout ratio is 20%.

Solution.

Given: EPS (E) = 8.00;

Rate of return required by shareholders (k) = 16% = 0.16

Market Price of Share (P) = Rs. 50

D/P Ratio $(1 - b)$ = 20% = 0.20

$\therefore$ $b = 1 - 0.20 = 0.80$

According to Gorden Model :

$$P = \frac{E(1-b)}{(k)-(br)}$$

by substituting the value in the above formula:

$$50 = \frac{8(0.20)}{(0.16)-(0.80)(r)}$$

$$50 \times [(0.16) - (0.80)\,(r)] = 1.60$$

$$(50 \times 0.16) - (50 \times 0.80\, r) = 1.60$$

$$8 - 40r = 1.60$$

$$40r = 8 - 1.60$$

$$r = 6.40/40 = 0.16\%$$

Hence, the firm should earn a return of 16% on its investments.

4.5 ESSENTIALS OF SOUND DIVIDEND POLICY

1. **Stability of Dividend:** Shareholders value stable dividends more than the fluctuating ones. Thus, regular payment of a certain amount of dividend for a long period, irrespective of fluctuations in the company's earnings, constitutes the main characteristic feature of a Sound Dividend Policy.
2. **Gradual Increases in Dividends:** In order to attract the Potential investors and satisfying the existing shareholders, the management should gradually increase the rate of dividend with the increase in earnings of the company. However, it must be particularly taken into account that dividend is paid out of current earnings or retained profits only. In case the company earns more profit in a year, the manag-ement can maintain the stability of dividend by distributing interim dividend along with the regular dividend. In this way, a sudden increase in the rate of dividend may be avoided in years when the company earns more profits.
3. **Moderate Dividend during Initial Years:** During Initial Years of a company, the shareholders should be distributed dividend at a low rate so that the liquidity position of the company may be strengthened. Afterwards, the dividends may be gradually increased along with the progress and increase in earnings of the company.

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4. **Distribution of Cash Dividend:** For avoiding the uncertainty of rate of return in return in future and for meeting their current living expenses, the shareholders usually prefer cash dividends than capital gains accruing as a result of ploughing back of profits in the business. Hence, dividends should be distributed in cash. However, when the company's liquidity position is not sound or it wants to capitalize its earnings, it may also distribute dividends in the form of shares known as bonus shares. Distribution of stock dividend should be within reasonable limits otherwise the company may face the problem of over-capitalization.
5. **Other Considerations:** Dividend should be distributed only after taking into consideration the liquidity position of the company. In case the losses of previous years are still pending, the company should pay dividends at a lower rate until such losses are fully written off. In order to maintain stability in dividends, the company should establish Dividend Equalization Fund so that money in this fund may be used for distribution of dividend in years of low earnings.

4.5.1 Company Law and Dividend Distribution

It is obligatory for Indian companies to follow the provisions of section 93 and 205 to 207 as well as the rules contained in table 'A' of the Indian Companies Act 1956 for declaration and distribution of dividend. Some of the provisions regarding Declaration and Distribution of Dividend are as follows:

1. **Payment of Dividend on Paid-up Capital:** According to section 93, a company may, if so authorized by its Articles, pay divided on the paid-up value of shares.
2. **Rules Regarding Dividends:** Rules 85 to 94 of table A provide:
   (i) A company may declare dividend in its general meeting provided it does not exceed the amount recommended by the board of directors;
   (ii) The board of directors may from time to time pay to the members such interim dividends as appears it to be justified by the profits of the company;
   (iii) Notice of any dividend should be given to those who are entitled to receive it;
   (iv) The directors may transfer any amount they think proper to the reserve fund which may be utilized for any contingencies;
   (v) When a dividend has been declared, it becomes a liability of the company to the shareholders from the date of its declaration but no interest can be claimed on it.
3. **Dividend only out of the Profits:** Dividends can only be declared or paid out of the current profits of the company or past accumulated profits, and money provided by the central or any State Government for the payment of dividends in pursuance of a guarantee given by that Government. No dividend can be paid out of capital. Director who is responsible for payment of dividend out of capital shall be personally liable to make such amount good to the company. Companies are not entitled to pay any dividend unless current year's depreciation or arrears of depreciation have been provided for out of the profits and an amount of 10% of profits has been transferred to the reserves of the company. However, Central Government may allow any company to declare or pay dividends out of profits before providing for any depreciation. Capital gains may also be utilized for the declaration of dividends provided there is nothing in Articles prohibiting distribution of dividend out of capital gains, they have been realized in cash and they remain as profits after revaluation off all assets and liabilities. Dividends can not be paid out of accumulated profits unless current losses are made good. (Section205).

4. **Payment of Dividend only in Cash:** Dividends are to be paid in cash only except in the following circumstances:
   (i) By capitalizing the profits by issues of fully paid bonus shares, if Articles so permit, provided all legal formalities have been satisfied in respect of issue of bonus share;
   (ii) By paying up any unpaid amount on partly paid-up shares. (Section205).
5. **Payment of Dividend to Specified Persons:** Dividends shall be paid only to those shoes names appear on the Register of Members on the date of declaration of dividends or to the holders of divided warrants, if issued by the company. (section 206)
6. **Payment of Dividend within 42 Days:** Dividend must be paid within 42 days of its declaration except in the following circumstances:
   (i) By operation of law of insolvency;
   (ii) Incompliance of the directors of the shareholders;
   (iii) Where right to receive dividend is pending decision;
   (iv) Where it is not due to the default of the company;
   (v) If company lawfully adjusts the amount against any debt due from the shareholders.

   Any director in default shall be liable to punishment of 7 days of simple imprisonment or fine or both. (Section 207)
7. **Payment of Interim Dividend:** Directors of a company may pay interim dividend subject to the provision of Articles. Interim Dividend can be paid at anytime between the two annual general meetings taking into full year's accounts and after providing full year's depreciation on the fixed assets.
8. **Transfer of Unpaid Dividend to a Special Account:** Where a company has declared a dividend but has not posted the dividend warrant in respect thereof within 42 days to the shareholders entitled to it, such unpaid dividends shall be transferred to a special account to be opened by the company in that behalf in any scheduled bank to be called 'Unpaid Dividend Account'. If the unpaid dividends are not so transferred, the company shall pay an interest at 12% per annum. (Section 205)
9. **Transfer of Unclaimed Dividend to Central Government:** Any amount transferred to the Unpaid Dividend Account remains unclaimed or unpaid for three years from the date of such transfer shall be transferred to the General Revenue Account of the Central Government by the company along with a statement giving full particulars in respect of the sums so transferred and the last known address of the persons entitled to receive it and such other particulars as may be prescribed. The company is entitled to a receipt for such transfer from the Reserve Bank of India.

   Where a company fails to comply with the above provisions, the company and every officer of the company who is in default shall be punishable with a fine which may extend to Rs.500 for everyday during which default continues.

4.5.2 Dividend Policy of Indian Companies

Three types of Dividend Policies are usually followed by companies:

1. **Liberal Dividend Policy:** Under Liberal Dividend Policy a large part of profits is distributed as dividend among the shareholders. The dividend payout ratio under this policy exceeds 80%. Adoption of this policy increases the goodwill of the company and

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income of the shareholders, but the financial soundness of the company is adversely affected in the long run. Liberal Dividend Policy also encourages speculation in shares and provides opportunity to the directors and their officers of the company to fulfill their vested interests.

2. **Conservative or Strict Dividend Policy:** Under this policy, companies retain a large part of profits financing their expansion and development programs and distribute minimum dividend to the shareholders. The companies adopting a conservative dividend policy either do not distribute dividends to the shareholders or distribute a minimum part of profits as dividends. Thus, the companies following strict dividend policy are in a position to retain sufficient financial resources for their development and expansion purposes. The profitable investment of reined profits results in increased earning to the company. Consequent to the increased earning capacity and financial soundness of the company, the market value of shares goes up, and the shareholders reap the capital gains. However, in practice, the shareholders are not satisfied with Strict Dividend Policy.
3. **Stable or Sound Dividend Policy:** Stable Divided Policy refers to a dividend policy which ensures regular payment of a certain minimum amount as divided irrespective of fluctuation in earnings from year to year. A Sound Dividend Policy attaches equal importance to the financial requirements of the company and interests of the shareholders. The divided payout ratio under this policy is 50%. In other words, 50% of the total profits is retained for profitable investment projects in the business so as to increase the earning capacity and goodwill of the company and also the market price of shares.

4.5.3 Bonus Shares of Stock Dividend

Bonus shares refer to the distribution of shares in lieu of or in addition to the cash dividend to the existing shareholders of the company. The bonus shares are allocated to the existing shareholders of the company in proportion to their present shareholdings. Hence, no change in ownership equity is effected. Bonus shares are, therefore, shares allotted by capitalization of reserves or surplus of a corporate enterprise.

Reasons for Issuing Bonus Shares

Issue of Bonus shares results in conversion of the company's profits into share capital and so it is also termed as capitalization of company's profits. A company Issues Bonus Shares in lieu of cash dividend for the following reasons:

(i) When Company is short of cash resources required for operation or expansion.

(ii) When Company wants to retain the entire profits for investment in profitable projects and satisfy the shareholders' desire to receive dividend.

(iii) When Company wants to earn higher profits in future in order to distribute increased dividends to shareholders.

(iv) When Company wants to avoid the conditions of under capitalization.

Effects of Issuing Bonus Shares

For Issuing Bonus Shares, an amount equal to the par value of bonus shares is transferred from reserves and surplus profit account to the shares capital account. The issue of bonus shares has the following three effects:

(i) It increases the total number of shares and reduces the retained earning of the company,

(ii) It reduces the earning and dividend per share,

(iii) It strengthens the liquidity position of the company.

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Advantages to the Company

Issuing of bonus shares by the company have following advantages to the company:

(i) *Conservation of Cash:* The issue of Bonus Shares or Stock Dividend enables the company to declare a dividend without using the cash resources that may be needed for financing the profitable investment opportunities with the company. The company may, thus, maintain its liquidity by retaining into earnings and, at the same time, satisfy the desire of the shareholders to receive dividends.

(ii) *Lowering the Increased EPS:* A company is having a high earning per shares (EPS) is likely to face problems both from employees and consumers. The employees of the company may feel that they are under-paid while consumers may demand a reduction in price for the company's products. Since issue of bonus shares results in increasing the number of share, the company can bring down the EPS to a reasonable limit without affecting the interests of the shareholders and annoyance of employees and consumers.

(iii) *Widening the Market for Shares:* Issue of Bonus Shares reduces the market price of the company's shares making them attractive for the ordinary investors. If bonus shares are not issued in case of highly profitable companies with increased business, the earning per share will go up and the market price their shares will touch a peal level. Thus, a large number of ordinary investors will not be attracted to the company's shares, and the market for its shares will be limited. Issue of Bonus Shares solves this problem by widening the market for the company's shares enabling it to trade on equity.

(iv) *Diffusion of Ownership:* Issue of Bonus Shares helps in diffusing the existing ownership of the company, because many existing shareholders sell their bonus shares in the market in order to convert them into cash for meeting their living expenses.

(v) *Economy in Capital Issue:* This is the most economical method of issue of share capital because underwriting commission or brokerage, etc., is paid in respect of issue of bonus shares to the existing shareholders.

(vi) *Increase in Borrowing Capacity:* Issue of Bonus Shares increases the credit worthiness of the company for the loan giving agencies, and so the company can arrange loans on more favourable terms and conditions.

(vii) *Savings of Taxes:* Issue of Bonus Shares enables a company to avail tax benefits, because under the Payment of Bonus Act, 1965 the taxation rate on paid-up capital is higher than on retained earnings. In case of issue of Bonus Shares or stock dividend, the company also saves income tax payable on cash dividend.

Advantages to Shareholders

Issuing of bonus shares by the company have following advantages to the shareholders:

(i) *Tax Benefits:* Receipt of Stock Dividend results in tax benefits to the shareholders because stock dividend is not taxable. Distribution of dividend in cash is included in the income of the shareholders and is taxed at usual income tax rates. Thus, receipt of bonus shares in lieu of cash dividend results in savings of income tax to the shareholders. Moreover, the profit made by the shareholder on sale of bonus shares is treated as a capital gain which is subject to a lower rate of Income Tax.

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(ii) *Higher Profits in Future:* Since Stock Dividend is generally declared only when the company's earnings are expected to increase, the issue of bonus shares is normally interpreted by shareholders as an indication of higher profits to the company in future. The Conveyance of such information may, therefore, have favourable impact of the market value of the Company's Shares.

(iii) *Higher Dividends in Future:* Where the company follows a stable dividend policy, the issue of bonus shares will result in increased dividends to the shareholders even if the existing dividend per share is continued.

(iv) *Psychological Value:* The declaration of stock dividend or issue of bonus shares has a high psychological value as it gives to the shareholders an impression of prosperity of the company. Issue of Bonus Shares is usually received positively in the market, which tends to create greater demand for the company's shares. Thus, issue of bonus shares may increase the share prices of the company's shares in the stock exchange resulting capital gains to the shareholders.

Advantages to Creditors

Issuing of bonus shares by the company has following advantages to the creditors:

(i) *Increased Margin of Safety:* Distribution of Stock Dividend does not affect the asset of the company as in case of cash divided. In issue of bonus shares strengthens the liquidity position of the company due to capitalization the retained earnings, which provides an increased margin of safety to the company's creditors.

(ii) *Psychological Effect on Creditors:* Issue of Bonus Shares has a favourable effect on the creditors of the company because issue of bonus shares does not influence the cash position of the company. Issue of Bonus Shares in lieu of cash dividends gives an impression of strong liquidity position of the company and increases the creditor worthiness, goodwill and financial soundness in the eyes of the creditors.

4.6 SUMMARY

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4.7 REVIEW QUESTIONS

1. What is dividend? Explain the forms of dividend.
2. What is dividend policy? What are the objective and importance of dividend policy?
3. What are the factors affecting dividend policy?
4. What are the theories of dividend decisions?
5. What is the theory of relevance?
6. Explain the walters Model?
7. What are the essentials of sound dividend policy ?
8. Explain company low and dividend decisions?
9. Explain the dividend policy of indian companies ?
10. What is Bonus shares of stock dividend ?

UNIT 5: WORKING CAPITAL PLANNING AND MANAGEMENT

Structure

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5.1 INTRODUCTION

Working capital commonly refers to the excess of current assets over current liabilities. Working capital, however, represents investment in current assets, such as-cash, marketable securities, inventories and bills receivables and current liabilities which include bills payable, notes payable and miscellaneous accruals. Net working capital is the excess of current assets over current liabilities. Current assets are those assets which are normally converted into cash with an accounting year; and current liabilities are usually paid within an accounting year. Following are some of the important definitions of working capital:

Mead, Molott and Fild, *"Working capital means current assets."*

J.S. Mill, *"The sum of the current assets is the working capital of a business."*

Bonneville and Dewey, *"Any acquisition of funds which increases the current assets, increases working capital for they are one and the same."*

C.W. Gerstenberg, *"Working capital has ordinarily been defined as the excess of current assets over current liabilities."*

Working Capital management refers to the management of current assets and current liabilities. Working Capital management, therefore, refers to all aspects of the adminis-tration of both current assets and current liabilities. In the words of Prof. **K.V. Smith,** *"Working Capital Management is concerned with the problems that arise in attempting to manage the current assets, the current liabilities and the inter-relationship exists between them."*

The basic objective of the Working Capital Management is to manage the company's current assets and liabilities in such a way that an adequate working capital is maintained. In fact, Working Capital Management policies have a direct bearing on a business concern's profitability, liquidity and its structural health.

Working Capital Management is an important aspect of Financial Management due to following reasons:

1. Management of current assets and current liabilities represented mainly by cash, inventories, bills receivable and bills payable, is a continuous process occupying a major portion of the financial managers time. On the contrary, decisions relating to investments in fixed assets and long-term financing are episodic.
2. Current assets in a typical manufacturing concern represent more than half of its total investment in assets. The portion of current assets to total assets is higher in case of a trading company, and lower in a service industry. In manufacturing concerns, working capital needs differ widely depending on the length of the manufacturing cycle, market characteristics etc.
3. Working capital requirements are volatile in nature due to seasonal variations in sales.
4. Since current assets are divisible and have a short durability, the financial manager can easily match them with current liabilities than he can match long-lived fixed assets with long-term liabilities.
5. Current assets and current liabilities are shown in balance sheets of companies separately from fixed assets and long-term liabilities. Thus, proper estimation of working capital requirements of a business concern is a pre-condition for running the business efficiently and profitably.

5.1.1 Objectives of Working Capital Management

The basic objectives of working capital management are as follows :

1. To optimize the investment in current assets and to reduced the level of current liabilities, so that the company can reduce the locking up of funds in working capital and, can improve the return on capital employed in the business.
2. The second important objective of working capital management is that the company should always be in a position to meet its current obligations which should properly be supported by the current assets available with the firm. But maintaining excess funds in working capital means locking of funds without return.
3. To manage the firm's current assets in such a way that the marginal return on investment in these assets is not less than the cost of capital employed to finance the current assets.

5.2 CLASSIFICATION OF WORKING CAPITAL

Working capital may be classified on the basis of its concepts as well as on the basis its requirement of time. On the basis of quantitative and qualitative concepts working capital can be classified into two categories, *viz*., (*i*) Gross Working Capital and (*ii*) Net Working Capital. Further, working capital can be classified into (*iii*) Permanent Working Capital and (*iv*) Temporary Working Capital on the basis of time.

5.2.1 Gross Working Capitanl

It refers to the company's total current or circulating assets, such as-cash, marketable securities, bills receivables, inventories, etc., which are normally converted into cash within an accounting year.

5.2.2 Net Working Capital

Net working capital is the excess of current assets over current liabilities. In other words, it is that portion of a company's current assets which is financed by long-term funds.

5.2.3 Permanent Working Capital

It refers to that portion of investment in current assets which is required at all times to carry on the business operations at a minimum level. It represents the current assets required on a continuing basis over the entire year. It remains in the business in one form or another, and also grows with the size of the business. Since it is permanently needed for the business operations, permanent working capital should be financed out of long-term funds.

5.2.4 Temporary Working Capital

It is also called variable working capital. The amount of temporary working capital keeps of fluctuating with the increase or decrease in business activities. It represents additional current assets needed at different times during the operating year. Since, it is required for carrying out seasonal or special operations of short duration such as extensive marketing campaigns; it should be financed from the short-term sources of finance like bank credit.

5.3 NEED AND SIGNIFICANCE OF WORKING CAPITAL

Regular availability of adequate working capital is inevitable for sustained business operations. It should neither be excessive nor inadequate. Both, inadequate and redundant working capital

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situations are dangerous. Excessive working capital situations are dangerous. Excessive working capital means idle funds laying with the firm and not earning any profit for it. Whereas, inadequate working capital means that the enterprise does not have sufficient funds for financing it daily business activities, which ultimately results in prod-uction interruptions and reduced productivity. It is rightly said that inadequate working capital is disastrous; whereas redundant working capital is a criminal waste. The advantage and importance of adequate working capital are the enumerated as follows:

1. Increase in Debt Capacity and Goodwill: Adequate working capital represents the financial soundness of a company. Promptness in payments creates goodwill and increases the debt capacity of the firm. Regular availability of adequate working capital creates confidence among investors and lenders that they will get their due interest and principal in time. Thus, a firm with adequate working capital can raise the requisite funds from market, borrow short-term credit from banks and purchase inventories of raw materials, etc., for the smooth operations of its business.
2. **Facility in obtaining Loans from Financial Institutions:** Adequate working capital representing excess of current assets over current liabilities is considered as an ideal security for trade credits. Thus, the presence of adequate working capital and current assets help a company to raise unsecured and secured loans from financial institutions.
3. **Increase in Production Efficiency:** If adequate working capital is maintained in the business, the firm can successfully carry out its operations, research and development programmes etc., which would lead to increased. Production efficiency, in turn, will increase the efficiency of the employees and boost up their morale. Further, it would also enable the company to discharge its social responsibility towards the society.
4. **High Executive Morale:** Maintenance of adequate working capital also boosts up the morale of the executives insofar as they have an environment of creativity, security and confidence, which is an important psychological factor in improving the efficiency and morale of the business executives who are at the helm of affairs in the firm.
5. **Exploitation of Favorable Opportunities:** In the presence of adequate working capital, a company can avail the benefits of favorable opportunities. For example, the company having adequate working capital can avail the benefits of bulk supply orders, bulk purchases of raw materials, off season purchases, etc.
6. **Meeting Contingencies and Adverse Changes:** In case of adequate working capital, a company can easily face certain business and economic crisis. For example, the demand for goods decreases during the depression period and the payment of credit sales is also made after a long period. In this case, companies with adequate working capital can only successfully meet this adverse situation. Certain other contingencies, such as-business oscillations, financial crisis arising from heavy losses etc., can be successfully met by a company having adequate working capital.
7. **Availing Cash Discount:** Maintenance of adequate working capital enables a company to avail the advantage of cash discount by making cash payments to the suppliers of raw materials and merchandise. Obviously it will reduce the cost of production and increase the profits of the company.
8. **Attractive Dividend to Shareholders:** Adequate working capital enables a company to declare and distribute attractive dividend to its shareholders. Conversely, a company not having adequate working capital cannot distribute attractive dividend in spite of sufficient profits. Moreover, distribution of goods dividend also increases the market value of shares.

9. **Sense of Security and Confidence:** Adequate working capital creates a sense of security and confidence not only among the business executives but also among the customers, creditors and business associates.
10. **Solvency and Efficiency of Fixed Assets:** Availability of adequate working capital is essential for maintaining the solvency of the company, so that payments could be made in time as and when they fall due. Likewise, adequate working capital also increases the efficiency of fixed assets insofar as their proper maintenance depends upon the availability of funds. It has been rightly said, "The fate of large scale investment in fixed assets is often determined by a relatively small amount of current assets."

Large investment in fixed assets is not sufficient to run a business successfully. Adequate working capital, *i.e*., investment in current assets is equally important for meeting the day-to-day expenditure on raw materials, salaries, wages, rents, advertisements and maintenance of fixed assets. Without working capital fixed assets are like a gun which cannot shoot as there are no cartridges. Working capital is the heart of a business. If it is weak, the business cannot prosper and survive although there is a large body of fixed assets. It is, therefore, rightly said, "*The fate of large scale investment in fixed assets is often determined by a relatively small amount of current assets*."

5.4 DANGERS OF INADEQUATE WORKING CAPITAL

The possible dangers of inadequate and redundant working capital are as follows:

1. **Loss of Goodwill and Creditworthiness:** The firm loses its creditworthiness and good-will as it fails to honor its current liabilities. Consequently, the firm finds it difficult to procure the requisite funds for its business operations on easy terms, which ultimately results in reduced profitability as well as production interruptions.
2. **The Firm cannot Avail the Favorable Opportunities:** The firm with inadequate working capital fails to undertake the profitable projects, which not only prevent the firm from availing the benefits of favorable opportunities but also stagnate its growth.
3. **Adverse Effect on Credit Opportunities:** The firm also fails to avail the attractive credit opportunities due to inadequacy of working capital.
4. **Operational Inefficiencies:** Inadequacy of working capital leads to operating inefficiencies as day-do-day commitments cannot be met.
5. **Low Rate of Return on Fixed Assets:** Inadequacy or shortage of working capital also results in lowering down the rate of return on fixed assets because fixed asset can not be efficiently utilized or maintained due to inadequacy of working capital.
6. **Increase in Business Risks:** Inadequate working capital increases the risk of the firm. In the absence of ample working capital, the firm cannot discharge its current liabilities and is liable of being declared as insolvent. Inadequate working capital, therefore, poses a serious threat to the survival of the firm.
7. **Non-achievement of Profit Target:** The firm with inadequate working capital cannot achieve its profit target because it cannot implement its operating plans due to shortage of working capital.
8. **Adverse Effect on the Morale of Business Executives:** In-adequacy of working capital also adversely affects the morale of the firm's executives because they do not have an environment of certainty, security and confidence, which is a great psychological factor in improving the overall efficiency of the business.
9. **Effect on Financial Capacity:** In-adequacy of working capital also weakens the shock-absorbing capacity of the firm because it cannot meet the contingencies arising form business oscillations, financial losses etc., due to shortage of working capital.

5.5 DANGERS OF REDUNDANT WORKING CAPITAL

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Dangers of redundant working capital are:

1. **Low Rate of Return on Capital:** Excessive or redundant working capital implies the presence of idle funds which earn no profit for the firm. Thus, the firm with excessive working capital cannot earn a proper rate of return on its total investments, whereas profits are distributed on the whole of its capital. This would ultimately result in bringing down the rate of return to the shareholders. Lower dividend, in turn, reduce the market value of shares and causes capital loss to the shareholders.
2. **Decline in Capital and Efficiency:** Due to low rate of return and low dividend to shareholders, companies often adopt some objectionable devices to inflate profits to maintain or increase the rate of dividend. Sometimes, unearned dividends are paid out of the company's capital to keep up the show of prosperity by window dressing of accounts. In order to make up the deficiency of reduced earnings, certain provisions, such as provision for depreciation, repairs and renewals are not made. This leads to decline in operating efficiency and fall in profits.
3. **Loss of Goodwill and Confidence:** Excessive working capital leads to lower rate of return on the company's total investments. Shareholders also get lower dividend. Lower rate of dividend leads to reduce the market value of the company's shares much less than the book value. The shareholders lose confidence in the company. The goodwill or credit of the company suffers a serious setback. The financial stability of the company is jeopardized.
4. **Misapplication of Funds:** Companies with excessive working capital do not utilize the societies' resources prudently. In case of excessive working capital, it becomes difficult to control the purchases of many things which are not required in the business. Often excessive inventories and fixed assets are purchased by the company, which do not add to the profitability of the company but adds to its maintenance costs and losses due to theft, waste and mishandling.
5. **Evils of Over-capitalization:** Excessive working capital is often responsible for giving birth to the situation of overcapitalization in the company with all its evils. Over capitalization is not only disastrous to the smooth survival of the company but also affects the interests of those associated with the company.
6. **Inefficient Management:** Existence of excessive working capital is an indication of in-efficient management of the company. it shows that the management is not interested in expanding the business, otherwise the excessive working capital might have been utilized in expanding the business.
7. **Destruction of Turnover Ratio:** Redundant working capital often destroys the control of turnover ratio, which is commonly used in the conduct of an efficient business. Excessive working capital also eradicates all other guides and sign posts commonly employed in conducting and operating a business.

It is evident from the foregoing discussion that a company must have adequate working capital pursuant to its requirements. It should neither be excessive nor inadequate. Both situations are dangerous. While inadequate working capital adversely affects the business operations and profitability, excessive working capital remains idle and earn no profit for the company. It is, therefore, rightly said, "Inadequate working capital is disastrous; whereas redundant working capital is a criminal waste."

5.6 FACTORS DETERMINING WORKING CAPITAL

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1. **Nature of Business:** Working capital requirements of an enterprise are basically determined by the nature of its business. Trading concerns invest a major part of their funds on inventories and bills receivable, and they also have to keep large amounts of cash. Conversely, the public utility concerns like railways, electricity, insurance etc., need relatively much less inventories and cash. Manufacturing concerns stand in between these two extremes. Working capital requirements of these concerns depends on a number of factors including nature of products, technology, marketing policies etc.
2. **Production Policies:** Production policies perused by the management constitute an important factor determine the working capital requirements of the firm. More working capital is required by those industries which produce or sale goods in a particular season. For example, sugar and woolen textile industries require more working capital in winter season. Likewise, concerns engaged in the manufacturing of fans, refrigerators, water coolers etc., undertake production whole year, whereas sales take place only in summer season. Such concerns of seasonal nature also require more working capital.
3. **Size of Business:** The amount of working capital also depends upon the size of a business unit. Generally, large scale concerns require more working capital as against the small concerns for maintaining big inventories and carrying out business operations.
4. **Length of Manufacturing Cycle:** The size of working capital is also influenced by the length of the manufacturing cycle. Manufacturing process always involves a time lag between the time when raw materials are fed in the production line and finished products are finally turned out by it. The length of this period depends on the nature of products and production technology used by a concern. Longer the manufacturing process, the higher will be the requirements of working capital and vice versa. Generally, highly capital-intensive industries need more working capital because of their highly sophisticated and production process. A concern can reduce its working capital needs by shortening the length of its manufacturing cycle through technological impr-ovements, and also by efficient planning and control of its manufacturing operations.
5. **Credit Policy:** Almost all manufacturing companies and also several trading company's use customer credit as one of their promotional tools. Companies allowing liberal credit to their customers require more working capital as against the companies which have efficient debt collection machinery and observe strict credit terms. This is because in the former case, a substantial amount of fund is tied up in bills receivable or sundry debtors. Similarly, working capital needs are also determined by the credit facilities availed by a business concern from its suppliers. Liberal credit facilities from the suppliers of raw materials inventories reduce the working capital requirements of a concern to that extent. A company which does not enjoy liberal credit facilities from its suppliers will need more amount of working capital.
6. **Turnover of Circulating Capital:** There is a high degree of correlation between the quantum of working capital and the speed with which the sales are affected. Companies with higher rate of turnover or faster sales will need less amount of working capital as against the companies with low turnover ration.
7. **Business Fluctuations:** Cyclical changes in the economy also influence the level of working capital. During boom period, the tendency of management is to pile up inventories of raw materials and finished goods to avail the advantage of rising prices. This

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creates demand for more capital. Similarly, during depression when the prices and demand fro manufactured goods constantly reduce, the industrial and trading activities show a downward trend. Hence, the demand for working capital is low.

8. **Growth and Expansion of Business:** In the beginning the working capital requirements of a company are low. However, with the gradual growth and expansion, its working capital needs also increase. Discernibly, large amount of working capital in a growing concern is required for its expansion programmes.

9. **Economies of Scale:** Need for working capital is also influenced by a company's desire to take advantage of the economies of scale. In purchasing inventories, it balances the ordering costs against carrying costs so as to arrive at the optimum order quantity. Similarly, it balances the transaction costs of borrowed funds against their interest costs.

10. **Current Assets Policies:** The quantum of working capital of a company is significantly determined by its current assets policies. A company with conservative assets policy may operate with a relatively high level of working capital than its sales volume. It may carry larger volume of raw materials and finished goods inventories, after liberal terms of credit of its customers and carry a large amount of cash to meet its current expenditure. On the contrary, a company pursuing an aggressive current assets policy operates with a relatively lower level of working capital.

11. **Fluctuations of Supply:** Certain companies have to maintain large reserves of raw material due to their irregular sales and intermittent supply. This is particularly true in case of companies which require special kind of materials available from limited sources. Similarly, companies using bulky materials also maintain large reserves of raw materials inventories. In case of such companies, the working capital requirements would be large.

12. **Labour-intensive Vs. Capital-intensive Industries:** In case of labour-intensive industries the working capital requirements will be high due to regular payments of heavy wage-bills and overtime. On the other hand, highly automatic and capital intensive industries require lesser amount of working capital because of heavy investments in fixed assets and shorter time in manufacturing process.

13. **Seasonal Variations:** A number of industries manufacture and sell goods only during certain seasons. For example, sugar, oil and woollen textile industries have either seasonal supplies of raw materials or make their sales in a particular season. Hence, the working capital requirements of such industries will be higher during a certain season as compared to any other period.

14. **Dividend Policy:** Dividend policy also influences the working capital requirements of a business enterprise. If a company follows a conservative dividend policy, more working capital would be required because more funds would be needed for payment to the shareholders even if the company's earnings are not sufficient to cover such payment. On the contrary, if a strict dividend policy is followed by the management, less working capital will be needed by the concern This is so because a portion of the company's earnings may be retained in the business.

15. **Other Factors:** Besides the above considerations, there are a number of other factors which affect the working capital of a business concern. Some of them are as follows:

    (*i*) Effective co-ordination between production and distribution policies will reduce the quantum of working capital in a business concern.

    (*ii*) Less developed means of transportation and communication add to the quantum of working capital of companies in such areas, because of stock piling.

    (*iii*) The magnitude of working capital is also determined by the extend of hazards and contingencies inherent in a particular type a business.

(*iv*) Absence of specialization in marketing of goodwill requires more working capital because such concerns will have to maintain their own marketing organization.

(*v*) Companies which have good banking connections and proved credit worthiness will require less working capital as they can easily obtain the requisite funds from banks.

5.7 METHODS OF WORKING CAPITAL ANALYSIS

Working capital management involves management of different components of working capital, such as cash, inventory, and creditors. To assess the serving of working capital its analysis becomes inevitable. The analysis of working capital can be made by employing the following three tools or techniques:

5.7.1 Funds Flow Analysis

Funds flow analysis is a useful tool of working capital analysis, and is widely used by the financial analysis. Funds flow analysis is the study of the sources of funds and their application in the business. It shows the sources and uses of funds. By the use of this technique, changes in the working capital between the two dates can be easily analyzed by studying the changes in each type of current assets and current liabilities. Funds flow analysis is an instrument of allocation of resources, and answers a number of intricate queries, such as-the overall creditworthiness of the concern, sources of repayments of the loans taken, quantum of funds generated during a specific period, etc.

5.7.2 Ratio Analysis

Another tool of working capital analysis is the technique of ratio analysis, which is widely used by the corporate sector for checking upon the efficiency with which the working capital is being utilized in the business. It serves as a useful tool of financial analysis.

5.8 APPROACHES FOR WORKING CAPITAL

There are three approaches for working capital

5.8.1 Matching Approach or Hedging Approach

When the firm follows matching approach, long term financing will be used to finance permanent working capital. Temporary working capital should be financed out of short term funds. The rationale underlying matching approach is that the maturity of source of funds should match the nature of assets to be financed.

5.8.2 Conservative Approach

According to the approach all requirements of funds should be met from long term sources. Short-term sources should be used only for emergency requirements. Under a conservative plan, a firm finances its permanent current assets and a part of the temporary current assets with a long term financing. In periods when the firm has no temporary current assets, it shores liquidity by investing surplus funds in marketable securities. Conservative approach is less risky but more costly as compared to matching approach. In other words, it is low profit low risk approach.

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5.8.3 Aggressive Approach

Under an aggressive policy firm uses more short financing than warranted by the matching plan, *i.e.*, the firm finances a part of its permanent current assets with short term financing. On the other hands more, use of short term financing makes the firm more risky.

5.9 PROFITABILITY AND LIQUIDITY TRADE-OFF

The overall objective of the business firm is to achieve wealth maximization. This concept could be attained only when the principal of financial management are put into practice. The proportionate investment on current assets to fixed assets or vice-versa directly influences the profitability, liquidity and the turnover of a company. A company which maintains higher current assets ratio (CA/FA) no doubt has the higher liquidity as the investment on current assets can be liquidated (converted into cash) immediately. This approach has the concept of loosing the opportunity of earning profits if the excess current assets investments are deployed elsewhere contrary to this, if a firm maintains lower current assets to fixed assets ratio, no doubt reduces the idle investment and reflects amounts of risk of stoppage of production due to want of materials. Therefore, the financial manager has to carefully plan to provide optimum ratio of current assets to fixed assets ratio. In a real life situation, the risk of maintaining optimum ratio is very difficult. However, the concept of understanding the mode of deployment of funds on current assets and fixed assets helps in increasing the profitability and liquidity position of the business firm. The following are the three approaches would assist the financial manager in working capital management:

5.9.1 Approach-A

According to this approach, if a business firm maintains high investment on current assets to a constant investment on fixed assets (or low investment on fixed assets), it is said to be a conservative policy of working capital management, where liquidity position of the company is good. Liquidity refers to the ability of the company to meet the obligation of third parties viz., creditors, bankers, etc., in addition to this, firm have to forego the opportunity cost of idle investment on excess current assets associated with lower return on investment, when other factors are assumed to be constant.

5.9.2 Approach-B

According to this approach, if a business firm maintains the moderate level of current assets to constant fixed assets, it is said to be average approach of working capital management. Average level of investment on current assets refers to neither excess nor lesser amount of investment on current assets. Under such a situation, the company will have moderate liquidity position with sufficient profit without having any substantial financial crisis. The rate of return on investment would be such higher than the situation of A. (because of idle investment).

5.9.3 Approach-C

According to this approach, if a business firm maintains lower level of investment on current assets to constant fixed assets, it said to be aggressive policy of working capital management. This situation reflects the operational efficiency of the management. In other words, the production activities of such a business firm will be operated with lower level of current assets. The success of this approach mainly depends on how well and quick materials are obtained and supplied

to production department. This approach is directly linked with higher percentage of profits or return on investments. But the under the prevailing socio-economic and infrastructural condition the business under this app-roach increases the stress, strain on the labor force. However, if it is implemented successfully, it provides higher percentage of profits to the business firm. Even I minor negligence inefficiency crops in, it results in stoppage of production due to the want of raw materials.

The detailed analysis of the above three approaches helps the financial manager to evolve a suitable policy to maintain on optimal current assets to fixed assets ratio. In addition to the basic knowledge of these three approaches, he has to consider number of factors, *viz*., production policy, and technology used projected sales, supply of raw materials, infrastructure and the level of operating efficiency.

5.10 WORKING CAPITAL REQUIREMENT

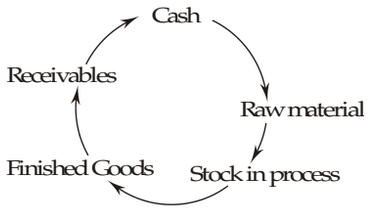
Working capital for any manufacturing unit means the total amount of circulating funds required for the continuous operation of the unit on an ongoing basis. For an uninterrupted functioning of a unit at a given capacity, it requires a specified level of current assets namely raw materials, stock-in-process, finished goods, receivables apart from reasonable cash in hand etc., these are known as gross working capital. In other simple words:

Gross working capital = Total current assets

Net working capital = Current assets – current liabilities

5.10.1 Operating Cycle

The duration of time needed to complete the chain of events from cash to production and back to cash is ermed the operating cycle:



This means there are four distinct stages of a working capital cycle as under:

1. Funds (whether own or bank's) are utilized for purchase of raw materials.
2. Raw materials are converted into finished goods.
3. Finished goods are stored in the godown before they are sold.
4. Finished goods are sold on credit and converted into accounts receivables which, when realized, are converted into funds and the process recycles itself.

Thus, in order to find out the total working capital requirement of a manufacturing unit, the needs at each of the four stages mentioned above are calculated and the sum total thereof is its total working capital requirement. However, in order to arrive at each of the four stages, one has to assess two parameters with reference to each stage:

(*i*) Time Factor (*ii*) Value

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These **parameters** for various stages ca be enumerated as follows:

Stage	*Item*	*Time*	*Value*
I	Raw material	Consumption Storage period	Value of consumed raw materials for the period
II	Stock-in-process	Time taken to Convert Raw Material into finished goods	Raw materials consumed plus manufacturing expenses for he said period (cost of production)
III	Finished goods	Period for which Finished Goods are kept in Storage before Actual sale	Raw materials consumed plus manufacturing expenses plus administrative overheads for the period (cost of sales)
IV	Receivables	Credit period Allowed to Buyer	Raw Material consumed plus Administrative Expenses plus profit for period (sales)

The total working capital requirement is calculated by adding the values at column No. IV.

5.11 METHODS OF ESTIMATING WORKING CAPITAL

Every firm finds it difficult to ascertain the Working Capital requirement which is a very practical and important problem. While inadequate Working Capital creates a lot of problems, an amount in excess of the requisite working Capital which is not utilised properly and remains idle, can also increase the cost. Therefore, in order to avoid both these difficulties, a working Capital Requirement Forecast is to be prepared after scrutinising and analyzing every aspect of business activity.

The main methods of estimation of working capital are as follows:

5.11.1 Cash Forecasting Method

In this method an estimate is made of the possible cash receipts and payments in the forthcoming period. The estimated cash receipts are added in the working capital available at the beginning of the period and the estimated cash payments are deducted. This shows the deficiency or surplus of cash at a definite point of time. This method has been discussed in detail in chapter 5 of this book 'Management of Cash'.

5.11.2 Adjusting Profit and Loss Method

Under this method the forecasted-profits are adjusted on cash basis. The estimation of working capital requirement by this method can be easily understood by the following format:

Computation of Working Capital

		Rs.
	Net Income	.....
Add :	(*i*) Non-Cash Items	.....
	Cash Inflow Items	.....
Less :	(*ii*) Cash outflow Items	.....
		.....
	Net Change in Working Capital	.....

5.11.3 Projected Balance Sheet Method

Under this method of forecasting, a forecast is made of the various assets and liabilities of the firm. Afterwards, the difference between the two is taken which will indicate either cash surplus or cash deficiency.

Example 5.1 *From the following informations given below, prepare an estimate of working capital requirements by projce Balanc Sheet Method:*

		(Rs.)
Issued share capital		4,20,000
6% Debenture		80,000
Fixed Assets at cost		80,000
The expected ratios of cost to selling price are:		
Raw Materials	50%	
Labour	20%	
Overheads	20%	
Profit	10%	

Following further information's are available:

(*i*) *Raw materials are kept in store for an average period of two months;*

(*ii*) *Finished goods remain in stock for an average period of three months;*

(*iii*) *Production during the previous year was 1,80,000 units and it is planned to maintain the same in the current year also;*

(*iv*) *Each unit of production is expected to be in process for half a month;*

(*v*) *Credit allowed to customers three months and given by suppliers is two months;*

(*vi*) *Selling price is Rs. 10 per unit;*

(*vii*) *There is a regular production and sales cycle;*

(*viii*) *Calculation of debtors may made at selling price.*

Solution. **Projected Blance Sheet**

(s on.....)

Liabilities	*Amount Rs*	*Assets*		*Amount Rs*
Share Capital	4,20,000	Fixed Assets		80,000
6% Debenture	80,000	*Current Assets:*		
Profit and Loss A/C	1,75,200	Stock:	Rs.	
Current Liabilities:		Raw Materials	1,50,000	
Creditors	1,50,000	Finished Goods	4,05,000	
Bank Overdraft (Balancing figure)	3,27,300	Work-in Progress	67,500	6,22,500
		Debtors		4,50,000
	11,52,500			11,52,500

Working Notes:

(*i*) Calculation of Profit

	Rs.	*Rs.*
Sales (1,80,000 Units @ Rs. 10 per unit)		18,00,000
(–) Material (18,00,000 × 50%)	9,00,000	

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	Labour (18,00,000 × 20%)	3,60,000	
	Overheads (18,00,000 0%)	3,60,000	16,20,000
	Gross Profit (being 10% of Sales)		1,80,000
(–)	Debenture Interest (assumed as being paid) (80,000 × 6%)		4,800
		Net Profit	1,75,200

(*i*) Debtors = $18,00,000 \times \frac{3}{12}$ = Rs. 4,50,000

(*iii*) Calculation of Stock of Raw Materials (2 Months):

$$18,00,000 \times \frac{50}{100} \times \frac{2}{12} = \text{Rs. } 1,50,000$$

(*iv*) Calculation of Stock for Finished Goods (3 Months):

		Rs
Raw Material	$\left(18,00,000 \times \frac{50}{100} \times \frac{3}{12}\right)$	2,25,000
Labour	$\left(18,00,000 \times \frac{20}{100} \times \frac{3}{12}\right)$	90,00
Overheads	$\left(18,00,000 \times \frac{20}{100} \times \frac{3}{12}\right)$	90,00
Total		Rs. 4,05,000

(*v*) Calculation of Stock of Work-in-Progress (12 Month):

		Rs
Raw Material	$\left(18,00,000 \times \frac{50}{100} \times \frac{3}{12}\right)$	37,500
Labour	$\left(18,00,000 \times \frac{20}{100} \times \frac{3}{12}\right)$	15,000
Overheads	$\left(18,00,000 \times \frac{20}{100} \times \frac{3}{12}\right)$	15,000
Total		Rs. 67,500

(*vi*) Calculation of Creditors (2 Months): $18,00,000 \times \frac{50}{100} \times \frac{2}{12}$ = Rs. 1,50,000

(*vii*) Calculation of Required working Capital:

	Current Assets:		Rs.
	Stock (Calculated as above)		6,22,500
	Debtors		4,50,000
			10,72,500
(-)	Current Liabilities:	Rs.	
	Creditors	1,50,000	
	Bank Overdraft	3,27,300	4,77,00
			5,95.200

5.11.4 Forecasting of Current Assets and Current Liabilities Method

This is the most popular method of estimating the working capital requirement. Generally we make the estimate on the basis of past experience related to production process, credit policy and stock policy. In brief, the following points are taken into consideration at the time of estimating the amount of current assets and current liabilities:

(i) The total number of units to be manufactured throughout the year;

(ii) The cost of raw materials, wages and overheads for each unit;

(iii) Information about the period during which raw materials will remain in stock on an average before the same are issued to production;

(*iv*) Information about the period during which the product will be processed in the factory *i.e.,* the length of the production process;

(*v*) Information about the period during which finished products will remain in the warehouse before sale *i.e.,* the length of sales cycle;

(*vi*) Information about the period of credit allowed to debtors;

(*vii*) Information about the period of credit allowed by suppliers;

(*viii*) Information about the lag in payment of wages and overheads.

Estimation of Current Assets:

(*i*) *Stock of raw Materials:*

$$= \frac{\text{Budget Production (in units)} \times \text{Cost of raw materials per unit} \times \text{Average inventory holding period (months/days)}}{\text{12 months/365 days}}$$

(*ii*) *Work-in-progress:*

$$= \frac{\text{Budgeted Production (in units)} \times \text{Estimated Work in process cost (per unit)} \times \text{Average time span of work-in-progress inventory (months/days)}}{\text{12 months/365 days}}$$

(*iii*) *Finished Goods Inventory:*

$$= \frac{\text{Budgeted Production (in units)} \times \text{Cost of goods produced per unit (excluding depreciation)} \times \text{Finished Goods holding period (months/days)}}{\text{12 months/365 days}}$$

(*iv*) *Debtors:*

The amount of funds locked up in sundry debtors will be computed on the basis of credit sales and the time-la in collecting payment.

$$= \frac{\text{Budgeted Credit sales (in units)} \times \text{Cost of sales per unit excluding depreciation} \times \text{Average debt collection period (months/days)}}{\text{12 months/365 days}}$$

(*v*) *Cash and Bank Balance:*

Apart form working capital needs for financing inventories and debtors, firms also find it useful to have some minimum cash balances with them. It is difficult to lay down the exact procedure of determining such an amount. The amount to be kept as cash in hand or cash at bank can be estimated on the basis of past experience. Every businessman knows the amount that he will require for meeting his day-to-day payments.

In brief, the computation of working capital is summarised in the following format:

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Statement Showing Working Capital Requirements

			Amount Rs
Current Assets :			
(*i*)	Stock of Raw Materials (for ….. months consumption)		.....
(*ii*)	Work-in-Process (for ….. months) :		
	(*a*) Raw Material	.....	
	(*b*) Direct Labour	.....	
	(*c*) Overheads	.....	.....
(*iii*)	Stock of Finished Goods (for ….. month's sales) :		
	(*a*) Raw Material	.....	
	(*b*) Labour	.....	
	(*c*) Overheads	.....	
(*iv*)	Sundry Debtors or Receivables (for ….. month's sales) :		.....
	(*a*) Raw Material	.....	.....
	(*b*) Labour	.....	.....
	(*c*) Overheads	.....	.....
(*v*)	Payments in Advance (if any):		
(*vi*)	Balance of Cash (required to meet day-to-day expenses) :		
(*vii*)	Others (if any)		
	Less: Current Liabilities:		
(*i*)	Creditors (for ….. months; purchase of Raw Material)	.....	
(*ii*)	Lag in payment of expenses	.....	
	(Outstanding expenses ….. month's)	.....	
(*iii*)	Others (if any)		
	Net Working Capital (C.A. – C.L.)		.....
Add: Provision for Contingencies			.....
	Total working Capital Required		.....

Example 5.2. *Delhi Manufacturing company sells goods in the home market only and earns a gross profit of 20% on sales. For the year ending 31st December, 2008, the folioing figures are available:*

	Rs.
Material used	1,12,500
Wages paid	90,000
Manufacturing expenses	1,35,000
Administrative expenses	30,000
Depreciation	15,000
Sales promotion expenses	15,000
Sales	3,00,000

Other particulars are:

(i) Suppliers of materials provide two months credit.

(ii) Wages are paid half month in arrear.

(iii) Manufacturing and administrative expenses are all cash expenses and are paid one month in arrear.

(iv) Sales promotion expenses are paid quarterly in advance.

(v) Sales are made at one month;s credit.

(vi) Company wishes to keep one month stock of raw materials and also of finished goods.

(vii) The Company believes in keeping Rs. 25,000 available to it including the overdraft limit of Rs, 12,500 not yet utilised by the company.

You are requested to ascertain the requirements of Working Capital for the year 2008.

Solution. Statement Showing Working Capita Requirement

		Rs.	*Rs.*
(A)	*Current Assets :*		
	(*i*) Debtors (3,00,000 - 20% of 3,00,000) ÷ 12	20,000	
	(*ii*) Advance Payment of Sales Promotion Expenses $\left(15,000 \times \frac{3}{12}\right)$	3,750	
		9,375.	
	(*iii*) Stock of Raw Materials (1,12,500 , 12	20,000	
	(*iv*) Stock of Finished Goods (1/12 of Rs. 2,40,000)	12,500	
	(*v*) Minimum ash Balance		65,625
(B)	*Current Liabilities:* :		
	(*i*) Creditors for Raw Materials $\left(1,12,500 \times \frac{2}{12}\right)$	18,750	
	(*ii*) Outstanding Expenses:		
	(*a*) wages $\left(90,000 \times \frac{1}{24}\right)$	3,750	
	(*b*) Manufacturing expenses $\left(1,35,000 \times \frac{1}{12}\right)$	11,250	
	(*c*) Administrative Expenses $\left(30,000 \times \frac{1}{12}\right)$	2,500	(–) 36,250
	Amount of Required working Capital (A) – (B)		29,375

Working Notes:

1. For calculating the debtors, only cash cost of sales has been taken into account. Thus,

	Rs.
Sales	3,00,000
(–) Gross Profit 20% on Sales	60,000
Cash Cost of Sales	2,40,000
Debtors = 1/12 of Rs. 2,40,000 = Rs. 20,000	

2. Stock of Finished goods is also taken at cash Cost of Sales. Hence, it is 1/12 of Rs. 2,40,000 = Rs. 20,000
3. The company wants to maintain Rs. 25,000 including Rs. 12,500 the overdraft limit. Hence the minimum Rs. 12,500 has been taken into account.
4. Deprecation is not a cash expense.

5.11.5 Operating Cycle Method

This method is more dynamic and refers to working capital in realistic way. Recently this method has gained importance because of its more rational approach based on operating cycles of a firm.

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According to this approach, the requirement of working capital depends upon the operating cycle of the business. The operating cycle begins with the acquisition of raw materials and ends with the collection of receivables. It may broadly be classified into the following four stages. viz.,

(i) Raw material and stores storage stage;

(ii) Work-in-process stage;

(iii) Finished goods inventory stage; and

(iv) Receivables collection stage.

In this method, the following four steps are involved to estimate the requirements of working capital:

(i) Duration of Operating Cycle: The duration is computed in days by adding together the average storage period of raw materials, works-in-progress, finished goods and the average collection period and then deducting form the total, the average payment period.

Symbolically, the duration of the working capital cycle can be put as follows:

$$O = (R + W + F + D) - C$$

Where:

O = Duration of Operating cycle

R = Raw material average storage period

W = Average period of work-in-process

F = Finished goods average storage period

D = Debtors collection period

C = Creditors payment period.

Each of the components of the operating cycle can be calculated as follow:

$$R = \frac{\text{Average stock of raw materials and stores}}{\text{Average Raw Materials and stores consumption per day}}$$

$$W = \frac{\text{Average work-in-process inventory}}{\text{Average cost of production per day}}$$

$$F = \frac{\text{Average finished stock inventory}}{\text{Average cost of goods sold per day}}$$

$$D = \frac{\text{Average book debts}}{\text{Average credit sales per day}}$$

$$C = \frac{\text{Average trade creditors}}{\text{Average credit purchases per day}}$$

(*ii*) **Number of Operating Cycles in Operating Period:** This is found out by dividing $\frac{P}{O}$ total number of days in the operating period by the number of days in the operatin cycle as shown below:

$$N = \frac{P}{O}$$

where:

N = Number of Operating Cycles in the operating period

P = Number of days in the operating period

O = Duration of operating cycle (in days)

Suppose the operating period is one year (360 days) and the duration of operating cycle is 60 days then number of operating cycles in the operating period will be calculated as follows:

$$N = \frac{360}{60} = 6 \text{ Cycles}$$

(*iii*) **Total amount of Annual Operating Expenses:** These expenses include purchase of raw materials, direct labour costs and the overhead costs-calculated on the basis of average storage period of raw materials and the time-lag involved in the payment of various times of expenses. The aggregate of such separate average amounts will represent the annual operating expenses.

(*iv*) **Estimating the Working Capital Requirement:** This is calculated by dividing the total annual operating expenses by the number of operating cycles in the operating period as shown below:

$$R = \frac{E}{N}$$

where:

R = Requirement of working Capital (Estimated)

E = Annual Operating Expenses

N = Number of operating cycles in the operating period.

In order to provide for contingencies, some extra amount generally calculated as a fixed percentage of the working capital may be added as a margin of safety.

The estimation of working capital by operating cycle method can be understood with the help of following example :

Example 5.3 *From the following information extracted form the books of a manufacturing company, compute the operating cycle in days:*

Period covered	*365 days*
Average period of credit allowed by suppliers	*16 days*
Raw materials consumption	*Rs. 73,000*
Average total of debtors outstanding	*Rs 7,900*
Total production cost	*Rs. 1,09,500*
Total cost of sales	*Rs. 1,13,150*
Sales for the year	*Rs. 1,80,000*
Value of average stock maintained:	
Raw Material	*Rs. 5,600*
Work-in-progress	*Rs. 4,800*
Finished goods	*Rs. 4,340*

Solution.

Computation of Operating Cycle

(*i*) Martial Storage Period

$$= \frac{\text{Average Stock for the year}}{\text{Daily Average Consumption}}$$

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$$= \frac{5,600}{73,000 \div 365}$$

$$= \frac{4,800}{300} = 28 \text{ days}$$

(*ii*) Production Process Period

$$= \frac{\text{Average Stock of Finished Goods}}{\text{Average Cost of Sales}}$$

$$= \frac{4,800}{1,09,500 \div 365}$$

$$= \frac{4,800}{1,09,500 \div 365} = 16 \text{ days}$$

(*iii*) Finished goods Storage Period

$$= \frac{\text{Average Stock of Finished Goods}}{\text{Average Cost of Sales}}$$

$$= \frac{4,340}{1,13,150 \div 365}$$

$$= \frac{4,340}{310} = 14 \text{ days}$$

(*iv*) Debtors Collection Period

$$= \frac{\text{Average Debtors}}{\text{Daily Average Sales}}$$

$$= \frac{7,900}{1,80,000 \div 365}$$

$$= \frac{7,900 \times 365}{1,80,000}$$

= 16 days approximate

(*v*) Average Credit period Granted by Suppliers = 16 days (given)

Operating Cycle Period = (28 + 16 + 14 + 16) – 16

= 74 – 16

= 58 days

Example 5.4 *From the following informations taken form the Black and White Limited, calculate the working capital required by the company by operating cycle method:*

(*i*) *Annual sales are estimated at 10,000 units @ Rs. 10 per unit;*

(*ii*) *Production and sales quantities coincide and will be carried on evenly throughout the year and production cost per unit is: Materials Rs. 5.00; Labour Rs. 2.00; Overheads Rs. 1.75 (including Rs. 2,500 for depreciation);*

(*iii*) *Customers are given 60 days' credit and 50 days' credit is taken form suppliers;*

(*iv*) *Forty days of supply of raw materials and fifteen days' supply of finished goods are kept in stock;*

(*v*) *The production cycle is 20 days and all materials are issued at the commencement of each production cycle;*

(*vi*) *A cash balance equal to one-third of the average other working capital is kept for contingencies.*

Solution.

Computation of Working Capital Requirements

1.	Computation of Operating Cycle:	Days.
	(*i*) Materials storage period	40
	(*ii*) Finished goods storage period	15
	(*iii*) Processing or Conversion period	20
	(*iv*) Debtors collection period	60
	(*v*) Minimum ash Balance	135
	Less: Creditors payment period	50
	Operating cycle period	85
2.	Number of Operating Cycles per year = 365/85 = 4.3 Approximate	
3.	Total Cash Operating Expenses:	Rs.
	Raw Materials (10,000 × Rs. 5.00)	50,000
	Labour (10,000 × Rs. 2.00)	20,000
	Overheads(10,000 × Rs. 1.75)	17,500
		87,500
	Less: Deprecation	2,500
		85,000
4.	Cash working capital	
	$= \frac{\text{Total Cash Operating Expenses}}{\text{No. of Operating Cycles}}$	Rs.
	$= \frac{\text{Rs. } 85{,}000}{4.3}$	19,767
Add: 1/rd for Contingencies		6,589
Total Working Capital Require		Rs. 26,356

Explanation: Suppose For example, in any business the raw material holding period is 24 days, the time required to complete production process is 25 days. Finished goods holding period is 23 days, average collection period is 15 days and the average payment period *i.e.,* the period for which the credit is allowed by the creditors is 14 days then the duration of the operating cycle will be 24 + 25 + 23 + 15 – 14 = 73 days. In other words, in a year (365 days) 5 operating cycles of working capital will be completed. If in the business the total annual operating expenses are estimated to be Rs. 5.00 lakhs then the working capital requirement of the business will be of Rs. 5,00,000 ÷ 5 = Rs. 1,00,000

Importance of Operating Cycle Concept: The application of operating cycle concept is mainly useful to ascertain the requirement of cash working capital to meet the operating expenses of a going concern. This concept is based on the continuity of the flow of values in a business operation. This is an important concept because the longer the operating cycle, the more working capital funds the firm needs. Management must ensure that this cycle does not become too long. This concept more precisely measures the working capital fund requirements, traces its changes and determines the optimum level of working capital requirements.

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5.10 SUMMARY

- Working capital commonly refers to the excess of current assets over current liabilities. Working capital, however, represents investment in current assets, such as-cash, marketable securities, inventories and bills receivables and current liabilities which include bills payable, notes payable and miscellaneous accruals
- Regular availability of adequate working capital is inevitable for sustained business operations. It should neither be excessive nor inadequate. Both, inadequate and redundant working capital situations are dangerous
- Regular availability of adequate working capital is inevitable for sustained business operations. It should neither be excessive nor inadequate. Both, inadequate and redundant working capital situations are dangerous. Excessive working capital situations are dangerous
- The overall objective of the business firm is to achieve wealth maximization. This concept could be attained only when the principal of financial management are put into practice.
- Working capital for any manufacturing unit means the total amount of circulating funds required for the continuous operation of the unit on an ongoing basis

5.11 REVIEW QUESTIONS

1. What do you mean by working capital? Why is working capital management important?
2. How is working capital classified?
3. Explain the need for working capital and what its significance?
4. What are the dangers of in adequate working capital?
5. What are the dangers of redundant working capital?
6. What are the factors determining working capital?
7. What are the approaches for working capital?
8. Explain the methods of estimating working capital?

UNIT 6: CORPORATE RESTRUCTURING

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Structure

6.1 INTRODUCTION

Merger, acquisition and restructuring have, of late, become the major financial strategy and economic force, a dominant global business theme. The weapon of 'take over' (to use the word of David Sinclair) seems to be the most popular and frequently used mechanism in the business

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world, all over the world; and India is no exception. Corporate restructuring has been resorted to in many top business firms like Tata Motors, L&T, SBI and NOCIL, to name just a few.

Mergers and acquisitions involve various types of transactions, like merger itself, or the purchase of a division, or take overs, or joint ventures, and so on. Corporate restructuring, however, comprises portfolio restructuring, financial restructuring, and organizational restructuring.

6.2 RATIONALE BEHIND MERGERS

A merger involves a combination of two companies together: the one merging with the other, and a new company emerging therefrom. It may, however, take place in two ways: one involving 'absorption', and the other involving 'consolidation'. In the case of an 'absorption', one company acquires the other, that is to say that it absorbs the other company. Thus, it may well be said that the Ashok Leyland Limited had absorbed (that is, acquired) Ductron Castings Limited. In a consolidation transaction, on the other hand, two or more companies may combine themselves together so as to form a new company. For example, HCL Limited had been formed with the combination of four companies, viz. Hindustan Computers Limited, Hindustan Instruments Limited, Indian Software Company Limited, and Indian Reprographics Limited.

It may be noted here that, in the legal parlance in India, the mergers are referred to as 'amalgamations', and are generally in the nature of absorption.

Further, the acquiring company is also referred to as the amalgamated company or the merged company, and the acquired company is referred to as the amalgamating company, or the merging company, or even as the target company.

In a merger transaction, the acquiring company acquires both the assets and liabilities of the acquired company.

Moreover, the shareholders of the acquired company receive the shares of the acquiring company in exchange of their shares of the acquired company.

There may be various types of mergers. These are:

(i) Horizontal

(ii) Vertical

(iii) Conglomerate

   (a) A horizontal merger comprises the merger of the companies which are engaged in the same line of business.

   (b) In the case of a vertical merger, however, the firms, engaged in different stages of the production of a similar product, amalgamate to form a new company.

   (c) As against the horizontal and vertical integrations, the conglomerate merger involves the merger of the companies, which are engaged in quite unrelated lines of activities.

The main and most significant rationale behind any merger deal is that the value of the new emerging company, after the merger of the two or more companies, is expected to be greater than the sum total of the value of all the merging companies, individually, taken together.

Some other rationales involved in favour of mergers are:

(i) Growth

(ii) Diversification

(iii) Economies of scale

(iv) Managerial effectiveness

(v) Utilization of tax shields

(vi) Lower costs of financing

(vii) Strategic advantages, etc.

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But then, on a closer look and analysis, some of the rationale may sound reasonable in terms of creation of some value, while some others may seem to be rather doubtful, in that they may not be creating sufficient value, worth the name.

6.3 SOME REASONABLE REASONS FOR MERGERS

6.3.1 Economies of Scale

With the merger of two or more companies, the emerging company involves operations on a much larger scale, which, in turn, results in the economies of large scale production, and the other related business activities. The resultant advantages pertain to more intensive and effective utilization of the installed capacity of the plants and machinery, distribution channels, engineering services, data processing systems, research and development (R&D) facilities, etc. It may, however, be noted here that the economies of scale are more pronounced and visible in the cases of horizontal mergers (as against the vertical mergers), in as much as in such cases the scope and opportunity of effective and intense utilization of the resources are much greater, by virtue of the fact that the line of business of all the amalgamated companies happens to be the same or, at least, quite similar to each other. It, however, should not give the impression that vertical integrations do not result in any significant benefits and advantages. In fact, these are present even in the cases of vertical mergers, though these are of some different type and nature. For example,

(a) It results in an improved coordination of the different levels of production activities,

(b) It facilitates working with a relatively lower level of inventories, and thereby results in a substantial savings in the form of lower overall inventory carrying costs.

(c) The combined entity, emerging out of the vertically integrated companies, commands a much higher power and position in the market.

Further, in the cases of conglomerate mergers, too, the inherent advantages comprise the elimination or, at least, some reduction, in respect of certain overhead expenses.

But then, if the sub-optional operations are usually found to be uneconomical, even an oversized company may generally prove to be so. Therefore, due care must be taken to ensure that the resultant company, emerging out of such merger, does not become highly oversized to ultimately prove to be rather uneconomical and disadvantageous.

Accordingly, the resultant size should emerge and must be retained at the optimal level, that is, it should be neither too small nor too large (and hence unwieldy), but just about right, whereby the unit cost could be kept at the minimal level.

6.3.2 Strategic Advantages

Instead of resorting to the strategy of expansion, on an internal basis, it may prove to be advantageous (strategically, that is) if other company or companies, engaged in the similar business activity are acquired, along with their existing production facilities and marketing network, that go therewith. Some of such strategic edges and advantages are listed hereunder:

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(a) It may result in the lack of or, at least, ease of competition, that would have otherwise arisen, if the acquired company, too, would have expanded internally and, thereby offered an increased quantum of competition and acquiring the additional market share.

(b) The merger option also results in a lot of saving of time, as such transactions enable the companies to skip the various stages involved in the usual internal expansion process.

(c) Such merger arrangements usually result in the cutting down of both the risks and cost factors, at the same time.

(d) And, more importantly, in a saturated market condition, where the scope of sustaining the expanded capacity is rather doubtful and full of risks, the strategy of merger seems to be undoubtedly the more advantageous option, inasmuch as it amounts to the expansion and replacement, both at the same time.

6.3.3 Synergy of Resources

There may be situations where the two companies in question may be found to be quite complementary and supplementary to each other. For example, a small unit may be having, or may be developing, some new innovative products and designs, but may be lacking the required technical and engineering capabilities, and even the market reach and network, of a large scale industry. Under such circumstances, the strategy of merger may well be found to be most suitable, so as to reap immense advantages of synergy of the complementary resources of the two separate economic units. In the process, the resultant joint production and profitability may prove to be far greater than the sum total of the total production and profitability of the two companies, working as two separate industrial units.

6.3.4 Advantages of Taxation

As we all know, a company may not carry forward its accumulated losses and/or unabsorbed depreciation for an indefinitely long period, with a view to deriving the advantages of tax concessions. But then, if such a company prefers to merge with a profit making company, its accumulated losses, and/or unabsorbed depreciation, get absorbed, automatically and immediately, in the quantum of the gross profit of the profit-making company. When the loss and unabsorbed depreciation get set off against the total income of the profit-making company, the resultant taxable income automatically goes down, and the tax liability, too, that goes therewith.

6.3.5 Gainful Investment of Surplus Funds

Some of the more profitable and cash rich companies somehow do not prefer to invest the surplus cash in some gainful sources of investment. They, instead, may resort to disbursement of dividends at a generously high rate, or else, may adopt the strategy of buying back of their own shares. But, as has been observed in some cases, the management of such companies prefer to make the investments for internal expansion, irrespective of whether such a strategy will ultimately prove to be profitable and accordingly wise, or otherwise. Under such a situation, it may prove to be much more sensible and desirable for the company to adopt the strategy of merging with another firm, which may involve some payment of cash, and thus, a better and more grainful employment of the surplus funds, available with such company.

6.3.6 Effective and Efficient Management

As has been revealed by several empirical studies, lack of managerial competence and control have been found to be one of the most common and valid causes of industrial sickness, both in the large, medium, and even small-scale sectors. Thus, it may augur well for a company,

burdened with an inefficient and ineffective team of managers, to merge with another well-managed company, so as to reap the inherent advantages of effective management and control in respect of its affairs, too, in the post-merger situation. Besides, by way of a related benefit, such merger may result in a much greater congruence and compatibility between the managers and the shareholders.

It has often been found that a company, which is not being managed effectively, and hence not performing well, often becomes the easy target for acquisition. Thus, in the post-merger stage, the officers and executives of the acquired company, too, may pull up their socks and begin to perform at the peak of their knowledge, skill and efficiency, so as to retain their post and position in the new venture.

6.4 SOME UNREASONABLE REASONS FOR MERGERS

We will now go on to look into some of the arguments, which, in reality, may not be found to be adding and enhancing any value for the companies, though these may appear, on the face of it, to be rather plausible and convincing.

6.4.1 Diversification

The process of diversification may result in some substantial reduction in the risk elements between the two merging companies, but only where there may exist a negative correlation between the earnings of such two companies. As against this, the existence of a positive correlation between the earnings of the two merging companies may result in a much lesser reduction of risks.

Moreover, even the investors do not derive any benefit from the merger of such two companies with the objective of reduction of the risks, due to the diversification, inasmuch as they may, on their own, reduce the elements of risks by going in for purchase of the shares of the two companies (which are proposing to merge) from the stock market, in a suitable proportion. Besides, such self-made diversification may give them a much greater flexibility, in that they may buy the shares of these two companies in suitable proportions, and at the same time, they may have the option of changing its portfolio the way they may like, and whenever they may like, depending upon the changing circumstances and the stock market behaviour. As against this, they may get confronted and stuck with a fixed proportion of shares they may get in the event of the merger.

But such flexible option may not be available to the existing shareholders of the two merging companies, if the shares of both these companies, or even of one of them, are not quoted and traded in the stock market. Thus, under such conditions, the only flexible alternative seems to be by way of corporate diversification, especially under the circumstances where one of such merging companies is confronted with such problems, which may jeopardize its very existence. Thus, its merger with the other stronger company, may well save it from the imminent bankruptcy and getting wiped off from the economic and industrial scene.

6.4.2 Lower Financial Costs

It is generally believed that, by virtue of merger, the cost of borrowing may go down for the following main reasons:

(a) The merger will give rise to increase in the (joint) size of the new company, and its greater power of earnings, and the financial stability that goes therewith.

(b) The equity base of the (joint) emerging company will naturally go up, as it will be the combined stocks of the two or more merging companies.

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(c) And, based on the aforesaid favourable factors, the creditors (both the banks and the sundry creditors) of the merged company, may feel more safe and secured and, therefore, may prefer to quote a somewhat favourable rate of interest and terms of credit sales, respectively.

But then, from the investors' (shareholders') point of view, the resultant increase in the level of equity, goes on to correspondingly enhance their own risk burden, related to their own funds, as against the loan or borrowed funds. Thus, on an ultimate analysis, the investors (shareholders) of the merging firms do not stand to gain much out the resultant mergers, in that the advantages of lower borrowing cost, if made available to the company, gets offset by the corresponding increased burden and risk of the own fund (equity) of the shareholders.

6.4.3 Growth in Income

There seems to be a general misconception and illusion that merger necessarily results in the growth in the income of the shareholders, which, in turn, may lead to a suitable increase in the market pricing of the shares of the companies, so merged. But this is not true, inasmuch as, in the event of a merger, the share holders of the merging company get the share of the merged company in proportion to their asset valuation and the prevailing market price.

For example, when the Reliance Petroleum Limited (RPL) had merged with the Reliance Industries Limited (RIL), the shareholders of the RPL had got the shares of RIL in the ratio of 1:11; that is one share of RIL in exchange of 11 shares of RPL. And, the resultant fractional shareholdings were duly compensated by way of payment of the sale proceeds of the consolidated shares of such franctional holdings.

It has, however, been observed that in some cases the market price of the post-merger company goes up initially (though falsely) but finally, after some time, it gets stabilised at the realistic level, showing no increase, whatsoever

6.5 STEPS AND PROCEDURES OF MERGER

A merger transaction involves three main considerations. These are:

- Legal provisions and procedures
- Provisions of taxation
- Accounting systems and procedures

Legal Provisions and Procedures

The legal procedure for a merger transaction involves the following steps and stages:

(i) **Examination of the Object Clauses:** As the very first step, the Memorandum of Association of both the merging companies must be referred to see:

(a) Whether the power to merge exists in both the cases, and

(b) Whether the object clause of the transferee (merged or amalgamated) company permits it to carry on the business of the transferor (merging or amalgamating) company. In the absence of such a clause, this clause has got to be incorporated in the Memorandum of Association, with the required approval of the shareholders, the board of directors, and the Company Law Board, as per the laid down procedures in law.

(ii) **Intimation to the Stock Exchange(s):** It is imperative that all the stock exchanges, wherein the shares of the merging and merged companies are listed, are duly informed about the proposed merger. Besides, the stock exchanges concerned must also be kept informed of the developments, from time to time, by sending the copies of all the documents, like the notices, resolutions, and orders, passed by the respective companies.

(iii) **Approval of the Draft Merger Proposal by the Respective Boards:** The respective Boards of Directors of the two companies must approve the draft merger proposal, and should also pass the resolution to the effect that the directors/executives are authorized to pursue the matter further.

(iv) **Application to the High Court:** The next step involves that each company must move an application to the High Court to seek the permission to convene a meeting of the shareholders and creditors for the purpose of passing and approving the merger proposal.

(v) **Despatch of Notices to the Shareholders and the Creditors:** Now comes the turn for sending, by each company, by post, the notices (along with the explanatory statements) for convening the separate meetings of the shareholders and the creditors, as approved by the High Court. It must, however, be ensured that the shareholders and the creditors of each company duly receive such notice at least twentyone days before the scheduled respective dates of such meetings. Besides, such notices need to be published in at least two daily newspapers (one of English and the other of vernacular). Further, an affidavit, too, should be filed in the Court to the effect that:

   (a) The notices have been despatched to the shareholders and the creditors, and

   (b) These have been published in two newspapers (one in English and the other in vernacular).

(vi) **Separate Meetings of the Shareholders and Creditors:** Two separate meetings, of the shareholders and the creditors of each of the companies involved, should be held whenever the scheme of merger is required to be approved and passed by at least 75 per cent (in value) of the shareholders, in each class, and by the same at least 75 per cent (in value) of the creditors, who vote either in person or by proxy.

(vii) **Petition to the Court:** After the scheme of merger has been passed in the meetings of the shareholders and the creditors, separately, and in the cases of each of the companies involved, as aforesaid, the involved companies are required to file a petition in the Court of law for confirmation of the scheme of merger. Thereafter, the Court fixes up a date for the hearing. A notice about the date so fixed by the Court should be published in at least two newspapers, as aforesaid. Besides, the notice is also required to be served to the Regional Director, Company Law Board.

After hearing the points presented by all the parties concerned, and satisfying that the scheme of merger is fair and reasonable enough, the Court will go on to pass an order sanctioning the merger. It thus, goes to imply that the Court is within its powers even to modify the scheme of merger and, pass orders, accordingly.

(viii) Filing of the Order with the Registrar of Companies

(ix) Certified copies of such Court order must be obtained and filed with the Registrar of Companies within the time period specified by the Court.

(x) Transfer of Assets and Liabilities: After the passing of the final order(s) by the Court, the entire assets as also the liabilities of all the merging companies concerned, are to be transferred to the merged company, with effect from the appointed date.

(xi) Lastly, after all the provisions of law have been fully fulfilled and duly completed, comes the turn of the issuance of the appropriate number of shares and debentures by the merged companies, which may later be listed on the stock exchange(s). However, in some cases, cash payments may have to be arranged.

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Provisions of Taxation

(i) ***Depreciation:*** For the purpose of taxation, the depreciation, to be charged by the merged (amalgamated) company is required to be computed on the basis of the 'written-down-value' of the assets, prior to the merger. But then, for the accounting (company law) proposes, it may be computed on the basis of the consideration (price) paid for the assets.

(ii) ***Accumulated Losses and Unabsorbed Depreciation:*** The accumulated losses and unabsorbed depreciation of the amalgamating (merging) company may be considered to be the loss/depreciation of the amalgamated (merged) company for the preceding year in which the amalgamation has been made effective, provided the following conditions are satisfied:

(a) The amalgamating company owes an industrial unit or a ship.

(b) The amalgamated company continues to hold at least 75 per cent of the assets (in value) of the amalgamating company, which has been acquired in the process of amalgamation, at least for five years from the effective date of the amalgamation.

(c) The amalgamated company continues to be in the business of the amalgamating company for at least five years, and

(d) The amalgamated company satisfies such other conditions, too, as may be prescribed to ensure the revival of the business of the amalgamating company, or to ensure that the amalgamation is for genuine business purposes.

In the event of the aforesaid specified conditions not being fulfilled, that part of the carry forward of the accumulated losses and the unabsorbed depreciation, remaining to be utilized by the amalgamated company, will be treated as the income in the year in which the failure to fulfil such conditions takes place.

(iii) Capital Gains Tax: No capital gains tax applies to the amalgamating company or its shareholders, if they get the shares in the amalgamated company.

(iv) Other Related Provisions of Taxes

These are given hereunder as follows:

(a) The amalgamated company is required to pay the taxes, due from the amalgamated company.

(b) (i) Expenses of amalgamation are not treated as tax-deductible expenses.

(ii) However, the taxes on the income of the amalgamated company, paid or even payable, as also the income tax litigation expenses, are treated as tax-deductible expenses for the amalgamated company.

(c) Bad debts, arising out of the debts of the amalgamating company, which were taken over by the amalgamated company, however, are not treated as tax-deductible.

(d) Any refund of taxes, paid by the amalgamating company, will be refunded to the amalgamated company.

(e) Any carried forward long-term capital losses, incurred by the amalgamating company, do not get carried forward by the amalgamated company.

6.6 ACCOUNTING SYSTEMS AND PROCEDURES

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As per the Accounting Standard 14 (AS14) pertaining to the amalgamation (issued by the Institute of Chartered Accountants of India), an amalgamation may be either in the nature of:

(a) Uniting for interest (or merger), or (b) Acquisition.

Cash vs Stock Compensation

While taking a decision as to whether the payment of the resultant compensation should be made in cash or in stocks (shares of the amalgamated company) to the shareholders of the amalgamating company, the following three main factors must be considered and weighed:

(i) ***Overvaluation:*** In case the stocks of the acquiring company happen to be overvalued, in comparison to the stocks of the acquired company, it will make a better business sense to pay the compensation in the form of stocks (shares) of the acquiring company, instead of in cash, which may naturally prove to be a cheaper and hence a more profitable proposition.

(ii) ***Tax benefits:*** While the cash compensation, paid to the shareholders of the acquired company, becomes taxable in their hands, the compensation paid in the form of stocks (shares) is treated as non-taxable. Therefore, it may be beneficial for the shareholders of the acquired company to prefer the compensation in the form of stocks (shares), rather than in cash.

(iii) ***Risk and Reward Sharing:*** In the case of payment of the compensation in cash, the shareholders of the acquired company automatically get absolved of all the risks but, at the same time, they get deprived of the rewards of the merger, too. As against this, if the compensation was to be paid in the form of stocks (shares), the shareholders of the acquired company continue to share all the risks as also the rewards connected with the merger.

6.7 TAKEOVERS

What Constitutes a Takeover?

A takeover usually comprises acquiring the effective control over the affairs of the company by virtue of holding a substantial amount of value and volume of the shares of the target company. Theoretically speaking, for the purpose of takeovers, the taking over company must acquire at least 51 per cent of the fully paid up equity shares of the target company. But, in actual practice, even from 40 per cent to as little as 20 per cent, or even a lesser percentage, may be found to be quite sufficient to serve the purpose. The aborted attempt, on the part of the Reliance Industries Limited (RIL), to acquire a certain percentage of the fully paid up shares of L&T from the open market, through some indirect channel, is a case in point.

This is so because, most of the small investors (shareholders) are scattered and unorganized, whereby they just do not have an effective voice and actual voting to thwart any adverse attempt or to change some vital decision of the board of directors of the company, in the general body meeting, called for the purpose. Some of the companies (e.g. RIL) even prefer to strategically hold such general body meetings, or even annual general meetings, in some remote villages located

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in rather difficult locations, so as to discourage the participation of most of the shareholders, especially those who may be expected to raise some points of objection and differences. However, the pro-management shareholders are facilitated to reach the venue in time, or even well in advance.

Takeovers, however, of late, have gained much popularity in the Indian corporate world. Some prominent cases of recent takeovers are as follows:

Chhabrias	:	Shaw Wallace
Goenkas	:	Calcutta Electric Supply Company (CESCO)
Hindujas	:	Ashok Leyland
Hindalco	:	Indal

Mcleod Russel : Union Carbide (Renamed as Eveready India)

Reasons (for and against) Take Overs

Opinions are widely divided amongst the academia and the professionals about the advantages, or otherwise, of the process of takeovers. It is generally agreed that the takeovers usually lead to a marked improvement, in forward and backward integrations, and the beneficial synergetic effects. Likewise, it has been argued that the imminent dangers of take overs may induce and activate the management to be always on its toes, so as to avoid and avert any such attempt. In fact, T. Boone Pickens, Jr., vehemently argues in favour of take overs and goes to the extent of saying that it is an effective device to punish the weak management, and thereby to protect the interest of the small investors (shareholders). But, on the other hand, Warren Law incisively criticises and challenges the arguments of Pickens, Jr., and holds that the extant management looks after the interest of the company and its shareholders in a much better manner, in comparison to the raiders (or predators), who have generally been seen to take over the companies with a view to making a fast buck, or to serve its own interest at the cost of the other. Peter F Drucker is also opposed to the strategy of take overs, as he feels that it usually adversely affects the morale of the employees, as also the activities of the company. He further strengthens his arguments against take overs by saying that it is only in some 30 per cent cases that some improvements in the performance have been observed. Thus, in a majority of 70 per cent cases, the take overs have failed to bring in any improvement in the efficacy of the management.

But then, there are sufficient evidences even in support of take overs, as have been revealed by several empirical studies. Michael Jensen and Richard* have concluded: 'In brief, the evidence seems to indicate that corporate take overs generate positive gains, that target shareholders benefit and the bidding firm's shareholders do not lose.... Finally, it is difficult to find managerial actions related to corporate control that harm shareholders'.

Rules and Regulations of Take Overs

The take overs, to be considered as legal and legitimate, must confirm to the following laid down rules and regulations:

(i) ***Transparency in the Process of Take overs:*** The process of take overs involves the varied interests of various parties and persons, like the shareholders, employees, customers, suppliers, creditors, the various acquirers, and so on. Hence, it has been provided that the whole process of the take over should be, and should also be perceived to be, open and above board, transparent and clear, such that all the involved parties may feel satisfied that their interest is not jeopardized in any manner, and at any stage.

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(ii) ***Safeguarding the Interest of the Small Investors:*** It has been observed that in the take over process, the 'controlling block' of the shares (which usually ranges between 20 to 40 per cent or so), is acquired from one single party at a negotiated price which, naturally, is higher than the prevailing market price. Implicitly, the single party concerned must have purchased these shares from the open market (stock exchanges) from various parties, largely involving the small shareholders, at the prevailing market price, which is definitely lower than the negotiated (selling) price that the single purchaser must have charged from the acquirer firm. Thus, in the process, the small shareholders stand to lose, if they are not in the know of the deal. Under the aforesaid circumstances, the code of conduct in the process of take overs, should also stipulate that the other shareholders, specially the smaller ones, are not likely to be put at any disadvantageous situation.

(iii) ***Realisation of Economic Gains:*** The main economic rationale, lying behind any take over, has been stated to be a marked improvement in the efficiency and efficacy of the operations, and a better utilization of the resources. To enable the acquirer to realise such objectives, he must be allowed sufficient flexibility and freedom in the areas of restructuring of the operations, widening the range of the products, deployment of the available resources, etc. Besides, in the cases of take overs of some sick units, with a view to rehabilitating them, the acquirer company must be given some fiscal incentives and concessions, to popularize and accelerate the process of such take overs.

(iv) ***Avoidance of Over-concentration of Market Power:*** Further, due care must be taken to ensure that, as a result of the take over, the acquirer company may not start enjoying the unduly strong and concentrated power in the market, which has the inherent danger of becoming detrimental to the interest of the customers and others.

(v) ***Financial Support:*** It has also been suggested that some competent persons, with proven managerial abilities, efficiency and good track records, must be given suitable financial assistance by way of loans from the banking system, or be allowed to approach the investors through capital market, so as to enable them to participate in the take over deal and process, such that it may not remain an exclusive domain of the financially strong and stable companies alone.

6.8 GUIDELINES STIPULATED BY SECURITIES AND EXCHANGE BOARD OF INDIA (SEBI)

The main guidelines, stipulated and issued by the SEBI, pertaining the acquisition of a substantial portion of the shares of a listed company, are discussed hereunder:

(i) ***Notification:*** The moment the holding of the acquirer company touches five per cent of the voting share capital of the target company, it is required to immediately inform the target company, as also all the stock exchanges on which the shares are listed and traded.

(ii) ***Public Offer:*** When such holding of the acquirer exceeds 15 per cent of the voting share capital of the target company, it is required to make a general offer for the purchase of a minimum of 20 per cent of the voting share capital from the remaining share holders, after making a public announcement to this effect.

(iii) ***Offer Price:*** The offer price can, in no case, be less than the highest of the following:

(a) Negotiated price,

(b) Average price paid by the acquirer,

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(c) Preferential offer price, if made during the last twelve months,

(d) Average of the weekly high and low [quoted prices in the stock exchange(s)] for the last twenty-six weeks.

(iv) Public Announcement: The public announcement must, inter alia, contain the following information:

(a) Number of shares to be acquired.

(b) Minimum offer price.

(c) Objective of the take over.

(d) Date by which the letter of offer is to be posted.

(e) Opening and closing dates of such offer.

Rationale Behind the SEBI Guidelines

The rationale behind the SEBI guidelines may be said to be as follows:

(i) To provide greater transparency to the deals of the take over.

(ii) To ensure that the disclosures, required to be made, in the public announcements and the letter of offer issued in this regard, are sufficient and adequate, greater and wider.

(iii) To safeguard the interests, specially of the small investors (shareholders).

6.9 ANTI-TAKEOVER DEFENCES IN INDIA

With a view to averting an attempt of a takeover, the Indian companies may invoke one or more of the following anti-takeover defences:

(i) ***Make Preferential Allotments:*** With a view to enhancing its equity stake, the promoter group may be allotted the required number of the equity shares or convertible securities (like fully convertible debentures) on a preferential basis.

(ii) ***Resort to Creeping Enhancement:*** SEBI guidelines have provided that the promoter group, can enhance its holding of the equity shares by way of creeping enhancements, within the prescribed limits, without being required to make an offer in the open market.

(iii) ***Amalgamation of Group Companies:*** A much larger company may be formed by way of amalgamation of two or more of the companies, promoted by the same group(s). This way, the take over may become rather far more difficult, inasmuch as, a larger company is far less vulnerable to the risks of take over, as compared to the smaller ones.

(iv) ***Sale of the Crown Jewel:*** It has often been found that some particular and valuable assets or assets of the company may attract some other companies to take it over. In such an eventually, the target company prefers to sell off its asset or assets to another company, so as to make it far less attractive in the eyes of the raiders, and thereby avert the attempt of the take over.

Help from a White Knight: A company, under the threat and danger of its takeover, may call for help and support from its friends and supporters. That is to say that, it may request the white knight to help it and save it from the clutches of the raider. The term 'white knight' has been described in the Chambers twenty-first century dictionary, as 'someone who rescues a company financially, especially from an unwanted take-over bid'.

6.10 ROLE OF FINANCIAL INSTITUTIONS

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By virtue of holding a substantial portion of the equity shares of large scale industries, the financial institutions command the balance of power, in that no takeover may take place without their consent. Accordingly, they are expected to play a crucial role in averting any undesirable takeover attempt. It has been found that, while in some cases the financial institution play the role in an objective and responsible manner, in some other cases they seem to play their role in a somewhat arbitrary and undesirable way. It will, therefore, be much desirable if some general guidelines are issued, so as to direct the action and role of the financial institutes in the desired manner, and more importantly, in the larger public interest. Accordingly, they should ensure that:

(i) The take over process is transparent.

(ii) The prospective acquirer companies are allowed to play on an even field.

(iii) The likely outcome of the take over should be the improved performance and profitability of the company concerned.

(iv) The interests of the shareholders, as also those of the other stakeholders and interested parties, stand protected.

(v) The take over may not give rise to any undue concentration of market power.

6.11 JOINT VENTURES

Joint ventures, or strategic alliances as these are usually referred to, involve a partnership between two or more independent companies, which may join together with common and mutually advantageous purposes. It is usually established as a newly constituted company, though the partners concerned may prefer some other form of the organisation. The establishment of P&G Godrej Limited, a joint venture of Godrej Soap Limited, and Procter and Gamble India Limited, is an apt example in point. In almost all the cases ofjoint ventures, the partners participate in its equity share capital. They also contribute the resources in the form of technology, facilities channels and network of distribution, brand equity, key manpower, etc. Thus, they jointly manage and control the affairs of the joint venture.

Rationale behind Joint Ventures

In India, the formation of joint ventures, especially between some Indian and foreign company, has, of late, been gaining ground.

The rationales behind such joint enterprises are the following:

(i) To become complementary and supplementary to each others, by pooling together their specific resources for the common purpose.

(ii) To get an access to the supply of raw materials and/or gain grounds in the fresh markets.

(iii) To diversify the components of risks.

(iv) To reap the benefits of the economy of scale.

(v) To ensure cost reduction.

(vi) To enhance the scope of tax concessions and rebate.

But it has also been found (vide the studies conducted by McKinsey & Company, and Cooper & Lybrand), that in most of the cases the joint venture have failed to succeed mainly due to the following reasons:

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(i) Inadequate pre-planning.

(ii) Failure in developing the expected technology.

(iii) Differences in the strategy, approach and vision of the partners.

(iv) Reluctance and refusal on the part of the partners to share the control of the management of the company.

(v) Inability to arrive at an agreement in respect of some difficult but vital issues.

It will, therefore auger well if due care is taken to avoid the aforesaid dangers and pitfalls, before attempting to go in for a joint venture company.

6.12 PORTFOLIO RESTRUCTURING

While the mergers, acquisitions, and takeovers are based on the principle of synergy, which may be represented figuratively as 2 + 2 = 5, the portfolio restructuring or demerger can well be termed as 5 - 3 = 3, or on the principle of 'anergy'. These two may as well be said to contain the elements of expansion and contraction, respectively.

Divestitures (Dis-investments)

Divestiture involves the sale, not of the whole but only a part (a division, a plant or a unit) of one company to another. It thus, amounts to expansion and contraction from the respective points of view of the buyer and the seller companies. We may also say that divestiture is the reverse or opposite of purchase. The sale of its cement division by the Coromandel Fertilisers Limited to the India Cements Limited is a case in point. Further, the sale of the cement segment by L & T to Ultratech Cement is a mor recent example.

Rationale behind Divestitures

Some of the rationales, lying behind adopting the strategy of divestitures, are discussed hereunder:

(i) ***Raising Capital:*** Companies, confronted with the problems of cash crunch or lack of liquidity, usually resort to the strategy of divestiture, whereby the inflow of cash could be used for repayments of the debts and settlements of the dues, and the production of the remaining products could be concentrated upon.

CEAT had sold out its nylon tyre chord plant at Gwalior to SRF, for a consideration of ' 325 crore, to meet its aforesaid objectives, and to concentrate on the activities of production of tyres.

(ii) ***Reduction of Losses:*** When a unit of a company seems to be incurring losses, or even some sub-optimal rate of return, it may make a better business sense to sell this division or unit to some other interested party, so as to cut its losses, and thereby enhance its prospects to earn a relatively better profit.

(iii) ***Strategic Realignment:*** There may be cases where some unit or units of a company may not gel well with its other lines of activities, which in turn, may take a lot of its managerial time and energy, incommensurate with the revenue and profit generated thereby. Under such circumstances, the company may prefer to sell such unit or units to some other interested buyer, so as to concentrate on its main and corelated lines of business for a better overall results.

The case of ICI is a good illustrative example in point. ICI had sold its fibre division to Terene Fibres India, its fertiliser division to Chand Chhap Fertilisers and Chemicals,

and its seeds division to Hysum India, mainly for the aforesaid strategic reasons. This had helped the ICI to concentrate on its main activities of production of paints and industrial chemicals, which is very much in line with its parent's line of business and global presence.

(iv) Enhancement of Efficiency: It makes a prudent business sense to divest, when the division, plant or unit of the firm is expected to enhance the efficiency, and hence the value, of the part so divested, when it becomes a part of the other company, or else, as an independent (stand-alone) business entity. This may happen when the 'anergy' (also known as the reverse synergy) takes place. This may be said to be a situation where the value of the parts becomes greater than the value of the whole, or else, figuratively speaking, when 5 - 3 = 3 (and not just 2). As against divestitures, the cases of mergers, result in synergy, where the whole is expected to be of a greater value than the sum of the parts. This, when represented figuratively, may be stated as 2 + 2 = 5 or 2 + 3 = 6.

6.13 FINANCIAL RESTRUCTURING

Financial restructuring, as the name itself suggests, essentially involves a major change in the overall financial structure (composition, base, or source) of a company, and/or the pattern of its ownership and control. It may take place in several ways. But, the main two types of financial restructuring have been discussed here. These are:

- Financial restructuring, with a view to bringing some relief from the debt burden
- Financial restructuring, with a view to concentrating the ownership of the equity shares of the company (and the management and control therewith) in a few hands only, with the financial help from the outside by way of debt, instead of equity.

Relief from Debt Burden

The companies, confronted with some financial difficulties, or those which are already sick or are about to be declared sick, endeavour to significantly and substantially reduce the quantum and extent of the burden in the form of debt, in one or more of the following ways:

(i) They request their creditors (lenders) to convert the entire portion, or a substantial portion, of the debt into equity, whereby the burden of ever increasing payment of interest on account of debt, could be avoided. As we all know, as against the legal obligation, on the part of the company, to regularly make the payment of the amount of periodical interest on debt or debentures, there is no compulsion on its part to pay any dividend on its equity shares.

(ii) They may as well request the creditors for the writing off of a substantial portion, or the entire quantum of interest, accumulated over a period of time.

(iii) The third strategy that they may adopt is to make a request for the provision of a suitable moratorium on the repayment schedule of the loans, both short-term and long-term.

(iv) They may also request for a suitable reduction in the rate of interest being charged from them on their loan accounts.

(v) Further, they may as well request for the concessions to the following effects:

(a) That, the accumulated quantum of interest may be made payable by them in suitable instalments, commensurate with their income generation, as from now, and

(b) That, they may not be required to pay any interest on the amount of the entire accumulated interest.

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6.14 CONCENTRATED EQUITY WITH DEBT COMPONENTS (ALSO KNOWN AS LEVERAGED BUYOUT)

The idea behind keeping the entire equity shares of the company within a very limited number of shareholders is to keep the management and overall control of the company in rather personal pockets. To this end, the balance amount of the finance required, being of a very high percentage, usually in the range of 80 to 85 per cent, is met by the outside sources, but only by way of debts, and not as equity. This strategy serves the twin purposes, of keeping the management and control of the company exclusively in very limited hands and, at the same time, keeping the owners' stake in the business to a limited extent.

Besides, the very fact that a very large portion of such venture is financed by way of a debt, it may go a long way in strengthening and streamlining the management of the company in an efficient and professional manner, so as to service the debt in due time. This brooks no mistake on the part of the management, which is required to be on its toes all the time. As G. Bennett Stewart III, Succinefly puts: Equity is soft, debt hard. Equity is forgiving, debt insistent; equity is a pillow, debt a sword. Equity and debt are the yin and yang of corporate finance.

[*Yin and Yang, in the Chinese language, stand for feminine and masculine elements, force and energy*]

Such arrangement, in the parlance and jargon of financial management, is referred to as 'Leveraged Buyouts'. Usually, such leveraged buyouts pertain to the acquisition of a division or unit of a company, and rarely by way of the purchase of the company, as a whole. The steps and strategies, involved in a leveraged buyout transaction, may be better understood and comprehended with the help of an illustrative example.

Example

Sunrise Industries Limited has five divisions, viz. plastic, paper, printing, leather bags, and home-appliances divisions. The company does not seem to be doing very well in its printing division. Accordingly, it is contemplating to sell this division out. But, unfortunately, it is expected to fetch only ‘ 100 lakh on liquidation, though its replacement cost has been estimated at ‘ 175 lakh. But, the company seems to be inclined to sell the division just for ‘ 120 lakh. Five key personnel in the printing division are reported to be inclined to purchase the printing division for ‘ 120 lakh, on a leverage buyout basis. But, they are prepared to invest ‘ 10 lakh only; all of the five persons contributing ‘ 2 lakh each. They now go to the financial institution for grant of a term loan to finance the project. On appraisal of the project report, submitted by the five executives, the financial institution has to come to the conclusion that the new company, run on an independent basis, by the five key personnel of the erstwhile printing division, may be able to generate sufficient cash surplus to support a total outlay of ‘ 120 lakh. But, the financial institution has assessed the quantum of term loan at ‘ 100 lakh only. This still leaves a gap of ‘ 10 lakh. Now the new proposed company contacts a private investor, who is willing to invest a sum of ‘ 10 lakh in the company by way of its equity shares. Thus finally, the printing division of the company gets incorporated under the name of 'Popular Printing Press' as an independent company, with the capital base detailed as follows:

(i)	Equity shares of ‘ 2 lakh each by the five key personnel of the erstwhile printing division of the Sunrise Industries Limited	₹10 lakh
(ii)	Equity shares of an outsider (the private investor)	₹10 lakh
(iii)	Term loan by the Financial Institution	₹100 lakh
	Total	120 lakh

Thus, the loan fund is ‘ 100 lakh, and the equity base is ‘ 20 lakh only, in the ratio of 5:1, or say, 83 per cent and 17 per cent (approximately).

A Success Story

Kohlberg Kravis Robert & Co. (KKRC), has acquired a major portion of the equity shares in a large number of companies, like RJR (the tobacco giant), Safeway (a large chain of grocery shops), Owen-Illinois (the largest glass manufacturing company in the USA), and Duracell (a reputed company manufacturing batteries), to name only a few. Thus, we see that all the forenamed companies, acquired by KKRC, are entirely unrelated to each other. Further, the company had paid quite a high premium for such deals. The company, however, has been reported to have had a mixed record of success, and some failures, too.

It may, therefore, augur well for the business world to learn a lesson or two from the facilitating factors, the steps and strategies, that have gone to improve and enhance the productivity and profitability of the majority of the companies, after these had been acquired by KKRC. Some of such outstanding success factors are discussed hereafter.

Decentralized Structure

The company has taken a strategic stand in favour of having a thoroughly decentralized organizational structure, in the truest sense of the term. Accordingly, all the companies have a minimal number of staff. It does not have the usual bureaucratic managerial culture in the organisations. There is no setting of corporate goals of productivity and overheads, nor holding of any corporate meetings. Above all, the company has realised that its people are its most important asset. Therefore, KKRC manages people, not by mandate, but by motivation. It works, and works well. Because, as we all know, we may force people to work, but cannot force people to work well. You can only motivate them to work well, as the motivated people work, not because they have to, but because they love to.

Aggressive Use of Debt

Though KKRC largely depends on the debt component in its capital structure, all its borrowings are also completely decentralised. Besides, the loans are obtained, managed and served by the subsidiary companies independently, and effectively. To put it in the words of G. Bennett Stewart III ‘Much like a boat whose hull is divided into separate chambers; compartmentalising debt and equity ensures that a leak in any one unit cannot sink the equity in any of the other unit’.

(Source: ‘The Quest for Value’, Harper Business, New York, 1991).

Prompt Repayment of Debts

KKRC believes in the principle of repaying the amount of instalments, with interest, as soon as possible, and preferably, even much earlier than the stipulated due dates, as per the repayment schedule. It thus, saves a substantial amount of interest payable on the loans. Further, by virtue of such earlier repayment practices, the credit-worthiness and financial stability and viability of the company go further higher up in the eyes of the banks and the other creditors. This way, the

company's borrowing capacity and credibility gets greatly enhanced which, in turn, facilitates the sanction and disbursement of further chains of loans to the company by the banks and the other creditors. Finally, the company may as well gradually enhance its ownership stake in the business, and reduce its dependability on debts.

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6.15 ORGANISATIONAL RESTRUCTURING

In the present era of globalization, and the resultant ever-increasing competition, most of the companies have now preferred to adopt the strategy of organizational restructuring. Some of the main and common elements and strategies involved in the organizational restructuring have been discussed hereafter.

Regrouping

This strategy involves the regrouping of a bigger number of scattered groups into a smaller number of groups; comprising strategically compact business units. Such groups/units are usually known as 'profit centres'. Based on such strategic principle, the renowned consulting firm McKinsey had recommended to Larsen and Toubro (L&T) to regroup its twelve business units into just five compact units or divisions. State Bank of India, too, on the advice of McKinsey, had created just four focused business groups, viz. Corporate, National Banking, International Banking, and Associates and Subsidiaries.

Decentralization

De-centralization and delayering gives extensive and enhanced discretionary powers to the executives, go a long way in facilitating much quicker decision-making process, and the financial gains that go therewith. This strategy empowers people and enhances their level of motivation, zeal and commitment. McKensey had made such suggestions to the State Bank of India, which has resulted in perceptible change in the pace and speed in the decision-making process. Hindustan Lever Limited, too, has reduced its managerial layers from nine to five.

[The name of Hindustan Lever Limited has since been changed to Unilever India Limited].

Downsizing

Downsizing, since being more elegantly and respectfully referred to as rightsizing instead, involves reducing the size of the workforce, both at the clerical (and worker's) and officers' levels, so as to keep the amount of payment of salary and wages at the minimal possible extent, with a view to cutting down the surplus manpower upto an optimal level. The strategy of introducing and implementing the Voluntary Retirement Scheme (VRS) has been found to be most popular in the recent times. Accordingly, the Tata Iron and Steel Company (now Tata Steel) had resorted to the downsizing strategy in a big way in the late 1990s, and so had been the case with the State Bank of India (SBI) in 2001–2002.

Outsourcing

Outsourcing means that the non-value adding activities may better be done from some outside sources, instead of doing it in-house. It also involves sub-contracting. Such strategies keep the fixed costs at a very low level, and the break-even point too, therewith. Thus, the entire cost of outsourcing and sub-contracting comprises just the variable cost. It is with such beneficial fallouts that the Tata Engineering and Locomotive Company (now Tata Motors) preferred to procure around 75 per cent of the parts and components for its Indica car by way of outsourcing and/or sub-contracting.

Business Process Re-engineering (BPR)

According to Joe Peppard and Philip Rowland, the Business Process Re-engineering (BPR) 'aims to achieve improvement in performance by re-designing the process, through which an organisation operates, maximizing their value-added content and maximizing everything else. This approach can be applied to an individual process level, or to the whole organization'. A very handy example of BPR is the case of re-engineering of Ford Motor Company's accounts payable (sundry debtors) department, which had resulted in the manpower reduction to a substantial extent, that is, up to 75 per cent.

Computerized Management Information System (MIS)

In the present age of high-tech and computerization of business activities, the traditional MIS is gradually being replaced with the computer-based MIS, whereby, instead of fragmented and departmentalised MIS, the whole enterprise-wide computerized and integrated MIS has been evolved. This mechanization helps the management to quickly perceive and foresee the overall effect and ramifications that a change in one segment or division may have on the performance and activities of the entire organization. This is one of the several beneficial uses of the advancement in the Information Technology (IT) in the area of planning, management and control. The computerbased MIS is popularly referred to as the comprehensive enterprise resource planning system. Mahindra and Mahindra (M&M) is one of the companies, which has introduced such system in its organization.

Total Quality Management (TQM)

Total Quality Management (TQM) has proved to be a very effective instrument of quality control which, in turn, goes a long way in reducing the cost, enhancing the customer satisfaction as also the loyalty to the product, and the productivity and profitability of the company that go therewith. Accordingly, the obtention of quality certificates and registrations like ISO 9000, ISO 9002, and so on, are gradually gaining popularity in the various industrial and commercial segments in India. Such certifications and registrations have been found to be a great motivating factor for the much-desired zeal to improve upon the quality of the products on an on-going basis. The introduction and implementation of a very ambitious Six Sigma Total Quality Management (TQM) drive by WIPRO is a recent case in point.

6.16 FINANCIAL EVALUATION OF DIVESTITURE

In the event of the sale of a unit (a division or a plant) by one company to another, both the assets and liabilities of the unit get transferred to the buyer company, of course, with the consent of the creditors concerned. That is to say that, the selling company (hereafter referred to as the parent company) essentially transfers its ownership rights and portion in that specific unit so divested.

It, therefore, means a prudent business sense to first evaluate whether such proposed and planned divestiture will be financially gainful and therefore, desirable. While undertaking such excercise of the financial evaluation, the following steps and procedures must be adopted, as has been discussed seriatim hereafter.

Estimate the Post-tax Cash Flow of the Unit (or Division or Plant)

Such estimate essentially aims at evaluating as to what may happen, in regard to the post-tax cash flow of the parent company in the following two cases:

(i) With the unit (or division), and

(ii) Without the unit (or division).

Thus, the difference between the two will represent the post-tax cash flow that may be attributed to the unit (or division) being so divested.

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Compute the Discount Rate of the Unit (or the Division)

The discount rate applicable to the post-tax cash flow of the unit (or the division) must represent the risk of such unit (or division) as a separate business entity (a stand alone business unit). How to go about computing it? One of the approaches, suggested in such cases, is to first find out the cost of capital of some company (or a group of companies) which are solely or substantially engaged in the same line of business, and which are operating on almost the same scale and size. Thereafter, by proxy, use this as the estimated cost of capital of the unit (or the division).

Compute the Present Value of the Unit (Division)

Use the discount rate, estimated in Step 2 above, and compute the present value of the post-tax cash flow estimated in step 1 above. This will represent the current worth or the present value of the capability of the unit (or division) to generate the cash flow.

Estimate the Market Value of the Liabilities Pertaining Exclusively to the Unit (Division) being so Divested.

The market value of the unit (division) being divested is nothing but the present value of the obligations pertaining to the liabilities of such unit or division. It must, however, be noted that the market value of the liabilities, exclusively of the unit or division, will be quite different from its book value, if the contracted rates of interest on such liabilities are different from the current rates of interest.

Find out the Value of the Position of Ownership of the Parent Company in this Unit (or Division)

The value of the ownership position (VOP) of the parent company can well be computed in the following manner: Present value of the cash flow of the unit or division (vide Step 3 above) [less] the market value of the unit specific (or division specific) liabilities.

Compare the Value of the Ownership Position (VOP) with the Divestiture Proceeds (DP)

Now comes the final stage, when the decision has to be taken for or against the adoption of the strategy of divestiture. Here, the rule of the decision is simple enough. That is:

(a) If the divestiture proceeds (DP) are greater than the value of the ownership position (VOP) of the parent company, the natural decision will be go for the sale of the unit or division.

(b) As against this, if DP is less than the VOP, one must not sell the unit (or division) but retain it, instead.

(c) If both DP and VOP happen to be equal (or almost equal) the decision could be taken either way.

6.17 GUIDELINES FOR MANAGING DIVESTMENTS

It will augur well for the corporate world to develop and follow some basic guidelines and ground rules for taking the strategic decision of disinvestments (divestitures).

Normal Part of the Business Life

As rightly puts it, 'a company lives by expanding and contracting, by growing and changing, by acquiring and divesting. These are the actions of a healthy, vital company, not a sick, dying company'. Thus, the process of disinvestments must be treated as a normal process of change and growth. As we know, the various business and industrial activities have their own life cycles of ups and downs. A business activity, considered most appealing and attractive today, may take a back seat tomorrow, and vice versa. Sometimes we may tend to take some wrong decisions, unwittingly. Therefore, there is no harm in rectifying such mistakes at a later stage, sooner the better.

Only One Out of Many Responses

In case a business or division starts showing some signs of under-performance, a large number of options and strategies are available to us to face such adverse situations. We may prefer to wait and watch for sometime and allow the activity to continue for some more time. Or else, we may keep it closed down for some time, till the business conditions improve favourably, and for the better. The third option could be to add some new product lines to make the venture viable. The strategy of taking effective and aggressive measures to control the cost, so as to sell the product(s) at a comparatively lower price could as well be a prudent and paying strategy. The expansion and strengthening of the manufacturing, marketing and/or distribution activities could also resolve the problem to a great extent. Further, when none of the aforesaid steps and strategies seems to be working to give the desired results, the strategy of disinvestments needs to be considered and reconsidered with great seriousness.

Positive Approach

The main management mantra in the business world is that the event of disinvestments must be viewed most positively - as an opportunity and not as a malady or catastrophe. We must always bear in mind the words of Leonard Vignola Jr., as he rightly says 'Difficulties abound and optimum divestment is not overly easy to accomplish. Yet divestment ought to be viewed as a chance to turn a less than favourable situation into a future benefit to the divesting company'.

6.18 DEMERGERS

A demerger involves the transfer by a company of one or more of its undertakings to another company. The company whose undertaking is so transferred is known as the 'demerged' company, while the company or companies to whom the undertaking is so transferred is called the 'resulting' company.

A demerger may take place in the forms of a (i) spin-off or else a (ii) split-up. In the case of a spin-off, the undertaking or the division of a company gets spun-off and takes the form of an independent company. This way, after the spin-off, the parent company and the spun off company become separate corporate entities in the eyes of law. The spin-off of the Information Technology Division of WIPRO Limited in the late 1980s is an example in point (However, in the late 1990s, it was again merged back with the parent company.)

As against the spin-off, in the case of a split-up, the company gets divided (split) into two or even more independent and separate corporate entities. Thus, in the process, the parent company disappears, giving rise to the emergence of the two or more independent legal entities. The split-up of the Ahmedabad Advance Mills into two separate companies, viz. (i) the New Ahmedabad Advance Mills and (ii) the Tata Metal Strips, is an illustrative example. But then,

we must remember that, though the process of spin off and split-up is different in form, they have one and the same economic and financial implications.

Rationale Behind Demergers

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The main rationale and the motivating factors for resorting to the strategy of spinoffs and/or split-ups are that these steps enhance the corporate values with the resultant increased efficiency, performance and profitability. This so happens due to the following main factors:

(i) **Focused Attention**

By removing and discarding the weaker link in the chain of activities of the company, it is naturally enabled to pay the much desired focused attention on its remaining activities from the point and position of strength. The strategy adopted by Itek Corporation, USA, by spinning off of its 'Vision' products division, facilitated and strengthened its high-tech position and enabled it to dedicate and concentrate its resources and efforts in the areas where it had been enjoying the expertise and leadership.

(ii) **Higher Incentives and Accountability**

Another beneficial fall out of a spin-off is the stronger incentives and motivation felt on the part of the managerial staff. This way, their sense of responsibility and accountability also show a marked improvement. The beneficial effects of Peabody's International spin-off of GEO International is most aptly and succinctly summarized by its President in the 1980 Annual Report of Peabody's International in these words: 'Managers in both companies now feel that their individual efforts can make a significant difference in bottom line results'. [Bottom line means Profit After Tax (PAT)].

6.19 TAX BENEFITS OF DEMERGERS

(i) The tax benefits and concessions available to any undertaking will now be available to the resulting undertaking, too.

(ii) Accumulated losses and unabsorbed depreciation are allowed to be carried over from the demerged company to the resulting company.

(iii) The companies and the shareholders are exempt from the payment of capital-gains tax.

(iv) All the expenses, incurred solely and exclusively in the process, and for the purpose of the demerger, become tax-deductible in five equal annual instalments, i.e. to the extent of 20 per cent per annum.

It must, however, be noted that the aforesaid tax benefits will not be available to the company in the event of another demerger of the resulting company taking place within a period of ten years from the date of the earlier demerger.

6.20 SUMMARY

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6.21 REVIEW QUESTIONS

1. What are the various reasonable and unreasonable rationales involved in mergers? Explain each of them separately.

2. What are the various types of mergers? Explain each of them separately.
3. Merger transactions involve three main considerations, viz. legal procedures, tax provisions, and accounting systems and procedures. Explain each of them separately.
4. Discuss the salient features of a takeover.
5. Opinions are widely divided in the academic and the professional world about the advantages, or otherwise, of the process of takeovers. Elucidate.
6. (i) What are the main guidelines stipulated and issued by the Securities and Exchange Board of India (SEBI),pertaining to the acquisition of a substantial portion of the shares of a listed company?

   (ii) What is the rationale behind each of the SEBI guidelines?
7. What are the salient features of Joint Ventures? What is the rationales behind such joint enterprises?
8. While mergers, acquisitions, and takeovers are based on the principle of synergy, the demergers are based on the principle of 'anergy'. Elucidate.
9. What are the main elements and strategies involved in the organizational restructuring?