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Paper - VI

FINANCIAL MANAGEMENT

UNITS: I – VIII

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Bachelor of Business Administration - II Year

Paper - VI — Financial Management

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Paper VI - Financial Management

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PAPER VI – FINANCIAL MANAGEMENT

UNIT I

Nature of Financial Management – Finance Function – Meaning and Objectives of Financial Management – Scope of Financial Management – Functions of Financial Management.

UNIT II

Capitalization and Source of Finance: Capitalization – Over Capitalization – Under Capitalization – Advantages and Disadvantages. Sources of Finance – Long Term Sources and Short Term Sources – Legal Issues involved.

UNIT III

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Cost of Capital: Measurement of Cost of Capital – Cost of Debt – Cost of Preference Shares – Cost of Equity Capital – Cost of Retained Earnings – Computation of Overall Cost of Capital – Optimum Capital Structure.

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UNIT VII

Working Capital Management: Types of Working Capital – Determinants of Working Capital - Sources of Financing of Working Capital – Significance of Working Capital Management – Working Capital Policy (simple problems).

UNIT VIII

Management of Working Capital Components: Cash Management – Objectives – Motives for holding cash – Short Term Cash Forecast – Long Term Cash Forecast – Monitoring Collections and Disbursements – Receivables Management – Objectives – Credit and Collection Policies – Inventory Management – Objectives – Inventory Management Techniques (theory only).

Note: Distribution of marks between problems and theory shall be 40% and 60%.

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UNIT - I

LESSON - 1.1

NATURE OF FINANCIAL MANAGEMENT

Contents

- ☆ Introduction
- ☆ Scope of Finance
- ☆ Finance Functions
- ☆ Place of Financial Management in the total Management
- ☆ Changing role of Finance Managers
- ☆ Major Financial Decisions
- ☆ Objectives of Financial Management
- ☆ Treasurer's Functions
- ☆ Treasurer's and Controller's Function in the Indian context
- ☆ Questions

INTRODUCTION

Financial management is that managerial activity which is concerned with the planning and controlling of the firm's financial resources. As a separate activity or discipline, it is of recent origin. It was a branch of Economics till 1890. Still today, it has no unique body of knowledge of its own, and draws heavily on Economics for its theoretical concepts.

The subject of financial management is of immense interest to both academicians and practicing managers. It is of great interest to academicians because the subject is still developing, and there are still certain areas where controversies exist for which no unanimous solutions have been reached as yet. Practicing managers are interested in this subject because among the most crucial decisions of the firm are those which relate to finance, and an understanding of the theory of financial

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management provides them with conceptual and analytical insights to make those decisions skilfully.

The purpose of this unit is to give a broad perspective of financial management. We shall specifically discuss the scope, objectives and organization of financial management.

SCOPE OF FINANCE

In order to understand more clearly the meaning of business finance, it is worthwhile to highlight the scope of business finance. At the outset, it may be pointed out that business finance is concerned with finances of profit-seeking organisations only and is an important segment of private finance.

Finance as such is but one facet of broader economic activity of mobilising savings and directing them in investments. Finance includes both public and private finance. Public finance is the study of principles and practices pertaining to the acquisition of funds, meeting the requirements of government bodies and administration of these funds by the government. Contrary to this, private finance concerns with procuring money for private organisations and management of the money by individuals, voluntary associations and corporations. Private finance, therefore, comprises personal finance, business finance and finance of non-profit organisations. Personal finance seeks to analyse the principles and practices of managing one's own daily affairs. Study of practices, procedures and problems concerning financial management of profit-making organisations in the field of industry, trade and service and mining is undertaken in business finance. The finance of non-profit organisations deals with the practices, procedures and problems involved in financial management of educational, charitable and religious and the like organisations.

Business finance is further split into three categories, viz., finance of sole trading organisations, partnership firms and corporate enterprises. In the study of business finance emphasis is given to financial problems and

practices of incorporated enterprises because business activities are predominantly carried on by company form of organisation. This is why business finance is also studied as corporate finance. It is worth noting that the basic principles of finance will apply uniformly to large and small and proprietary and non-proprietary organisations. Nevertheless, there are sufficient differences of a specific operating nature justifying separate consideration of each of these organisations.

The field of business finance is so wide as to cover the study of financial operations of business enterprises right from its very inception to its growth and expansion and in some cases to its liquidation also. However, special attention is devoted to the analysis of the problems and practices entailed in raising and utilisation of funds. It should be noted that problems of purchase, production and marketing are outside the domain of business finance although their problems are so intimately linked to problems of finance that in actual practice it is difficult to discern them.

FINANCE FUNCTIONS

Modern scholars view finance as an integral part of the overall mangement rather than the fund raising operations of Staff specialist. Accordingly, the financial manager has been assigned wider responsibilities. According to them, it is not sufficient for the financial manager to see that a firm has sufficient funds to carry out its plans but at the same time he has also to ensure wise application of funds in the productive process. Thus, to carry out his responsibilities effectively is the bounden responsibility of the financial executive to make the rational matching of the benefits of potential uses against the costs of alternative potential sources so as to help the management to accomplish its broad goal. It is, therefore, concerned with all financial activities of planning, raising, allocating and controlling and not just with any one of them. Aside from this, he has to handle such financial problems as are encountered by a firm at the time of incorporation, liquidation, consolidation, reorganisation and the like situations that occur infrequently.

Finance Functions, according to the modern scholars, can be categorised into two broad groups – Recurring finance functions and Non-recurring functions. We shall now elaborate these functions in the following paragraphs:

Recurring Finance Functions

Recurring Finance Functions encompass all such financial activities as are carried out regularly for the efficient conduct of income and controlling the uses of funds.

1. Planning for funds: The initial task of the financial manager in a new or going concern is to formulate finance plan for the company. Financial plan is the act of deciding in advance the quantum of fund requirements and its duration and the make-up of such investments to achieve the primary goal of the enterprise. While planning for fund requirements, the financial manager has to aim at synchronising the cash inflows with cash outflows so that the firm does not have any resources lying unutilised. Since in actual practice such a synchronisation is not possible, the financial manager must maintain some amount of working capital in reserve and the magnitude of this reserve is the function of all amount of risk that the firm can safely assume in given economic and business conditions.

Keeping in view the long-term goals of the company, the financial manager determines the total fund requirements of the company, duration of such requirements and the forms in which the required funds will be obtained. Decision with respect to fund requirements is reflected in captialisation. While determining fund requirements for the enterprise the financial manager must keep in mind the various considerations, viz., purpose of the business, economic and business conditions, management attitude towards risk, magnitude of future investment programmes, State regulation, etc.

Broadl speaking, there are two methods of estimating funds requirements, viz., *Balance Sheet Method and Budget Method.* In balance sheet method total capital requirements are determined after totalling the

estimate of current, fixed and intangible assets. In contrast with this, a forecast of cash inflows and cash outflows is made month-wise and cash deficiencies are calculated to find out the financial needs. With the help of cash budget, amount of fund requirements at different time intervals can be calculated.

After estimating total fund requirements of the enterprise, the financial manager decides as to how these requirements will be met, viz. forms of financing fund requirements. Such decision is reflected in capital structure. The financial manager is supposed to choose the most suitable pattern of capital structure for his enterprise bearing in mind the cardinal principles of cost, risk, control, flexibility and timing.

2. *Raising of funds:* Procurement of desired amount of funds constitutes another important responsibility of the Financial Manager. If the organisation decides to raise the needed capital by floating security issues, the financial manager has to arrange the issue of prospectus for the security issue. In order to ensure quick sale of securities, generally, the stock brokers, who deal in securities in the stock market and who are in constant touch with their clients, are approached.

Even after the issues are floated in the stock market there is no certainty that the security issues will bring in the desired amount of capital because public response to security issues is difficult to estimate. If a business entrepreneur fails to assemble the desired amount of funds through security issues, the enterprise is plunged in grave financial trouble. In order to overcome this problem the financial manager has to make such an arrangement as may protect the issue against its failure. For that matter, he has to approach underwriting firms whose main job is to provide the guarantee of buying the shares placed before the public in the event of non-subscription of shares. For these services, they charge underwriting commission. Thus, if an underwriter is satisfied with the issuing company, an underwriting agreement is entered into between the company and the issuing company. The obligation of the underwriter as per the agreement

arises only when the event of non-subscription of the issues by the public takes place.

Where the company decides to borrow money from financial institutions, the financial manager has to negotiate with the appropriate authorities. He has to prepare the project for which the loan is sought and discuss it with the executives of the financial institutions along with the prospects of repayment of the loan. If the financial institution is satisfied with the desirability of the proposal, an agreement is entered into by the financial manager on behalf of the company.

3. Allocation of funds: Another major responsibility of the financial manager is to allocate funds among different assets. In allocating the funds, consideration must be given to the factors such as competing uses, immediate requirements, management of assets, profit prospects and overall management plans. It is true that management of fixed assets is not the direct responsibility of financial manager. However, he has to acquaint the production executive who is primarily seized with the task of acquiring fixed assets with fundamentals of capital expenditure projects and also about the availability of capital in the firm. But the efficient administration of financial aspects of cash receivables and inventories is the prime responsibility of the financial manager. In managing funds the financial manager has also to see that only that much of fixed assets are acquired that could meet the current as well as the increased demand of company's product. At the same time he should take steps to minimize the level of buffer stock of fixed assets that the company is required to carry for the whole year so as to satisfy the expanded demands.

In managing cash, the financial manager should prudently strike a golden mean between these two conflicting goals of profitability and liquidity of the company. He has to set minimum level of cash so that the company's liquidity is not jeopardized and at the same time its profitability is maximized. Alongside this, the financial manager has to ensure proper

utilisation of cash funds by taking such steps as help in speeding up the cash inflows, on the one hand and slowing cash outflows, on the other.

While managing receivables the financial manager should endeavour to minimize the level of receivables without adversely affecting sales. This calls for formulation of suitable credit policy and designing appropriate collection procedures.

The operating responsibility of managing inventories in a company is outside the province of the financial manager and well within the realm of the production manager and the chief purchase officer. However, the financial manager is responsible for supplying the necessary funds to support the company's investment in inventories. In order to ensure that funds are allocated efficiently in inventories, the financial manager must familiarise himself with various methods by which efficient management of inventories can be achieved. The problem that the financial manager faces is to determine the optimal magnitude of investment in inventories. With the help of the EQQ (Economic Order Quantity) model, suitable level of inventories is decided.

4. Allocation of income: Allocation of annual income of the organisation as between different uses is the exclusive responsibility of the financial manager. Income may be retained for financing expansion of business or it may be distributed to the owners in the form of dividends as a return of capital. The basic problem in this regard is that if the company retains the income and reinvests it, current shareholders will not receive an immediate sum but will sacrifice part of their claim to future growth. The issue facing the management then is what portion of earnings the company should distribute as dividends in order to maximize share price. This decision should be taken in the light of the financial position of the company, present and future cash requirements of the firm, shareholders' preference and the like factors.

5. Control of funds: The last but not the least function of the financial manager is to control the uses of funds committed in the firm so as to

ensure that cash is flowing as per plan and if there is a deviation between actuals and estimates, the same is dealt with in a manner compatible with the continued financial health of the business. Similarly, the financial manager has to evaluate the performance of receivables management in order to judge how far credit and collection policies laid down by the firm are being carried out effectively by the credit department. For that matter, credit and collection practices will have to be examined minutely. If analysis of receivable turnover, age of each account, percentage of collections, ratio of bad debts to sales and ratio of delinquent accounts to sales indicates that the performance is not satisfactory, the financial manager must determine whether credit and collection policies are inadequate and need revision or there is laxity in the credit and collection department in implementing the policies.

Where the company decides to borrow money from financial institutions, the financial manager has to negotiate with the appropriate authorities. He has to prepare the project for which the loan is sought and discuss it with the executives of the financial institutions along with the prospects of repayment of the loan. If the financial institution is satisfied with the desirability of the proposal, an agreement is entered into by the financial manager on behalf of the company.

Principal tools that are employed to control the uses of funds are Budgetary reports, Projected financial statements and Actual financial statements, Ratios, Funds flow statements and Break-even analysis.

PLACE OF FINANCIAL MANAGEMENT IN THE TOTAL MANAGEMENT

In the total picture of management, finance management is number one. The others are production management, marketing management, material management, personnel management. All the functions are linked with one another. The finance provides the required blood to other functions for maintaining uninterrupted flow of work. This helps to achieve ultimately the overall business objectives.

The finance function is directly concerned with other functions in business when decision are involved regarding acquisition of assets or infusion of fund to ongoing areas/activities.

Since finance is involved in overall planning and control of funds of the whole organization, the blueprint of such planning and control relate obviously to other functions. Accordingly, finance function enjoys an elevated position in relation to other functions like production, marketing, personnel etc., in the total hierarchy. However, this does not demote the position of other functions of the business in any way. Since all activities are meant for conversion to cash ultimately and finance managers handle the same, finance holds a coveted position in relation to other functions.

RELATIONSHIP BETWEEN FINANCIAL MANAGEMENT AND OTHER AREAS OF MANAGEMENT

Such relationship on an overall basis has already been explained above. However, they are discussed according to their individual functions below:

Financial Management and Production Management

While setting up a business enterprise, the main investment centers round building the factory. It involves substantial investment in factory land, factory building and machineries for production and equipments for maintenance and quality control. Similarly, in analysing the total cost of a product, we find that cost of production constitutes a substantial portion of the total cost. The production cycle ranges from putting the input in the production process and to extracting the finished product meant for storing/despatch. Such production process may be as short as a few minutes for a standard product, to a ship-building company where production process may extend to two or three years.

What management of finance is about?: The role of finance function is to watch that production process does not get interrupted either because of shortage of materials, non-payment to production people their dues or failure to provide power or fuel for production, or not providing requisite

equipment/spares/consumables for maintenance of production machineries/equipments etc. That is why a quantitative production budget is supplemented by a production budget in money terms. Thus to achieve a production target annually, the production budget in money terms specifies the value of materials required, the wages/salaries to be paid, the power/fuel to be consumed, the likely cost of maintenance of plant, insurance etc. Obviously, the finance function is closely connected with production activities.

Financial Management and Materials Procurement Management

Materials Management covers areas like procurement of materials, machineries, equipments, stores, spares, consumables and storage thereof, maintaining them in good condition so that they can be used for production. It also includes areas like application of judgement and prudence so that optimum quantity of materials are always kept in the stores. Records of the slow moving and non-moving stores are kept separately so that they can be disposed off in due course. In a number of cases even the responsibility of storage of finished stock comes under the purview of Materials Department.

It is known that in any organisation materials constitute a significant portion of cost. In some cases it is as high as 80% to 90% of the factory cost of production. Accordingly, during the preparation of production budget utmost care is taken to scrutinise the budget for materials. Here materials manager and finance manager jointly decide the aspects like how much to order, when to order, and in case of import whether bulk purchase will be economical considering time lag in procurement on the one hand and cost of carrying excess inventory on the other. Obviously, the length of the production cycle plays a dominant role here. Both the material and finance departments should be aware that because of paucity of materials at any time if the production cycle gets disrupted, the other costs will go up because of delayed production cycle and the objective of the company of wealth maximisation will get disrupted.

Financial Management and Marketing Management

The ultimate goal of business is to earn profit by selling goods and services. Hence any budget process starts from getting an idea as to the quantities the Company will be able to sell in the market. The marketing department with their down to earth approach scan their performance in the past and give a projection for the future. Such projections of the marketing department generally are both for short term and long term. In other words, they are projections for the next year as well as for, say next five years. Such projections include whether in the long run the company needs to diversify into other areas, whether some of the present products are becoming obsolete, the growth of demand of the Company's products, the pattern of collection from customers, the trade or cash discount if any to be offered. In case of competition of cut-throat nature, whether price advantages will have to be given to bulk purchases and in case of statutory increase of cost of materials say at the time of Budget, what portion of cost can be shifted to the customers and conversely in case of likely decrease in price whether price concession is to be given to customers-are the areas where marketing department contributes. Naturally in all such decisions, finance and marketing departments jointly decide looking at the overall objectives of the Company and the resource constraint, if any, and other similar factors.

Financial Management and Personnel Management

Ultimately, the business is run by human beings. Naturally, it is the manpower that is important in every business. Employees with high morale and who are proud of their organization are the assets of any business. This keeps away Industrial Disputes on filmsy grounds. An excellent management-worker relation is a must for the healthy growth of any business.

However, when the crucial decisions are to be taken like introduction of incentive schemes, new avenues of promotions, productivity linked bonus and pay scale revisions, the finance manager and personnel manager join hands to form policies. Ultimately, it is the success of these policies that

keeps at bay industrial disputes and maintain congenial atmosphere at the work place. Even otherwise, both these functional heads very often communicate with each other to solve the day to day issues involving finance and personnel.

CHANGING ROLE OF FINANCE MANAGER

Industralisation is sweeping the Country now. Many industries have been opened to private sectors and foreign investors. The Industrial policy which was so long protective and conservative has been opened to a great extent outside the purview of Government.

The critical problem being faced by the ompanies in such an environment is obtaining finance for expansion. The Capital markets were primitive relatively. The transfer of funds from individual savers to business were quite difficult a few years ago. With the changes of regulations in stock exchanges, the environment in the Capital Markets is better than before and is progressing towards a near perfection stage slowly.

In earlier years, Finance Managers in India used to practice in an an environment where sellers' market prevailed. Near monopoly was the state of affairs in the Indian business. Source of finance used to come mostly from Banks/Financial Institutions. The emphasis on Debt/Equity ratio took a back seat. The satisfaction of shareholders was not the concern of the promoters since most companies were closely held.

Because of the opening up of economy, the competition is hotting up. Sellers' markets are becoming buyers' market at a rapid rate.

The emphasis on decision making by Finance Managers has changed in recent years. Firstly, there has been increasing belief that sound investment decisions require accurate measurements of the cost of capital. Accordingly, ways of quantifying the cost now play a key role in Finance. Secondly, capital has been in short supply rekindling new interests in methods of raising funds. Thirdly, there has been continued Merger activity, leading to renewed interest in Take-covers. Fourthly, accelerated

programme in transportation and communication has stimulated interests in international Finance. Fifthly, an increasing awareness of social problems, such as air and water pollution, work safety and unemployment among minorities, has demanded a greater proportion of the time of financial managers in their efforts to determine the firm's appropriate role in relation to these problems. Finally, another important change in the economic environment is the present high rate of inflation.

MAJOR FINANCIAL FUNCTIONS

Although it may be difficult to separate the finance functions from production, marketing and other functions, yet the functions themselves can be readily identified. The functions of raising funds, investing them in assets and distributing returns earned from the assets to shareholder are respectively known as financing, investment and dividend decisions. While performing these functions, a firm attempts to balance cash inflows and outflows. This is called liquidity decision and we add it to the list of the important finance decisions. Finance decisions include:

* Investment decision.
* Financing mix decision.
* Dividend decision.
* Liquidity or Short-term asset-mix decision.

A firm performs finance functions simultaneously and continuously in the normal course of its business. They do not necessarily occur in a sequence. Finance functions call for skilful planning, control and execution of a firm's activities.

Let us note at the outset that shareholders are made better off by a financial decision which increases the value of their shares. Thus while performing the finance functions, the financial manager should strive to maximize the market value of his company's shares.

Investment Decision

Investment decision or capital budgeting involves the decision of allocation of capital or commitment of funds to long-terms assets which

would yield benefits in future. Its one very significant aspect is the task of measuring the prospective profitability of new investments. Future benefits are difficult to measure and cannot be predicted with certainty. Because of the uncertain future, capital budgeting decision involves risk. Investment proposals should, therefore, be evaluated in terms of both expected return and risk. Besides the decision to commit funds in new investment proposals, capital budgeting also involves the decision of recommitting funds when an asset becomes less productive or un-profitable.

Another major aspect of investment decision is the measurement of a standard or hurdle rate against which the expected return of new investment can be compared. There is broad agreement that the correct standard to use for this purpose is the required rate of return or the opportunity cost of capital. However, there are practical problems in computing the cost of capital from the available data. A decision maker should be aware of these problems.

Financing Decision

Financing decision is the second important function to be performed by the financial manager. Broadly, he must decide when, where and how to acquire funds to meet the firm's investment needs. The mix of debt and equity is known as the firm's capital structure. The financial manager must strive to obtain the best financing mix or the optimum capital structure for his firm. The firm's capital structure is considered to be optimum when the market value of shares is maximized. The use of debt affects the return and risk of shareholders; it may increase the return on equity funds but it always increases risk. A proper balance will have to be struck between returns and risk. When the shareholders' return is maximized with minimum ..... the market value per share will be maximized and the firm's capital structure would be considered optimum. Once the financial manager is able to determine the best combination of debt and equity, he must raise the appropriate amount through the best available sources. In

practice, a firm considers many other factors such as control, flexibility, loan covenants, legal aspects etc. in deciding its capital structure.

Dividend Decision

Dividend decision is the third major financial decision. The financial manager must decide whether the firm should distribute all profits, or retain them, or distribute a portion and retain the balance. Like the debt policy, the dividend policy should be determined in terms of its impact on the shareholders' value. The optimum dividend policy is one which maximizes the market value of the firm's shares. Thus, if shareholders are not indifferent to the firm's dividend policy, the financial manager must determine the optimum dividend-payout ratio. The dividend payout ratio is equal to the percentage of dividends distributed to earnings available to shareholders. The financial manager should also consider the questions of dividend stability, bonus shares and cash dividends in practice. Most profitable companies pay cash dividends regularly. Periodically additional shares, called bonus shares, are also issued to the existing shareholders in addition to the cash dividend.

Liquidity Decision

Current assets management which affects a firm's liquidity is yet another important finance function, in addition to the management of long-term assets. Current assets should be managed efficiently for safeguarding the firm against the dangers of illiquidity and insolvency. Investment in current assets affects the firm's profitability, liquidity and risk. A conflict exists between profitability and liquidity while managing current assets. If the firm does not invest sufficient funds in current assets, it may become illiquid. But it would lose profitability as idle current assets would not earn anything. Thus, a proper trade-off must be achieved between profitability and liquidity. In order to ensure that neither insufficient nor unnecessary funds are invested in current assets, the financial manager should develop sound techniques of managing current assets. He should estimate the firm's needs for current assets and make sure that funds would be made available when needed.

It would be thus clear that financial decisions directly concern the firm's decision to acquire or dispose off assets and require commitment or recommitment of funds on marketing and other functions of the firm. This, in consequence, will affect the size, growth, profitability and risk of the firm and ultimately the value of the firm.

OBJECTIVES OR GOALS OF FINANCIAL MANAGEMENT

A successful corporate enterprise must have goal-oriented financial management. The financial manager has to perform his functions in consistency with the goal set for the finance department.

Since the financial management is primarily concerned with optimal use of capital funds - the most important scarce resource in modern societies - *profit maximisation* could be regarded as the basic goal for financial management. Profit maximisation as the prime decisional criterion implies that each decision would be evaluated on the basis of its overall contribution to the enterprise's earnings. White profit maximisation has the benefit of being a simple and straightforward statement of objective, there are some serious drawbacks to accepting it as a primary goal of the company.

In the first instance, it is a vague concept and does not discriminate between short-term profits and long-term profits. If the financial manager aims at maximising short-term earnings and for that matter, a decision is taken to operate a machine without its proper maintenance, the company can in that case increase profits by lowering the current year's operating expenditures. However, the company will suffer decline in its earnings in the ensuing years when the machine will no longer be in operation due to prior neglect. This points out clearly that long run considerations cannot be ignored to subserve the objective of maximising short-term profits.

Further, profit maximisation goal does not take cognizance of time value of money. A profit seeking organisation must consider the timing of cashflows and profits because money received today has a higher value than money received a year from now, lest investment decisions taken by

the financial manager turn out to be erroneous. Hence, profit maximisation goal would be ambiguous and limited in providing choices among alternative courses of action. Further, this objective overlooks risk factor. Prospective earnings of the different projects are related with risks of varying degrees. In view of this, different projects may have different values even though their earning capacity is the same. Projects of high degree of uncertainty may be more risky than their counterparts. Obviously investors would provide less value to the former projects than the latter one. Finally, profit maximisation goal ignores qualitative aspects of future activities. Corporate enterprises may not always carry on their activities solely with an eye to accomplish the highest possible profits. Some enterprises may place a higher value on growth of sales and thereby accept lower profits to gain the stability provided by a large volume of sales. It is recognised by some business enterprises that diversifying their activities into different products or markets strengthens the enterprises although it may result in short-term decline in profits. There may be some corporations which will use a portion of their earnings to attain social goals or to make contributions to society. It is widely observed that non-profit considerations have also an important bearing on the determination of corporate goals, even in profit seeking ventures.

In view of the above, profit maximisation goal cannot be prescribed as corporate goal. Another objective of a business enterprise is to maximise the value of the company over the long- run. This goal implies *maximisation of wealth* which is defined as Net Present Worth of the enterprise. Net present worth is the difference between Gross Present Worth and the Amount of Capital Investment required to achieve the benefits. Gross amount represents the present value of expected cash benefits discounted at a rate which reflects their certainty or uncertainty. Thus, wealth maximisation goal as decisional criterion suggests that any financial action which creates wealth or which has a net present value above zero is a desirable one and should be accepted, and that which does not satisfy this test should be rejected.

Algebraically, net present value or worth can be expressed as follows, using Ezra Solomon's symbols and models:

$$W = \frac{A_1}{(1+K)} + \frac{A_2}{(1+K)^2} + \frac{A^n}{(1+C)^n}$$

$$= d \quad DDDDD \quad C$$

$$t = 1 \ (1+K)_1$$

where W = Net Present Worth

A_1, A_2 .....A_n = The stream of benefits expected to occur from a course of action over a period of time.

K = Appropriate discount rate to measure risk and timing.

C = Initial outlay required to acquire the asset

The goal of wealth maximisation as pointed out above has the advantage of exactness and unambiguity and takes care of time value and risk factors.

The wealth maximisation goal when used as decisional criterion serves as a very useful guideline in taking investment decisions. This is bec se the concept of wealth is very clear. It represents present value of the benefits minus the cost of investment. The concept of cashflow is more precise in connotation with that of accounting profit. Thus, measuring benefits in terms of cashflows generated avoids ambiguity.

The wealth maximisation goal considers time value of money. It recognizes that cash benef emanating from a project in different years are not identical in value. This is why annual cash benefits of a project are discounted at a discount rate to calculate total value of these cash benefits. At the same time it also gives due weightage to risk factor by

making necessary adjustments in the discount rate. Thus cash benefits of a project with higher risk exposure is discounted at higher discount rate (cost of capital), while lower discount rate is applied to discount expected (cash benefits) of a less risky project. In this way, discount rate used to determine present value of true streams of cash earnings reflects both the time and risk.

It is evident from the above analysis that maximisation of wealth is more useful than maximisation of profits as a statement of the objective of most business enterprises, in as much as the former goal takes into account profit factor from a long-term point of view along with growth, stability, risk avoidance, and the market price of the company's stock.

Organisation of Financial Management

The exact nature of organisation for financial management will differ from firm to firm. It will depend on factors such as size of the firm, nature of the business, financing operations, and the capabilities of the firm's financial officer also differs from firm to firm. In some cases he may be known as the financial manager, while in others as the vice-president of finance or the director of finance or the finance controller. Two more officers – treasurer and controller–may be appointed under the direct supervision of the chief financial officer (CFO) to assist him. In larger companies, with modern management, there may be vice-president or director of finance, usually with both controller and treasurer reporting to him.

Fig. 1 illustrates the financial organisation of a large (hypothetical) business firm. It should be remembered that it is a simple organisation chart, and as stated earlier, the exact organisation of a firm will depend on its circumstances. Fig. 2 reveals that the finance function is one of the major functional areas, and the financial manager or director is under the control of the Board of Directors. Fig. 2 shows the organisation of the finance function of a large, multi-divisional Indian company.

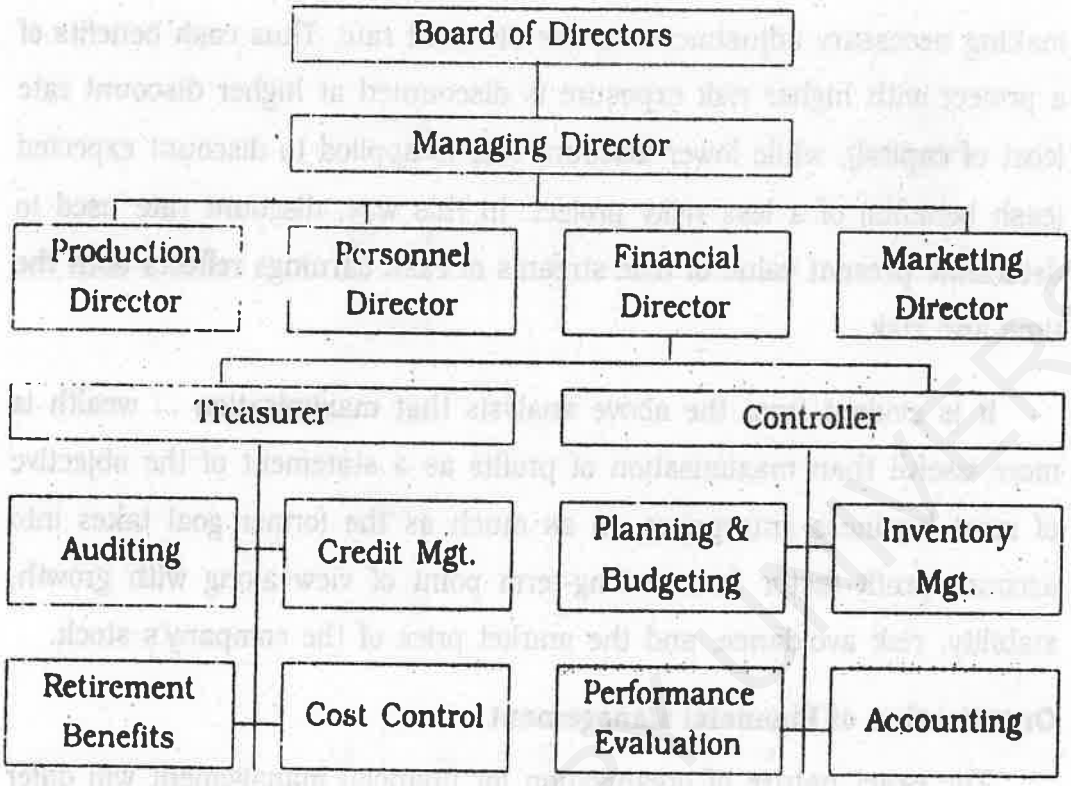


Fig. 1

The CFO has both line and staff responsibilities. He is directly concerned with the financial planning and control. He is a member of the top management, and he is closely associated with the formulation of policies and making decisions for the firm. The treasurer and controller, if a company these executives, will be under his supervision. He must guide them and others in the effective working of the finance department.

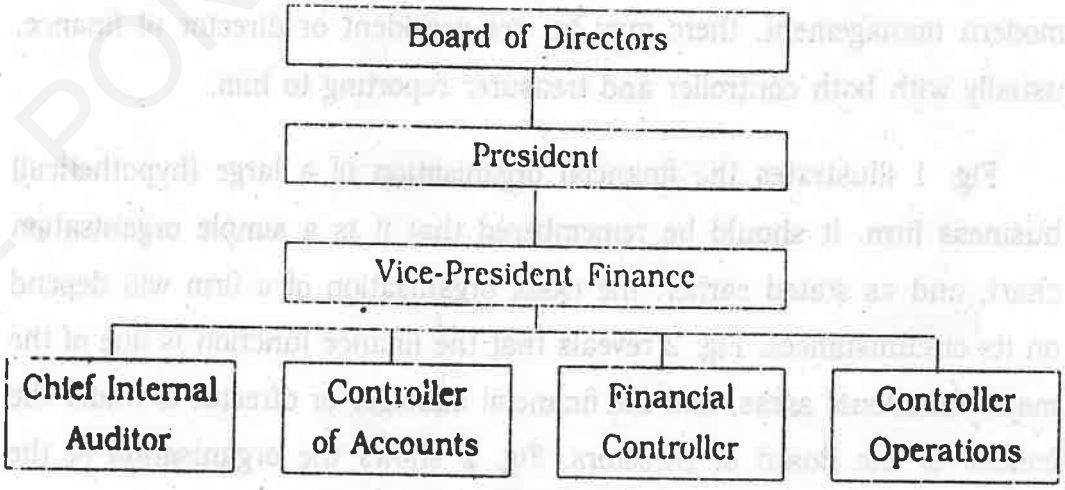


Fig. 2

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The main function of the Treasurer is to manage the firm's funds. His major duties include forecasting the financial needs, administering the flow of cash, managing credit, floating securities, maintaining relations with financial institutions and protecting funds and securities. On the other hand, the functions of the Controller relate to the management and control of assets. His duties include providing information to formulate accounting and costing policies, preparation of financial reports, direction of internal auditing, budgeting, inventory control, taxes etc. It may be stated that the controller's functions concentrate on the asset side of the balance sheet, while treasurer's functions relate to the liability side. The functions of treasurer and controller, in the context of the USA companies, are described below in detail.

TREASURER'S FUNCTIONS

Provision of finance: To establish and execute programs for the provision of the finance required by the business, including negotiating its procurement and maintaining the required financial arrangements.

Investor relations: To establish and maintain an adequate market for the company's securities and to maintain adequate contact with the investing community.

Short-term financing: To maintain adequate sources for the company's current borrowings from the money market.

Banking and custody: To maintain banking arrangements, to receive, have custody of and disburse the company's monies and securities and to be responsible for the financial aspects of real estate transactions.

Credit and collections: To direct the granting of credit and the collection of accounts to the company.

Investments: To invest the company's funds as required and to establish and co-ordinate policies for investment in pension and other similar trusts.

Insurance: To provide insurance coverage as may be required.

CONTROLLER'S FUNCTIONS

Planning and control: To establish, coordinate and administer, as part of management, a plan for the control of operations. This plan would provide to the extent required in the business, profit and planning, programmes for capital investing and for financing, sales forecasts, and expense budgets.

Tax administration: To establish and administer tax policies and procedures.

Government reporting: To supervise and coordinate the preparation of report to government agencies.

Protection of assets: To assure protection of the business assets through internal control, internal auditing and assuring proper insurance coverage.

Economic appraisal: To appraise economic and social forces and government influences, and interpret their effect upon the business.

CONTROLLER'S AND TREASURER'S FUNCTIONS IN THE INDIAN CONTEXT

The controller and the treasurer are essentially American terms. Generally speaking, the American pattern of dividing the financial executive's functions into controllership and treasurership functions is not being widely followed in India. We do have a number of companies in India who have officers with the designation of the controller, or the financial controller. The controller or the financial controller in India, by and large, performs the functions of a chief accountant or management accountant. The officer with the title of treasurer can also be found in a few companies in India.

The general title, financial manager, seems to be more popular in India. This title is also more apprpriate than the title of treasurer since it conveys the functions involved. The main function of a financial manager in India should be the management of the company's funds. The financial manager's duties with others should be realised. The managing of funds-a

very valuable resource – is a business activity requiring extraordinary skill on the part of the financial manager. He should ensure the optimum use of money under various constraints. He should, therefore, be allowed to devote his full energy and time in managing the money resources only.

QUESTIONS

1. Define the scope of financial management. What role should the financial manager play in a modern enterprise?
2. How does the modern financial manager differ from the traditional manager? Does the modern financial manager's role differ in the large diversified firm and the small to medium size firm?
3. Define finance function. Explain the modern finance functions.
4. Explain the relationship between financial management and other functional areas of management?
5. Critically examine the changing role of financial manager in the present day context.
6. What are the basic financial decisions? How do they involve risk-return trade off?
7. "The profit maximization is not an operationally feasible criterion". Do you agree? Illustrate your views.
8. In what ways is the wealth maximization objective superior to the profit maximization objective? Explain.
9. How should the finance function of an enterprise be organized? What functions are performed by the financial officers?
10. Should the titles of controller and treasurer be adopted under the present context? Would you like to modify their functions in view of the company practices in India? Justify your opinion.

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UNIT – II

LESSON – 2.1

CAPITALISATION

Contents

- ☆ Introduction
- ☆ Theories of Capitalisation
  - (i) Earnings Theory
  - (ii) Cost Theory
- ☆ Over-Capitalisation
  - (a) Definition
  - (b) Symptoms
  - (c) Causes
  - (d) Effects
  - (e) Remedies
- ☆ Under Capitalisation
  - (a) Definition
  - (b) Symptoms
  - (c) Causes
  - (d) Effects
  - (e) Remedies
- ☆ Questions

INTRODUCTION

The term 'Capital' refers to the total investment of a concern in money, tangible assets like building, machinery, etc., and intangible assets like goodwill. It is in a way the total wealth of a company.

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Thus 'Capital' includes all the loans and reserves of the concern, but 'Capitalisation' includes only long term loans and retained profits besides the capital. The term capitalisation is used only in relation to companies and not in respect of firms or sole proprietorships.

Traditional views: In its narrow view, as defined by the traditional authors the term Capitalisation is used only in its quantitative aspect and refers to the amount at which a company's business can be valued. Many authors have attempted to define the term Capitalisation.

It is the sum total of all long term securities issued by a company and the surpluses not meant for distribution. That is, it is composed of

(a) the value of shares of different kinds,

(b) the value of surpluses, and

(c) the value of bonds and debentures issued by a company still not redeemed.

The 'surpluses' may be either capital surplus or earned surplus. Capital surplus represents the surplus resulting from the sale of an asset of the concern at a profit and such surplus is meant for long term use in the concern. Earned surplus represents the surplus profits set apart and accumulated over a period of time with a view to using it for meeting its long term financial requirements.

Modern view: Many writers on this subject regard Capitalisation as synonymous with financial planning. The financial plan of a company incorporates decisions regarding the amount of capital to be raised, the securities by the issues of which they are to be raised and the relative proportions of the various classes of securities to be issued and also the administration of the capital. Hence, it may be rightly remarked that Capitalisation refers to the process of determining the plan or patterns of financing. It includes not merely the determination of the quantity (amount) of finance required for a company but also the decision about the quality of financing (which type of security is to be issued and to what extent).

THEORIES OF CAPITALISATION

To determine the amount of Capitalisation of newly promoted concern, two theories have been propounded:

(i) the Earnings Theory and

(ii) the Cost Theory.

Earnings Theory

Under the Earnings theory of Capitalisation, two factors are generally taken into account to determine Capitalisation:

(a) what the business is capable of earning, and

(b) what is a fair return, also known as "Multiplier" which is 100 per cent divided by the appropriate rate of return.

For instance, if a business is capable of making net profits (net earnings) of Rs. 75,000 annually and 12% is a fair rate of return for that kind of business, the Capitalisation based on earnings would be as follows:

$$\text{Capitalisation} = \text{Earnings} \times \text{Multiplier}$$

$$\text{Multiplier} = \frac{100 \text{ per cent}}{\text{rate of return}} = \frac{100}{12} = 8\frac{1}{3}$$

$$\text{Capitalisation: Rs. } 75{,}000 \times 8\frac{1}{3}$$

$$\text{Rs. } 6{,}25{,}000$$

Cost Theory

Under the Cost theory, a company's Capitalisation is worked out by aggregating the cost of fixed assets (i.e. investment in plant and machinery, land and buildings and the like), the amount of regular working capital (i.e. investment in cash, inventories, receivables, etc.,) required to run the business, the cost of establishing the business and other costs such as promotion, and organisation expenses and to cover possible initial losses. The glaring defect of this approach is that it does not take into consideration the future needs or contingencies of the business.

Besides costs of assets and earning capacity, the following factors, ındamental to the success of any financial plan, have to be kept in view ı determining the amount of Capitalisation.

ı) Corporate conditions: The needs and financial condition of the company ıave to be considered. In its own interest, the company should issue first he weakest security the market can absorb, reserving the better protected ypes for future use when the market conditions are less favourable.

b) Market conditions: The corporate management has to keep an eye on he prevailing conditions in security markets and issue debentures if the nvesting public is pessimistic or offer shares for subscription if it desires ı share in the future growth.

ɜtate of Capitalisation

An analysis of the term Capitalisation involves further consideration ɔf its triple nature viz., Over-Capitalisation, Under-Capitalisation and Optimum or Fair-Capitalisation. A concern should neither be ɔver-captalised nor under-capitalised; the aim should be to achieve fair-ːapitalisation. To understand the significance of these states of ːapitalisation, let us first look into the technicalities of over and under ːapitalisation.

ƆVER-CAPITALISATION

Meaning: The phrase, Over-Capitalisation is a relative term ordinarily used to convey the sense of over-statement of properties held by the concern. When a company raises more capital than is warranted by the figure of Capitalisation of its earning power, the company is said to be over-capitalisated. In other words, a company is over-capitalised when its actual profits are not sufficient to pay interest and dividend at proper rates. It follows that an over-capitalised company in unable to pay a f . return on its investment. However, over-capitalisation is not quite the same thing as excess of capital. In actual practice over-captilised concerns have been found short of funds.

Definition of Over-Capitalisation

A few definitions of Over-Capitalisation are given below:

Gresterberg defines it as follows:

"A corporation is over-capitalised when its earnings are not large enough to yield a fair return on the amount of stocks and bonds that have been issued, or when the amount of securities outstanding exceeds the current value of the assets."

According to Bonneville, Dewey and Kelly,

"When a business is unable to earn a fair rate of return on its outstanding securities, it is over-capitalised."

In the words of H. Gilbert,

"When a company has consistently been unable to earn the prevailing rate of return on its outstanding securities considering the earnings of similar companies in the same industry and the degree of risk involved, it is said to be over-capitalised."

Likewise, Hoagland opines that

"Whenever the aggregate of the par values of stocks and bonds outstanding exceed the true value of the fixed assets, the corporation is said to be over-capitalised."

The analysis of the above definitions reveals that over-capitalisation refers to that state of affairs where earnings of the corporation do not justify the amount of capital invested in the business. In other words, an over-capitalised company earns less than what it should have earned as fair rate of return on its total capital.

Again, a company is not over-capitalised from the very beginning. The state of over-capitalisation is found after sometime. It may not be out of place to mention that a company is said to be over-capitalised only when it has not been able to earn fair income over a long period of time. Thus

it is clear that a company is not said to be over-capitalised if it fails to pay a proper rate of dividend over a few years. it represents a chronic disease and if a company shows it persistent inability to earn a proper rate of return on its investment and so failure to pay adequate rate of dividend, it is said to be over-capitalised.

Symptoms of Over-Capitalisation

Over-Capitalisation of the business is indicated by the following:

(a) Unnecessary investment of funds in fixed assets which are in excess of its actual needs;

(b) low earning capacity of the business;

(c) high proprietary ratio;

(d) real value of firm's assets is lower than their book value;

(e) inadequate earnings per share.

A situation of over-capitalisation happens under the following circumstances:

1. Capital employed is in excess of requirements
2. Disproportion between Shareholders' Funds and sales volume.
3. Inadequacy of return on capital employed in the business.
4. Existence of intangible assets such as Goodwill, Patent and Trade Marks.
5. Capitalisation is in excess of tangible assets.
6. Profitability is too low.
7. Capital structure is not in tune with profits.
8. Inadequate depreciation due to continuous losses.
9. Under-utilization of assets and other facilities.
10. Assets acquired are much in excess of their market price or vice-versa.
11. When a company's progress or growth is hampered due to the transition from a war time economy to a peace time economy. This

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may result in rendering the plant and machinery and other facilities idle.

12. When Patent, Trade Marks, design etc., have outlived their utilities.

Thus, to sum up

Real value > Book value = Under-Capitalisation

Real value < Book value = Over-Capitalisation

Real value = Book value = Fair-Capitalisation

Par value : It is the face value of the share.

Book value: It is the proprietary value of share.

$$= \frac{\text{Share capital + Reserves and surplus}}{\text{Number of outstanding shares}}$$

Real value = It is the capitalised value or earning value of share.

$$= \frac{\text{Capitalised value of earning}}{\text{Number of shares outstanding}}$$

Market value: It is the share market value of share.

$$\frac{\text{High market value of share + Lower Market value of share}}{2}$$

Causes of Over-Capitalisation

1. Over-issue of capital: Defective financial planning may lead to excessive issue of shares or debentures. The issue would be superfluous imposition of a constant burden on the earnings of the company.

2. Acquiring assets at inflated prices: Assets may be acquired at inflated prices or at a time when the prices were at their peak. In both the cases, the real value of the company is below its book value and the earnings are very low.

3. Formation during the boom period: If the establishment of a new company or the expansion of an existing concern takes place during the boom period, it may be a victim of over-capitalisation. The assets are acquired at fabulous prices. But when boom conditions ceases, prices of products decline resulting in lower earnings. The original values of assets remain in books

while earnings capacity dwindles due to depression. Such a state affairs results in over-capitalisation.

4. *Over-estimation of earnings:* The promoters or the directors of the company may over-estimate the earnings of the company and raise capital accordingly. If the company is not in a position to invest these funds profitably, the company will have more capital than required. Consequently, the rate of earnings per share will be less.

5. *Inadequate depreciation:* Absence of suitable depreciation policy would make the asset-values superfluous. If the depreciation or replacement provision is not adequately made, the productive worth of the assets is diminished which will definitely depress its earnings. Lowered earnings bring about a fall in share values, which represents over- capitalisation.

6. *Liberal dividend policy:* The company may follow a liberal dividend policy and may not retain sufficient funds for self- financing. It is not a prudent policy as it leads to over-capitalisation in the long run, when the book value of the shares falls below their real value.

7. *Lack of reserves:* Certain companies do not believe in making adequate provisions for various types of reserves and distribute the entire profit in the form of dividends. Such a policy reduces the real profit of the company and the book value of the shares lag much behind its real value. It represents over-capitalisation.

8. *Heavy promotion and organisation expenses:* "A certain degree of over-capitalisation may be caused by heavy issue expenses."

If expenses incurred for promotion, issues and underwriting of shares, promoters' remuneration etc., prove to be higher when compared to the benefits they provide, the enterprise will find itself over-capitalized.

9 *Shortage of capital:* If a company has small share capital it will be forced to raise the loans at heavy rate of interest. This would reduce the net

earnings available for dividends to shareholders. Lower earnings bring down the value of the shares leading to over-capitalisation.

10. Taxation policy: High rates of taxation may leave little in the hands of the company to provide for depreciation and replacement and dividends to shareholders. This may adversely affect its earnings capacity and lead to over-capitalisation.

Effects of Over-Capitalisation

The effects of over-capitalisation on different sections of the society can conveniently be classified under the following three categories:

A. Effects on Company

(i) Destroys the goodwill and credit-worthiness: Over-capitalisation marked by low earning capacity destroys the reputation and goodwill of the company with deterrent effects on the prospects of future business.

(ii) Difficulty in raising additional funds: It causes decline in share values which brings down the credit-standing and financial reputation of the company. Thus, it finds difficulties in mobilizing additional funds.

(iii) Borrowings at higher rate of interest: An over-capitalised company which is not able to raise capital from the shareholders may get loans at higher rate of interest due to which the position may further deteriorate.

(iv) Resort to unfair practices: It may force the management of the company to follow unhealthy practices of window dressing of earnings. For example, it may not provide sufficient depreciation and also neglect the maintenance and replacement of assets. This will decrease the earning capacity of the company and discourage the genuine investors from investing in the company.

B. Effects - Shareholders

The shareholders of an over-capitalised company are losers in all transactions.

(i) The Market value of their holdings is reduced.

(ii) Their holdings have small value as collateral security.

(iii) If the shares are sold, no fair consideration is obtained.

(iv) Speculation is encouraged in the shares and the real investors have to suffer on this account, and

(vi) When an over-capitalised company tries to set its house in order through reorganization, the shareholders are the worst sufferers. Reorganisation would usually take the form of liquidation too, the shareholders having to satisfy themselves with much less than their original investment.

C. Effects on Consumers

Over-capitalisation is unfair to the consumers also. Over-capitalised companies desirous of increasing their earnings would unjustifiably raise the price of their products and ignore or lower the quality of the goods.

D. Effects on Workers

In order to make up deficient earnings, the over-capitalised concerns may reduce the workers' wages and withdraw the costly amenities admissible to them. Lower wages and adverse working conditions would demoralize the workers and decrease their operational efficiency.

E. Effects on Society

(i) An over-capitalized company increases prices and reduces the quality of goods. Thus, the public is a loser both as regards price and quality.

(ii) An over-capitalised company may try to increase its profits by reducing wages of workers. This may spoil industrial relations.

(iii) The closure of an over-capitalised company may become the cause of general panic and workers also lose their jobs.

(iv) Over-capitalisation results in depletion of society's resources.

(v) The shares of an over-capitalized concern provide scope for speculation on the stock exchange. it is undesirable from the social point of view.

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Remedies for Over-Capitalisation

In order to correct the situation caused by over-capitalisation, one or more of the following measures should be adopted:

(i) Increase in earnings: The earnings capacity of the company should be raised by enhancing the efficiency of human and non-human resources belonging to the company. All types of wasteful expenditure should be avoided.

(ii) Plough-back earnings: The remedy for over-capitalisation resulting from over-valuation of assets of the company lies in the squeezing of the water out of the stock by ploughing back earnings into the business for replacements and extensions.

(iii) Reduction of funded debt: It is desirable to correct over-capitalisation by reducing long terms debts. The debentures and bonds should be redeemed to restore parity between the book value of the company and its real value. True reduction of capitalisation would be effected if the debt is retired from earnings.

(iv) Reduction of interest rate on bonds: The old debenture holders may agree to take new debentures of lower rate of interest when premium is given on new debentures. But here, the scheme may not be successful without effecting reorganisation.

(v) Redemption of preferred stock if it carries a high dividend: This can be tried in cases where the preferred stock is cumulative. Funds for the redemption would probably have to be procured from the sale of common stock at low prices.

(vi) Reduction of par values of shares: It is a good method, if the equity shareholders are ready to give their consent to it.

(vii) Reduction in the number of equity shares of common stock: There are difficulties in its implementation due to the average stockholders' unwillingness to convert their holdings into stock. Since this procedure

does not decrease the stockholders' proportionate interest in the equity, it is sometimes effected.

Watered Capital

Watered Capital or stock represents those security issues which are not covered or backed by the value of the assets of the company. It is the excess of total capitalisation over the real value of the long term assets of the company. Simply speaking 'water' is said to be present in the capital when a part of the capital is not representated by assets. It is considered to be as worthless as water. Watered capital arises when a company pays higher price for the assets acquired from a going concern or when the promoters' services are highly valued. It also arises when adequate consideration in the form of assets is not received for the issue of securities. The capital becomes watered to the extent of the excess price paid for the assets or the excess payment made to promoters or the inadequacy of consideration for the issue of securities.

The primary test of watered stock is found in the intent of the promoters who sell the stock. If there is a deliberate attempt to cheat the shareholders by the inflation of the value of the asset, a watered condition is the inevitable result. For example, a company purchases a machinery from another company for Rs. 1 lakh, but its real value is Rs. 80,000 only. In this case Rs. 20,000 is the amount of watered capital.

Watered capital is one of the main causes of over-capitalisation. But it does not mean over capitalisation in all circumstances. Water enters the capital usually in the initial period i.e., at the time of promotion. Over-capitalisation can be observed only when the corporation has worked for a few years. A company may start with watered capital but its working may be very efficient and its earnings may justify the amount of capitalisation. In such a case the company will not be over-capitalised even though a part of the capital is watered or not represented by an asset. It is also possible that a company's over-capitalisation may be caused by low

earnings, existence of idle capital and factors other than the existence of watered capital.

UNDER-CAPITALISATION

Meaning: Under capitalisation is just the reverse of over-capitalisation. A company is under-capitalised if the real value is higher than book value of its assets. In other words, under-capitalisation occurs when a company's actual capitalisation is lower than its proper capitalisation warranted by its earning capacity. Thus, the phrase 'under-capitalisation' should never be misconstrued with inadequacy of capital. Under-capitalisation is an indication of effective and proper utilisation of funds employed in the enterprise.

Definition

In the words of Grestenberg, "a company may be under-capitalised when the rate of profits it is making on the total capital is exceptionally high in relation to the return enjoyed by similarly situated companies in the same industry or when it has too little capital with which to conduct its business."

Symptoms of Under-Capitalisation

Under-capitalization is identified with

(a) low proprietary ratio,

(b) low current ratio,

(c) higher return on equity funds,

(d) shortage working capital, and

(e) higher real value of firm's assets than their book value.

Causes of Under-Capitalisation

(i) Under-estimation of capital requirements: Under-estimation of capital requirements by promoters in the beginning leads to a situation of under-capitalisation.

(ii) Under-estimation of earnings: If earnings of new venture were under-estimated and the enterprise was capitalised accordingly, it may find itself in a condition of under-capitalisation afterwards when its actual earning was much more than what was anticipated.

(iii) Conservative asset management policy: A conservative and over cautious management may write down the value of the assets below their fair value for the purpose of creating secret reserves; ultimately lading to under-capitalisation in the long run.

(iv) Promotions during recessionary or depression period: Companies which have been set up in deflationary or recessionary conditions generally become under-capitalised after deflation or recession is over. The acquisition cost of the assets of such company will be low in comparison to normal time price level.

(v) Forced scarcity of capital: Sometimes, the supply of capital is restricted because of an inability to obtain it on reasonable rates from the capital market. In such circumstances, the problem of the shortage of ready funds can create under-capitalisation.

(vi) Trading on equity: If the company follows the policy of trading on equity for a long time and the debt capital is available to the company on suitable terms and conditions and comparatively at a lower rate, the company will be under-capitalised after some time.

(vii) Unforeseeable increase in earnings: If there is an unforeseen increase in earnings due to high turnover of working capital, or exemptions granted by government in corporate taxation, it also leads to under-capitalistion.

(viii) High level efficiency: By employing new techniques of production and rationalisation of production activities, operating efficiency of the company can be improved.

(ix) Conservative dividend policy: Companies following conservative dividend policy build up substantially large funds/reserves for replacement and

renovation of obsolete assets and for financing developmental and expansion actiivites. A sound reserves and surplus base encourages the management to pay higher dividends in the long run.

(x) Ploughing back of profits: When a company reinvests its surplus profits and reserves in the business, its earnings are increased leading to enhanced rate of dividend to equity shareholders.

Effects of Under-Capitalisation

Under-capitalisation may be preferred in those cases where there is genuine rise in earnings, better financial planning and efficient management. The rate of dividend will be very high and the market price of the shares will also be very high. But this situation also leads to certain evil consequences. Firstly, it may encourage the management to manipulate the value of its shares by showing more or less profit than the actual profit and vice-versa. Secondly, higher earnings would fascinate the prospective competitors to enter into the same line of business. Thirdly, higher rate of earnings may prompt the worker to demand higher wages, and other socio-economic amenities and facilities. Fourthly, the consumers may feel that they are being charged higher prices. Last, but not the least, the company may attract the interference of the Government because of manipulative practices followed by the management.

Where under-capitalisation arises from shortage of funds, it may lead to some serious consequences. Firstly, since there is inadequacy of capital there will be a constant danger of failure of the company. It may not be able to pay its creditors in time. This will spoil the credit worthiness and reputation of the company. Secondly, it has to go in for loans at higher rate of interest to make up the deficiency of share capital.

Remedies for Under-Capitalisation

To remedy the evils of under-capitalisation, the Indian Companies Act, 1956, provides that no allotment of shares can be done unless minimum subscription has been obtained. Other remedies of under-capitalisation may be discussed as below:

1. *Spliting up of shares:* The directors should split up the shares in order to decrease the rate of earnings per share. It does not affect the total capitalisation because only the par value of the stock is reduced.

2. *Increase in par value of shares:* Under-capitalisation may be remedied by increasing the par value of equity shares by revising upwards the value of assets. This will lead to decrease in the rate of earnings per share. As a further step, the company may offer the shareholders a share split-up and an increase in par value.

3. *Issue of bonus shares:* The most widely used and effective remedy for under-capitalisation is the conversion of reserves into shares. This will reduce both dividend per share and the overall rate of earnings.

4. *Issue of shares and debentures:* Where under-capitalisation is due to inadequate capital, more shares and debentures may be issued to the public.

QUESTIONS

1. Define 'Capitalisation'.
2. State the symptoms of under-capitalisation and over-capitalisation.
3. What are the causes of over-capitalisation?
4. How to correct the malady for and consequences of under-capitalisation?
5. Explain the causes for and consequences of under-capitalisation.
6. What is meant by the fact that a firm is under capitalised?
7. What are the risks inherent in under-capitalisation?
8. What is meant by the fact that a firm is over-capitalised and how does this relate to the so-called redundant assets?
9. What are the risks of over-capitalisation?

LESSON – 2.2

SOURCES OF FINANCE

Contents

- ☆ Sources of Company Finance
  - (a) Permanent Sources
  - (b) Long-Term Sources
  - (c) Medium-Term Sources
  - (d) Short-Term Sources
- ☆ Non-Fund Based Facilities
- ☆ Questions

SOURCES OF COMPANY FINANCE

Following chart indicates the sources of company finance

Table 2.1: Sources of Company Finance

SOURCES OF COMPANY FINANCE

Permanent sources	Long Term sources	Medium Term sources	Short Term sources
(a) Share Capital	(a) Redeemable Preference shares	(a) Medium term loans	(a) Cash Credit
(b) Retained Profits	(b) Debentures	(b) Deferred Credit	(b) Overdraft
	(c) Long term loans	(c) Public Fixed Deposits	(c) Bills Discounting
	(i) Indian Rupees	(d) Working Capital Term loan	(d) Commercial paper
	(ii) Foreign Currency		(e) Non-Fund based facilities
	(iii) Seed Capital		(f) Export Credit
			(g) Bridge Finance
			(h) Trade credit
			(i) Factoring credit

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Table 2.1.2: Matching Sources of Finance to Uses

Types of Capital	Uses	Matching Assets	Sources
1. Permanent	(a) Broaden Borrowing Base	Freehold or long Term Property.	Share Capital
	(b) Financing Major fixed assets		Retained Profit on Interest
	(c) Financing take-over or merger	Shares of acquired or merged company	
2. Long Term	(a) Financing assets with long life	Freehold and Long Leasehold property; Plant and Machinery	Redeemable Preference share
	(b) Permanent working capital	Permanent stock or Debtor requirements	Long term loans
3. Medium-Term	(a) Financing Fixed Assets	Vehicles, Plant and Fittings	Medium Term Loans
	(b) Working Capital	Stock, Debtors	Hire Purchase Leasing
4. Short-term (upto 1 year)	(a) Working Capital	Stock, Debtors	Cash Credit
	(b) Financing fluctuations		Bill Discount
	(c) Financing Export		Commercial Papers
	(d) Bridging Finance		Letter of credit
	(e) Minor Fixed Assets		Creditors Export Credit

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Permanent Sources

These are sources used to

(a) broaden borrowing base,

(b) Financing major fixed assets,

(c) Financing acquisition/takeovers.

Obviously lives of the acquired assets with these fund remain as long as the Company remains in existence. Freehold or very long leasehold property and shares of acquired or merged Company's shares are such examples.

(a) Share capital: Generally equity shares are issued during formation of a Limited Company whether private or public. The equity shareholders are the owners of the business. The money available along with the issue of such equity shares are utilised for buying permanent assets. These assets constitute the foundation of the Company which earns profit.

Though there is no legal bar as such as to how much equity shares should be issued by a Company (except compulsion of gearing of 2:1 and 4:1 between Debt and Equity Capital), a number of factors restrict the liberty of the company to issue equity share as freely as they wish.

It may appear that there is no cost of equity share capital since the company is under no compulsion to pay dividends. However, unless dividends are declared and paid, the credibility of the Company in question will decline. Accordingly the cost of equity capital is the dividend as paid in similar industry.

(b) Retained earnings (profit): Retained earnings are profits retained in the business after distribution of dividends.

These are used to acquire permanent fixed assets required either for expansion or for diversification or for takeover/merger.

There is a wrong notion at certain quarters that the retained earnings of the Company provide a free source of fund. This is not correct. However

cost of funds provided by retained earnings is less than that of funds obtained by issue of new equity capital. The Company must consider the income the shareholders could obtain if the earnings had been distributed instead of being retained. It is obvious that if it cannot earn at least an equivalent amount of income on these funds, it should return them to the shareholders.

There is a belief that all profits of the Company should be distributed as dividend so that the shareholders can reinvest them wherever they think best. But it may be a costly process to distribute all profits and then invite equity holders to subscribe for new issues. Thus, the Company should bear in mind that it should only retain earnings if it can justify doing so, after taking into account the cost differences.

Long Term Sources

The purpose of these sources is to finance assets with long life and to have a permanent working capital. The sources include.

(a) Redeemable Preference share,

(b) Debentures

(c) Long Term Loans which may include Rupee Loans or Loan in Foreign Currency or it may include both,

(d) Seed Capital. The period of such sources vary from 7 to 20 years.

(b) Debentures: This is the principal Debt Capital. It may be convertible into equity or may be non-convertible or may be partly convertible. They are generally redeemable and having a fixed interest rate payable yearly or half-yearly. However there are Zero-Interest Debentures also. If the terms of issue so provide, then Debenture also can be redeemed at par or at a premium.

The cost of such funds is net of taxes. In other words, if the coupon rate of interest is 15% on any Debenture, the real cost to the Company is after providing for tax (say @ 50%) is 7.5%.

(c) Long term loans: These can be categorised into Indian Rupee Loans and Foreign Currency Loans.

(a) Indian rupee loans: Such loans are obtained generally either from Banks or Financial Institutions. Depending on the amount of loan it is decided whether the loans will be provided by Bank(s), State Financial Institutions or All India Financial Institutions like IDBI, ICICI, IFCI, LIC, UTI etc. Obviously, technical and financial viability are the main criteria for grant of such loans. Besides, Debt Equity Ratio of the Company before such granting of loan is looked into by the Banks and Financial Institutions. In case the amount of loan is in excess of certain amount, these loans are sanctioned on consortium basis. The rates of interest of such loans in recent years vary between 17% and 19%. Generally for such long term rupee loans, Banks and Financial Institutions insert clause of conversion of such loan into equity in certain circumstances.

(b) Foreign currency loans: In case of projects where requirement of heavy capital equipments are involved, the role of Foreign Currency Loans come into the picture. Sources of such loans are Euro-money market, International Banks/Financial Institutions, Domestic Bond Market of Foreign countries, Export Credit Agencies, World Bank etc.

Funds can be borrowed in Foreign Currency on fixed rates of interest or on floating rates of interest. Under fixed rate of interest borrowings, the methods of financing capital goods import are

(a) buyer's credit,

(b) supplie'rs credit, and

(c) fixed-rate loans.

Such loans are provided by all India Financial Institutions either under Project Scheme or under Equipment Finance Scheme.

Seed Capital: There are a number of technically qualified entrepreneurs who lack financial capability to provide for promoter's contribution which are necessary for availing of loans from Financial Institutions. Industrial

Development Bank of India (IDBI) has opened schemes to provide such fund to the "would-be" entrepreneur. Such assistances are provided to the entrepreneurs through state level financial institutions. All projects otherwise will have to be eligible for financial assistance from IDBI. There are at present two schemes in operation. They are

(a) Special Seed Capital Assistance scheme, and

(b) Seed Capital Assistance scheme.

Under the former scheme, seed capital is provided for smaller project where assistance is restricted to 20% of the project cost or Rs.2 lakhs whichever is less. The scheme is managed by state level financial institutions out of funds provided by IDBI. However in certain cases, the concerned state governments also provide fund for seed capital.

Under the second scheme, IDBI may directly provide financial assistance. However, in most cases the state financial institutions manage the scheme with the due approval from IDBI. The main characteristics of the scheme are:

(a) The entrepreneur must be active member of the project and must be a whole time member of it.

(b) The promoter must be one who is technically and professionally qualified to handle the project and this must be his first project and he is incapable to provide promoter's contribution. However, sometimes depending on each case, such assistance can be provided for expansion/diversification of SSI Units.

(c) The project must be otherwise eligible for finance or refinance from IDBI.

(d) The maximum amount of assistance under the scheme should not exceed Rs.15 lakhs or 50% of promoter's contribution whichever is less. However, the project cost should not exceed Rs. 2 crores.

(e) The system of disbursement and repayment of such Seed Capital Assistance are

		(i) For Public Ltd. Co.	(ii) Private Ltd. Co.	(iii) Proprietor/ Partnership
(a)	Assistance	Paying call money of Equity shares against which promoters have already contributed.	Subscription in cumulative redeemable preference shares	Interest free loan
(b)	Fee/Service charge	1% for 1st 5 yrs. 2% for next 5 yrs. 3% for subscquent period.	1%	1% on the outstanding loan
(c)	Repayment	Repayment period varies from project to project depending on profitability	To be repaid within 12 years from date of issue	A maximum moratorium period of 5 years given. Repayment period varies from project to project depending on profitability

Medium Term Sources

The differences between long term and medium term sources mainly centre around the period of loans and the nature of investment of the loan fund.

Medium Term sources can be classified as

(a) Medium Term Loan,

(b) Deferred credit,

(c) Public Fixed Deposit,

(d) Working Capital Term Loans.

They are discussed hereunder.

Medium term-loans: These loans are generally provided by Banks/ Financial Institutions. The period of loans vary from 3 to 7 years. The investment of these loan funds are in the plant and machinery, vehicles and certain other equipments. The procedures for granting such loans are detailed as in case of long term loans. Besides, in most cases consortium finance may not be required. In case of long term loan, the fund is invested in Freehold Land or in long leased land since their Long Term Loan may be termed as of degree rather than of kind.

Deferred credit/rediscounting scheme: This scheme is operated mainly by IDBI. This is a scheme of deferred payment for purchase of machinery and equipments. The seller of the machine/equipment should get the scheme approved by IDBI. An advance of 10 to 35% is provided for 7 years. The bills for payment are so arranged that one bill becomes matured for payment half yearly. The operation of the scheme has been detailed below:

(a) The buyer along with his banker accepts the bills drawn on him by the seller.

(b) The seller discounts these bills with his banker and gets all the money due on the bill.

(c) The seller's banker rediscounts these bills with IDBI.

(d) The buyer's banker generally charges a fee as service charge on the buyer.

(e) The number of instalments for payment of such bills vary from 10 to 14 and payments are made half-yearly.

In 1965 this scheme of Bill re-discounting was put into operation for helping the indigenous manufacturers to boost sales of their products by offering deferred payment facilities to purchasers. This is an excellent sources of finance for the industries for meeting their urgent replacement of machinery and equipments.

Public fixed deposit: Such deposits are to be collected from public in general and shareholders. Section 58A of the Companies Act regulates such deposits. Such deposits can be taken for a maximum period of 36 months and a minimum period of 6 months generally.

Maximum amount of deposits from public should be restricted to 25% of the Net worth of the Company according to the latest audited Balance Sheet. In case of shareholders, such deposit acceptance is restricted to 10% of the Net worth of Company's latest audited Balance Sheet. Thus total amount of 35% of paid up capital and free reserves can be raised. Interests on such deposits differ from period to period depending on the duration of the deposit and policy of the Government from time to time. The maximum amount of interest on such deposits is restricted to 14% p.a. at present.

The deposits are unsecured loans and utilized by Companies to part-finance working capital requirements.

Working capital term loans: It will depend on the quantum of credit that a bank should disburse. Tandon Committee suggested three methods, of which banks generally follow the second method of lending.

As per this method, the borrower will have to contribute 25% of the total current assets. The remaining working capital gap will be funded by bank borrowing. Where borrower fails to bring such additional fund, the banks usually sanction "Working Capital Terms Loans" which the borrower is to repay in a phased manner. Such repayment time allowed is maximum five years. To put pressure on the borrower for early repayment of such loans the banks generally charge 1% higher rate on such loan over and above the rates charged on Cash Credit Account. However, such excess charge of interest is entirely in the jurisdiction of the bank which may discriminate between borrowers depending on the financial status and future prospects of the concerned borrower.

The concept of "Working Capital Term Loan" has been introduced by Chore Committee which was appointed for reviewing working capital lending by banks subsequent to the introduction of the recommendation of Tandon Committee.

Short Term Sources

Such requirements may vary from requirement of say a few weeks/fortnights to around one and a half to two years. The production flow or the marketing strategy of the Company may get disrupted badly but for such short term financing. In fact day to day commercial/industrial transactions of the Company are run by finance from short term sources. They have been discussed in the following lines.

Cash credit and overdraft: In cash credit the Bank fixes a drawing limit for the borrower after providing for margin. The borrower is allowed to draw fund from bank within this drawing limit for financing day to day activities of the Company like paying salaries/wages, buying materials for production. The current assets of the borrower are hypothecated with the bank. Generally the drawing limit fixation is based on second method of lending as fixed by Tandon Committee's norms.

Cash credit has been categorised as a short term source of finance because it is granted on yearly basis. At the end of each year the whole process of sanctioning credit is repeated to find out whether the norms against which, or the value of Current assets against which, Cash Credit facility was given are still valid. For example, if the borrower has incurred loss during the year under consideration, the Current assets may have eroded (reduced) in the meantime. Accordingly, the drawing limit of Cash credit may be reduced next year if at all the bank wishes to continue the cash credit facility.

Overdraft, on the other hand, is facility for drawing money in excess of credit balance of a borrower for a temporary period. Such facility may be for a period of say one week or one month or so. Such facilities are given generally looking at the financial status of the borrower. Thus this

is a discretionary facility which a banker may or may not give depending on the past record and financial status of the borrower. Generally, no hypothecation of Current assets or pledge of stock as in the case of cash credit are involved in case of overdraft facilities.

Under cash credit normally, the maximum interest charged by the Banks are generally 3 to 4% over the lending rate of RBI. At present the rate of interest for cash credit is 15%. The rate of interest on overdraft is generally lower since the period of such loan is very short. In case of cash credit, penal interest is charged for

(a) drawing over sanctioned limit

(b) nonsubmission of stock statement and other returns, but in case of overdraft no such penal interest is charged.

Bill discounting: This is a facility extended by a bank to its customer when the customer is the seller of goods. On selling the goods, the seller draws a bill of exchange on the buyer for the period of credit. When the purchaser signs such bill of exchange as a token of acceptance, such bill of exchange is presented by the seller to his banker. The banker immediately releases the principal money against certain charges/discount. On maturity, the banker collects the due amount in the bill of exchange including interest, if any from the buyer of goods. In case of failure of the buyer to honour the bill, the banker will revert back to the seller for honour of such bill against which banker has already released money to the seller. Such credit to seller by banker extends generally for a period between 30 and 90 days.

Commercial paper: Companies having high financial status and having good track record of performance can issue commercial paper. It is generally privately placed by a Company with any banker against which the banker obviously releases equivalent fund to the Company. This is issued generally for a period of 6 months and is partly a substitute for cash credit facility. Rate being lower than the cash credit facility, a number of companies are rushing for commercial paper in recent times.

NON-FUND-BASED FACILITIES

As the name implies, no fund is involved in such facilities but banks help customers to obtain certain facilities from third parties. Issuance of Letter of credit and guarantees by banks are principal examples of such Non-Fund Based Facilities.

In case of Letter of credit, it helps settlement of payment of a trade transaction and enables the customer of a bank to whom this facility has been extended to purchase goods/services whether in India or abroad.

In case of guarantee, it may be categorised as Performance Bank Guarantee, Bank guarantee against advances received by a supplier and Bank guarantee in liu of security deposit or Earnest Money as per requirement of Tenders of different Governmental or Corporate bodies, be it in private sector or in public sector.

In case of Performance Guarantee, it is an assurance by the bank to a third party about the performance of the project or equipments/machineries up to a certain period which has been executed/manufactured by the customers of the bank. In case of Bank guarantee for advances received by the customer of the bank from third party, such guarantee assures the third party that if the project for which advance has been given is not executed, the bank is liable to refund such advance.

Such Non-Fund Based Facilities by bank are not given independently but are generally considered by them along with the question of sanction of Cash credit facilities.

Export Credit

To boost the exports of our country to counter the adverse balance of payments, RBI has advised the banks to be liberal in extending Export credit. Export credit is generally divided into: (a) Pre-shipment credit and (b) Post-shipment credit. Banks have been advised to be liberal as follows:

(a) For Calculating Maximum Permissible Bank Finance (MPBF) as per second method of norms of Tandon Committee, no margin should be charged on receivable portion of Export. Thus, this will give exporter enough leverage to boost his exports.

(b) In the case of small scale sector having requirement of aggregate working capital limit under banking system of less than Rupees one crore, and the concerned Company has exported 25% or more of its products in preceding accounting year, for the purpose of fixing working capital limit the first method of lending of Tandon Committee will have to be applied instead of the second method of lending as in the case of general working capital requirement. This will enable exporters to get extra working capital.

(c) If there is any additional requirement of funds for further export subsequent to fixation of MPBF as above, the banks have been advised to extend credit in such case over and above MPBF.

(d) No Interest Tax will be levied by banks on the rates of interest applicable to export credit. Pre-shipment credit is also known as "Packaging credit". It is a credit facility for procuring, manufacturing, packing, and shipping the goods subjected to export. Such credit is not of continuous nature but is given on case basis for export.

In case of Companies which are doing both export and domestic sale, such facility of pre-shipment credit is a part of the total limit of Cash Credit facility provided to the Company. However, in case of 100% Export oriented units, separate drawing limit for pre-shipment credit is fixed in a liberal way so that the exporter does not face any problem in pre-shipment stage.

Post-shipment credits are sanctioned to the exporter after despatch of goods. Immediately on despatch of goods (shipment), the exporter prepares necessary export bill and along with other necessary shipping documents submits them to the bank for encashment against the Letter of Credit already opened by the importer at the time of negotiation of the deal of such export. Generally banker insists during negotiation of the dea

between importer and exporter that such L/C is irrevocable. Obviously, this puts both the banker and exporter in a safer position.

Such immediate receipt of funds against shipping of goods enable the exporter to recycle his funds quickly for a better turnover ratio and higher profitability.

Bridge Finance

After a positive appraisal of the project is finalised, usually Financial Institutions take some time to disburse the loans. The reasons for such delay being procedural formalities for creation of mortgage, consortium arrangement with financial institutions. Some times the same delay may occur in case of grant of subsidy/grant/loans from Government or in case of the intervening period between the decision to go for public issue of shares and actual receipt of such subscription from public.

In all such cases projects will get delayed if the Company is to wait for the time of receipt of fund from the respective authorities/sources. That may eventually lead to time over-run and ultimately cost over-run. To avoid the delay, such Companies approach the banks for loans for the periods for which delay may otherwise occur. Such loans are called Bridge Finance.

Such loans are repaid back by the concerned Companies out of the funds received from such Financial Institution, Government or from public subscription in due course. The Interest on such loans are generally higher by 1% to 2% than the usual Term Loans.

Trade Credit/Creditors for Expenses

There are two Categories of credit available normally. One being credit available against purchase of goods/services. Such credit may extend from 30 days to 90 days normally. Generally Interest cost is in-built in the price, interest cost being the difference in price between cost of credit purchase and the cost of purchase in cash. Such difference is generally known as cash discount.

Creditors for expenses may be represented by expenses such as:

(a). Wages of a preceding month being paid on the 7th or 10th of the following month.

(b) Contribution of Provident Fund is payable by 15th of the following month.

(c) Bonus for the year ending 31st March of the earlier year is payable, say by 15th October of the following year.

In both cases of creditors for goods/services and expenses since the Company is not to pay the due amounts immediately though the goods/services are already available by this time, it releases a burden on the Company for a short term and hence is a source of fund.

Factoring

Factoring is a concept which has not been practiced in India in a full-fledged manner. Three parties are involved in factoring: The supplier of goods (seller), the receiver of goods (buyer), the undertaker of debt (factor). When some goods are sold on credit and payable after a specified period, the efforts of sellers are always to collect receivables as quickly as possible. To put it in other way, they will remain busy significantly for such receivable management. It involves cost, time and efforts on the part of the seller. Instead of making such internal arrangement for such receivables, he may delegate such job of receivables management i.e. collection of debts to a specified agency. Such an agency is called "Factor".

By factoring, the seller assigns his right of collection of debt from the purchaser to the factor. The buyer is advised with this assignment to pay dues directly to the factor instead of to the seller. Hereafter, it becomes responsibility of the factor to collect the receivables. For such service to the seller and also for bearing the risk of non-collection, the factor obviously charges some fees. In addition, sometimes they also finance the seller by advance payment before collection of dues. In such cases they charge interest for such financing in addition to a fee.

To make operative of such service in India, RBI constituted a committee in January, 1988. The Committee submitted its report in January, 1989 and RBI accepted its recommendations in principle.

SBI commercial and Factoring Services Ltd. is the first factoring company which is on the verge of starting its operations in factoring. Out of its total capital SBI holds 54%, SIDBI 20% and State Bank of Indore and State Bank of Saurashtra hold the balance 26%. This company will look after business of Western India. The business of Northern India and Southern India will be looked after by Punjab National Bank and Canara Bank respectively.

When such banks will be fully in operation, it will be a boon specially to small and medium sectors.

Advantages of Factoring:

(a) Liquidity position of the Company enhances.

(b) The hazardous job of collection from Debtors gets eliminated.

(c) The loss of interest because of late collection of Debtor can be arrested. Obviously, the return of investment improves.

(d) The whole attention and energy of the concerned company can be diverted only on the sales/marketing aspects.

QUESTIONS

1. What do you mean by Long-Term source of Finance? List out the various sources of Long-Term Finance.
2. Discuss the potential of equity shares as a means of Corporate Finance.
3. Critically examine the debentures as a source of Long-Term Finance.
4. What are the various sources of Short-Term Finance available to a business? Explain.
5. Examine the potential of various non-fund based sources of Finance.

UNIT – III

LESSON – 3.1

CAPITAL BUDGETING

Contents

- ☆ Introduction
- ☆ Importance of Capital Budgeting
- ☆ Types of Capital Investment Projects
- ☆ Relevant Costs for Capital Expenditure Projects
- ☆ Capital Expenditure Control
- ☆ Kinds of Capital Budgeting Decisions

INTRODUCTION

Every business concern has to face the problem of capital expenditure decisions some time or the other. Hence, planning for capital expenditure has become an integral part of policy making, management and budgetary control. Capital expenditure is one which is intended to benefit future periods and normally includes investment in fixed assets and other development projects. It is essentially a long-term function, and as such a decision to buy land, buildings or plant and machinery etc., would influence the activity of the business for a considerable period of time. Hence, it is essential to keep a close watch on capital expenditure at all times. Further the advent of mechanisation and automation has resulted in management being confronted with even more frequent and difficult problems. Despite the fact that various techniques have been developed to assist management in its task of decision-making more effectively, the ultimate decision depends on the availability of relevant information which can be generated only by well-established capital expenditure budgeting system. The other commonly used nomenclatures for capital expenditure decision are "Capital Budgeting", or "Capital Investment Decision", or simply "Investment Decisions".

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Concept of Capital Budgeting

Capital budgeting normally refers to long-term planning for proposed capital outlays and their financing. It is the decision-making process by which firms evaluate the acquisition of major fixed assets whose benefits would be spread over several time periods. Succinctly, it involves current investment in which the benefits are expected to be received beyond one year in the future. The use of one-year as a line of demarcation is, however, somewhat arbitrary. The main exercise in capital budgeting is to judge whether or not an investment proposal provides a reasonable return to investors which would be consistent with the investment objective of the business. Hence, capital budgeting involves generation of investment proposals, estimating costs and benefits (cash flows) for the investment proposals and evaluation of net benefits and selection of projects based upon an acceptance criterion.

IMPORTANCE OF CAPITAL BUDGETING

1. Involves commitment of huge financial resources: The capital investment involved is usually very large. It will have several far-reaching implications on the activities of the business and may even seriously affect the very financial stability or flexibility of the business. It is these implications which make capital budgeting so important.

2. Wrong sales forecast may lead to over or under-investment of resources.

It shows the possibility of expanding the production facilities to cover additional sales shown in the sales forecast. In fact the economic life of the asset acquired represents an indirect sales forecast for the duration of its economic life. Any error in this regard may result in over or under investment in fixed assets, i.e., excess production capacity or inadequate capacity.

3. Leads to better timing of assets purchase.

Capital budgeting may allow alternative forms of assets to be considered as replacements for assets which are wearing out or are in danger of becoming obsolete. In other words, it would lead to better timing of asset purchases and improvement in quality of assets purchased. It helps to match efficiently the need for capital goods with their availability. It also assists in formulating a sound depreciation and asset replacement policy.

4. It ensures the selection of the right source of finance at the right time.

Capital expenditure decisions involve substantial funds which may not be immediately, and automatically available. A well-established capital budget would enable the management to decide in advance the sources of finance and ensure their availability at the right time.

Objectives of Capital Budgeting

1. Selection of the right mix of profitable projects: It may be said that the overall objectives of capital budgeting is to allocate the available investible funds among the competing capital projects in order to maximise the total profitability. This is made possible by employing the various evaluation techniques for the selection of investment projects which contribute the maximum towards the overall investment objective. In the case of public enterprises, capital budgeting may also assure fulfilment of other objectives such as promotion of employment, development of backward regions, etc.

2. Capital Expenditure Control: Control of capital expenditure is the next important objective of capital budgeting. This is achieved by forecasting the long-term financial requirements and thereby enabling the management to plan in advance to raise funds at the right time. The objective of preparing capital budget is to plan and then compare the actual capital expenditure with the budgeted figure for controlling costs.

The next important objective of capital budgeting is to determine the funds required for long-term projects and to see that such estimates fall in line with the company's financial policies. It also aims at a compromise between the availability of funds and needs of the capital projects.

TYPES OF CAPITAL INVESTMENT PROJECTS

Investment projects may be classified in a number of ways. The following kinds of investment projects are commonly used by both private and public sector business units in their capital expenditure forecasts:

(a) Expansion of existing product lines.

(b) Expansion into new product lines.

(c) Replacement and modernisation schemes.

(d) Projects for the utilisation of scraps, and also of surplus installed capacity.

(e) Cost reduction projects.

The projects listed above are generally profit-oriented and therefore they may be evaluated on the basis of their costs and benefits. But there are investments which are undertaken by all business units and on which it would be difficult to measure returns, such as the following.

(i) Safety precautions: Provision of safety devices and equipment may be demanded by various legal requirements.

(ii) Welfare projects: Provision of sports facilities for employees' morale. This cannot be evaluated financially.

(iii) Service projects: Provision of buildings and equipment for non-manufacturing departments may be essential, but the return from investment on them cannot be evaluated.

(iv) Research and development: This may be initiated to improve the company methods or products. It would be very difficult to measure the return on R&D for a considerable period of time.

(v) Educational projects: Provision of company training course may be instrumental in improving the efficiency of employees but the returns from investment on such programmes may be difficult to evaluate.

RELEVANT COSTS FOR CAPITAL EXPENDITURE DECISION

Generally, costs and benefits in the form of cash flows are more relevant for capital budgeting than the conventional accounting cost and benefits because such costs and benefits normally encounter a number of measurement problems owing to factors such as method of depreciation, valuation of inventories. write-off, etc. Different types of investment decisions call for different kinds of costs. Not all costs which are used in conventional accounting system are relevant for investment decision-making. A few items of relevant cost are:

Future Cost: Future costs are the projected or estimated costs. They are relevant for all types of investment decisions. Past cost, though not relevant for decision-making, are useful to the extent that they furnish a starting point for future cost projections. While calculating these costs, factors such as market conditions, economic conditions, political situation, general trend in the price levels, probabilities relating to future production and sales, economic life of the project, etc., are to be taken into account.

Opportunity cost: In simple terms, opportunity cost refers to the benefits of the best alternative forgone. As the investment in a project involves commitment of the firm's investible funds it becomes relevant to consider the opportunity of getting some benefits by employing the resources on some other alternative. For example, in an expansion scheme the economic value of the space required rather than its book value is relevant. In a replacement decision, the realisable value rather than the book value of the old may be relevant as a reduction of the cost of replacement. This type of cost is relevant for all types of investment decisions. Imputed cost is a kind of opportunity cost. It is the cost which is not actually incurred, but would be incurred in the absence of self-owned factors e.g. cost of retained earnings, rent on company owned facilities, etc.

Incremental or differential cost: It is the additional cost due to a change in the volume of business or nature of business activity. Hence it is useful for decisions such as adding new machinery, new product, changing a distribution channel etc. Sometimes this cost is considered synonymous with marginal cost. But marginal cost has much limited meaning as it refers to the cost of an added unit of output.

Interest cost: Accounting reports normally ignore the imputed interest on capital which is relevant for decision-making purposes. Interest cost constitutes the minimum acceptance criterion for capital investment projects undertaken for profit. A firm must at least recover its money cost before it can realise a profit on its own investment.

Depreciation and Income-Tax: Depreciation is normally excluded while calculating cash flows for investment, appraisal and evaluation. But it is included for calculating the accounting rate of the project. Payment of taxes results in cash flows and therefore is an important element in capital investment decisions. Income-tax has a number of effects on capital investment decisions. Hence, tax laws and applicable legal decisions emphasise the need for special skill in this area.

Secondary costs and benefits: These costs and benefits are particularly relevant for the capital expenditure decisions in public enterprises. They are external to the project implementing body and therefore are called external costs and benefits, or simply "externalities". These are the costs and benefits, which are imposed on other sectors–government, society or the economy as a whole – during the construction and operation of the project and for which nothing is paid or received. There are two types of externalities, viz., technological and pecuniary. The smoke and dust pollution and noise etc., are examples of technological externalities. Pecuniary externalities are such as increasing rates of hire for factors of production, reduction in prices of substitute products, etc. Secondary benefits are the increase in profits that can be attributed to the increased activity of processors, merchants and others who handle the project's

output or input. The major problems associated with these costs and benefits are their identification and measurement. However, for easy identification they should be related to the socio-economic objectives assigned to the project. To measure these costs and benefits, shadow prices or imputed prices should be used.

CAPITAL EXPENDITURE CONTROL

The control over capital expenditure is growing in importance as mechanisation and automation are introduced and extended. However, formal capital budgeting is still undeveloped as it is of comparatively recent origin. Any system of capital expenditure control should have the following features:

Planned development: Capital expenditure should be carefully planned to include developments in each site or department to ensure that each unit in the group or company is developing in step with the overall plan.

Preparation of capital budget will be essential, even when companies do not operate a complete system of budgetary control. Capital appropriations and payments must be planned well in advance.

Control of progress: A progress record is necessary to show the progress of each capital project. The budget and actual expenditure will be compared for analysis and control. These reports are also useful to ensure that the overall programmes remain within the limit set by the policy of the company.

Post-completion audits: This is an important step of capital expenditure control. Post-completion audits of projects determine whether their actual value is in accordance with the one determined at the time of authorisation. This review can be very important because it may reveal inefficiencies in the system, and it would provide experience which would help in avoiding repetition of mistakes.

Forms and procedures: There should be a routine for controlling capital expenditure. A procedure should be adopted for the various stages

requesting for capital expenditures, authorisation, reporting the progress of such project and audit. A well designed form should be used for the above purposes for better control.

KINDS OF CAPITAL BUDGETING DECISION

Capital budgeting refers, according to J. Lawrence Gitman, to the total process of generating, evaluating, selecting and follow-up of expenditure alternatives. A business concern sets apart or budgets financial resources to new investment proposals. Basically, capital budgeting decisions can be classified into three types

(a) Accept-reject decision,

(b) The mutually exclusive choice decision, and

(c) Capital rationing decision.

Accept-Reject Decision

This type of decision is basic to the capital budgeting. If the proposed project is accepted by the top management, the company proceeds with the investment of funds therein. Alternatively, if the project is rejected, the company does not make any investment. Generally speaking, all those proposals which yield a rate of return greater than the expected rate or cost of capital, are accepted and the rest are rejected. By adopting this criterion, all independent proposals are accepted or rejected.

Mutually Exclusive Project Decision

This relates to projects which compete with others in such a manner that the acceptance of one automatically excludes the acceptance of other projects. The alternative proposals are mutually exclusive and only one can be implemented. Suppose, a company running a printing press decides to buy a cutting machine. There are three competing brands all of which involve different initial capital outlays and operating costs. The three machines represent mutually exclusive alternatives, as only one of the three machines can be selected. It should also be remembered that the mutually exclusive project decisions are not independent of the above accept-reject decision.

Capital Rationing Decision

Capital budgeting becomes a very simple process for companies with unlimited funds, since all independent investment proposals yielding return greater than the expected rate or cost of capital are implemented. But the real situation is entirely different. Many companies have only limited funds and resort to fixed capital budgets. Whenever a large number of investment proposals compete for the limited funds, they necessitate capital rationing to them. The company allocates the limited funds to all projects in such a manner that the long-term returns are maximised. Capital rationing relates to selection of a group of investment proposals out of many acceptable under the accept- reject decision method. This leads to a system ranking of investment proposals whereby projects can be ranked on the basis of predetermined rate or cost of capital as the cut-off point for determining whether it should be accepted or rejected. In this process the availability of funds or the limitations imposed by the top management on the volume of funds to be utilised for the purpose will be taken into consideration. Thus, there are three aspects interlinked and it is a difficult process to bring them together to facilitate optimum investment decision.

Illustration

The three aspects of capital budgeting are highlighted in the following illustration.

Projects	Description	Capital outlay	Estimated rate of return	Remarks
		Rs.	%	
A	New product Line	5,00,000	30	
B	New Sales Office	2,00,000	25	
C	New Lathe	5,00,000	18	
D	Market Research	3,00,000	16	Total amount available investment
		15,00,000		

E	Making of parts instead of buying	1,00,000	15	
F	Plant re-arrangement	2,00,000	14	
G	Replacement of old machinery	2,00,000	13	cut-off point-cost of capital 12%
H	Replacement of crane	1,00,000	10	
J	Extension of sales office	50,000	6	

In the above illustration the average cost of capital is 12% and the management has decided to invest only Rs.15,00,000/- during the year. Four projects A to D would be selected based on the criterion of availability of total funds. The projects E to G would be rejected temporarily due to lack of funds. Projects H and I would be totally rejected as they cannot fetch even 12% profitability.

When a number of investment proposals offer the expected rate of return it becomes necessary to rank them in the order of the profitability so that the available capital will be put to best use. But the normal procedures adopted in any business concern is to list all the investment proposals offering the expected rate in the order of increasing capital expenditure to facilitate comparison between them.

LESSON - 3.2

CAPITAL BUDGETING APPRAISAL METHODS

Contents

- ★ Methods of Ranking Investment Proposals
- ★ Traditional Techniques
  - (a) Pay-Back Period Method
  - (b) Average Rate of Return Method
  - (c) Internal Rate of Return Method
  - (d) Profitability Index
- ★ Questions

METHODS OF RANKING INVESTMENT PROPOSALS

In most business concerns, there are usually more number of proposals awaiting execution than their finances could permit. Even though all the proposals are equally worthy of implementation, undoubtedly some are highly desirable, others are less desirable and yet others the least. This necessitates a screening process for finding out the real content and worthwhileness of the projects and a method of differentiating between them. In fact, the essence of good capital expenditure management is the proper appraisal of the investment worth of individual proposals. When this task is done effectively, the chances of company's achieving its objective of wealth maximisation are increased manifold.

The methods of evaluating capital expenditure proposals can be classified under two categories and they are

(1) Traditional or unsophisticated methods, and

(2) Sophisticated or time-adjusted methods.

The latter methods are often referred to as "discounted cashflow techniques" as they take cognizance of the time factor. The first category includes

(i) Payback Method (PB)

(ii) Average Rate of Return Method (ARR).

The second category includes:

(i) Net Present Value Method (NPV);

(ii) Internal Rate of Return Method (IRR);

(iii) Net Terminal Value Method (NTV) and

(iv) Profitability Index (PI)

While discussing the different techniques of evaluation of capital expenditure proposals, it should be remembered that many phases of business operations are conceived and managed through intuitive approach which is highly subjective. Thus, if there is a breakdown of an existing machine, it becomes imperative to replace the same more quickly to ensure smooth and uninterrupted production in the factory. This does not warrant application of any elaborate and detailed evaluation technique in such cases. In other words, where urgency is felt in the implementation of a project, to avoid disruption in production, no evaluation technique, however scientific it may be, need be applied. The consideration of the urgency brings certain extraneous factors into capital budgeting decisions whereby all economic considerations are relegated into background. However, when the project outlay is large and far-reaching in its effect, urgency alone should not be the sole criterion for its implementation.

Traditional Techniques

(A) PAYBACK METHOD (PB)

One of the traditional methods of capital budgeting is the payback method. This pay back method (PB) which is otherwise known as payout or payoff period method, represents the number of years required to return the original investment through earnings before charging depreciation but after payment of tax. It measures the period of time it takes for the original cost of the project to be recovered from the earnings of the project itself. Simply stated, if an investment of Rs. 20,000/- earned cash proceeds of Rs. 10,000/- in each of the first two years of its use, it would have a

payback period of two years. Likewise, all capital expenditure proposals are processed and ranked according to the length of the payback periods such that an investment with a shorter payback period is preferred as against investment with longer payback period as shown in the following illustrations.

Illustration 3.1

Year	Earnings before depreciation	
	A	B
	Rs.	Rs.
1	100	400
2	200	400
3	300	200
4	400	200
5	500	–
6	600	–

From the above it is clear that project A would require a four-year payback period to recover the original investment of Rs.1000, while project B would need a payback period of three years to recover the same amount invested therein. Based on the above, project B would be preferred to Project A. However, it should be remembered that the introduction of a new machine or the implementation of a new project will result in a reduction of cost and as such both costs incurred on the project as well as the resultant savings thereof have to be taken into consideration.

There are two methods of calculating the payback period. The first method is applicable where the cashflow stream is evenly spread throughout the lifespan of a project. In such a case the initial cost of the investment is divided by the annual cashflow, for ascertaining the payback period.

$$PB = \frac{\text{Investment}}{\text{Cashflow}}$$

For example, when an investment of Rs. 45,000/- in a machine is expected to yield Rs. 9,000/- for a period of ten years, then the payback period is calculated as follows:

$$PB = \frac{\text{Rs. } 45{,}000}{\text{Rs. } 9{,}000} = 5 \text{ Years}$$

This payback period of 5 years indicates that the total investment Rs. 45,000/- in the machine will be recovered in 5 years' time.

The second method is used when a project's earnings are not equal but vary from year to year. In such a case the payback period is calculated by the process of aggregating all cashflows until it becomes equivalent to the amount of original investment as shown in Illustration 3.2

Illustration 3.2

When an investment of Rs.70,000 in a machine is expected to yield earnings of Rs.6,000, Rs.12,000, Rs.17,000, Rs.20,000 Rs.20,000 and Rs.25,000 in years 1 to 6 respectively, calculate the payback period.

Year	Annual earnings Rs.	Cumulative earnings Rs.
1	6,000	6,000
2	12,000	18,000
3	17,000	35,000
4	20,000	55,000
5	20,000	75,000
6	25,000	1,00,000

From the above it is clear that the payback period lies between the fourth and the fifth year. The cumulative earnings or cashflow at the end of the fifth year is Rs.75,000/- which exceeds the initial investment cost of Rs.70,000/-. Therefore, the recovery of total investment lies somewhere between the fourth and fifth year and the payback period being four years plus a fraction of a year. Assuming that the earnings accrue evenly

throughout the year, the balance amount of Rs.15,000/- at the end of the fourth year is required to make it equivalent to the total investment of Rs.70,000/-. The balance amount required would be recovered in 3/4th of the fifth year.

$$\left[\frac{\text{Rs.15,000}}{\text{Rs.20,000}} \text{ or } \frac{3}{4}\right]$$

Thus, the payback period for the whole project is

$$4\ \frac{3}{4} \text{ or } 4.9 \text{ years}$$

To be more precise, the payback period would be 4 years and 9 months.

Advantages

The merits of the payback method are as follows:

1. The payback method is undoubtedly an improvement over the criterion of urgency.
2. It is easy to understand and simple to adopt in any concern. It is used as an effective tool for evaluating investment proposals such that the investment with the shorter payback period is preferred to investment with longer payback period.
3. The short-term approach involved in the payback method greatly minimises the possibility of losses through obsolescenc.
4. The use of payback method is preferred for the simple reason that the returns beyond three or four years are quite uncertain and the same is disregarded in any planning decision.
5. A company which is running short of funds with no other sources of raising the required funds, must necessarily select only those projects yielding quick returns and hence, more attached to this method of evaluating investment proposals.

Disadvantages

The payback method suffers from certain shortcomings which are as follows:

1. This method completely ignores all cash inflows accruing from the project after the payback period. The application of this method in the case of a project with a longer gestation period will be misleading.
2. This method fails to take into account the total period of time over which the investment is likely to yield the returns. As such, this method ignores the interest factor which is more vital for evaluating investment decisions.
3. Another limitation of payback method is that it does not measure precisely even the cashflows expected to be received within the payback period, in the sense that it does not differentiate between the projects in terms of the timing or magnitude of cashflows. It takes into consideration only the recovery period. This happens because it does not discount the future cashflows and treats a rupee received in the second or third year as equivalent to a rupee received in the first year. In short, this method ignores the time value of money.

Despite its limitations the payback method is very popular in American and British industries for evaluating investment proposals. A recent survey of the Machinery and Allied Products Institute of U.S.A. indicates that 60% of the companies surveyed, used the tool of payback method for evaluating the capital investment decisions.

Illustration 3.3

	Type P Rs.	Type Q Rs.	Type R Rs.
Cost of machine	17,500	12,500	9,000
Estimated savings in scrap	400	750	250
Wages per operative	250	300	250
Cost of indirect materials	—	400	—

Expected savings in indirect material	100	—	250
Additional cost of maintenance	750	550	500
Operatives not required (number)	11	20	9
Estimated life of machine	10 years	6 years	5 years
Taxation at 50% of the profit			

You are required to advise the management which type of machine should be purchased.

Solution:

Profitability Statement

	Type P Rs.	Type Q Rs.	Type R Rs.
Machine cost	17,500	12,500	9,000
Life of the machine	10 years	6 years	5 years
Savings (per year) in costs:			
Wages	2,750	6,000	2,250
Scrap	400	750	250
Indirect materials	100	—	250
TOTAL	3,250	6,750	2,750
Additional expenditure			
Indirect materials	—	400	—
Supervision	—	800	—
Maintenance	750	550	500
	750	1,750	500
Marginal Profit (A–B)	2,500	5,000	2,250
Net Savings after tax of 50%	1,250	2,500	1,125
Payback period	14 years	5 years	8 years
Payback Profitability	Nil	Nil	Nil

The Company is advised to purchase Machine Type Q since it ranks first both in payback period and profitability criteria. In the case of Type P and Type R the life of each machine is shorter than the payback period.

(B) AVERAGE RATE OF RETURN METHOD (ARR)

The method is mainly based on accounting approach rather than cashflow approach. The average rate of return method (ARR) which is otherwise known as the accounting rate of return method, consists of aggregating all the earnings after depreciation and dividing them by the project's useful life span. The resultant average earnings over the period is divided by the average investment over the period. The average investment in a project represents the simple arithmetic mean of the values of the asset at the beginning and at the end of the useful lifespan of the asset which is always zero at the later point of time. Under these circumstances the average investment in a project is always one-half of the original investment. For calculating the ARR, sometimes the value of the initial investment is used in the place of average investment. However, it should be remembered that the use of the average investment is more logical. For the calculation of ARR the following formula can be adopted.

$$ARR = \frac{\text{Average Annual earnings after taxes}}{\text{Average Investment}} \times 100$$

If a machine has salvage value, then the depreciable cost (cost - salvage value) of the machine should be divided by 2 in order to ascertain the average net investment, since the salvage money will be recovered at the end of the lifespan of the project. As the amount equivalent to salvage value is tied up to the project throughout its lifespan, no adjustment is required to the sum of the salvage value to determine the average investment. Again, if any additional working capital is required in the first year of the project's life, which is likely to be released only at the end of the project's lifespan, the amount of working capital needed should also be included for determining the relevant investment proposal while calculating the ARR method. The average investment, sometimes, consists of the following:

Average Investment = Net working capital + Salvage value + 1/2 (initial cost of the machine - salvage value)

Illustration 3.4

Initial investment on machine (including installation charges)	Rs	22,000
Scrap value	Rs	2,000
Working capital	Rs	4,000
Useful lifespan		5 years

Assuming that the straight line method of depreciation is followed calculate the average investment.

Average investment = Net working capital + Salvage value + 1/2 (initial cost of the machine – salvage value)

= Rs. 4,000 + Rs. 2,000 + 1/2 (Rs. 22,000 – Rs. 2,000)

= Rs. 16,000

The ARR method facilitates the decision-maker to decide whether to accept or reject an investment proposal. Based on ARR method as an accept-reject criterion the actual ARR is compared with a predetermined or a minimum required rate of return or cut-off rate. A project is accepted, when the actual ARR is higher than the minimum desired rate of return. Otherwise, the project is rejected. Alternatively the ranking method can be employed to decide on the capital investment proposals.

Advantages

The advantages of ARR are as follows:

1. The ARR method is also simple to understand and easy to adopt. What is required is only the accounting profits in a project after providing for taxes. This figure can be easily obtained.
2. This method is considered superior to the payback method in the sense that it takes into consideration the earnings over the entire

lifespan of the project and hence, facilitates the comparison of the value of different projects.

3. The method takes into consideration only the net earnings after providing for depreciation, as it is of vital importance in the appraisal of investment proposals.

Disadvantages

The ARR method suffers from the same shortcomings as that of the payback method and they are given below:

1. The main disadvantage arises from the use of the accounting approach instead of cashflow approach in this method.
2. Another disadvantage is that it does not take into account the time value of money. If only earnings from different investments accrue at the same time, this method can be safely employed. It is well known that the receipts occur at different time intervals and that timing of cash inflows and outflows is a vital factor in financial decision making.
3. Again the ARR method of evaluating investment proposals does not differentiate between the size of the investment required for each project.
4. This method does not take into consideration the benefits accruing to the company as a result of sale or abandonment of equipment which is replaced by the new investment.

Illustration 3.5

X Ltd., is considering the purchase of a machine. Two machines are available, E and F. The cost of each machine is Rs.60,000. Each machine has an expected life of 5 years. Net profit before tax during the expected life of the machine are given below:

Year	Machine E	Machine F
	Rs.	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
Total	85,000	90,000

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

Solution:

Statement of Profitability

Year	Machine E			Machine F		
	Profit Before Tax	Tax 50%	Profit After Tax	Profit Before Tax	Tax 50%	Profit After Tax
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1.	15,000	7,500	7,500	5,000	2,500	2,500
2.	20,000	10,000	10,000	15,000	7,500	7,500
3.	25,000	12,500	12,500	20,000	10,000	10,000
4.	15,000	7,500	7,500	30,000	15,000	15,000
5.	10,000	5,000	5,000	20,000	10,000	10,000
Total	85,000	42,500	42,500	90,000	45,000	45,000

	Machine E	Machine F:
Average Profit (after tax)	42,5005 = 8,500	45,000/5 = 9,000
Average Investment	60,000/2 = 30,000	60,000/2 = 30,000

Rate of Return	8,500/30,000 × 100	9,000/30,000 × 100
	= 28.33%	= 30%

Machine F is more profitable.

Sophisticated Techniques

I. DISCOUNTED CASHFLOW METHOD (DCF)

As investments are effected in anticipation of future returns, the time value of money is basically considered while evaluating investments. Time is always crucial for the investment such that the sum received today is worth more than the same sum to be received tomorrow. Thus, in evaluating investment proposals, it is essential to consider the timing of return on investment.

The discounted cashflow method (DCF) takes into consideration the time value of money and provides a more objective basis for evaluating investment proposals. This method is considered superior to payback method as well as average rate of return method, since the former eliminates the shortcomings of both. The DCF method considers the net cashflows as representing the recovery of original investment plus a return on capital invested. Another characteristic feature of DCF method is that it takes into consideration all benefits and costs of the project during the entire period. The DCF methods are mainly divided into two types and they are the Net Present Value method (NPV) and the Internal Rate of Return Method (IRR). Two variations of the NPV method, i.e., terminal value and profitability index are also considered. As a group, all these methods are often referred to as time adjusted or present value or discounted cashflow methods.

II. NET PRESENT VALUE METHOD (NPV)

The net present value method (NPV) is one of the DCF or time-adjusted techniques of evaluating investment proposals. It recognises the fact that cashflows arising out of different time periods differ in values and are comparable only when their present values are determined. As a first step

an appropriate rate of interest should be selected to discount cashflows and this in turn corresponds with the cost of capital which is equal to the minimum rate of return expected to be earned from the investment projects. Secondly, the present value of investment proceeds representing the cash inflows and the present value of the investment outlays representing cash outflows should be computed using cost of capital as the discounting rate. Thirdly, the net present value should be computed by deducting the value of cash outflows from the present value of cash inflows spread over the life period of a project. Thus, the NPV method is a technique of ascertaining the present value of cash inflows and outflows of an investment project, using the cost of capital as the appropriate discounting rate.

The NPV method can also be defined as the summation of the present value of cash proceeds in each year minus the summation of the present values of net cash outflows in each year. The equation for the net present value, assuming that all cash outflows are made in the initial year (t = 0), will be:

Where A_1 , A_2 ... represent cash inflows, k is the firm's cost of capital, C is cost of the investment proposal and n is the expected life of the proposal. It should be noted that the cost of capital, k is assumed to be known: otherwise, the net present value cannot be determined.

The acceptance rule as applicable to NPV method is, to accept the investment project if its net present value is positive, (i.e., the present value of cash inflows exceeds the present value of cash outflows, or is equal to zero.

The NPV method is employed to select between mutually exclusive projects by taking into consideration whether the incremental investment results in a positive net present value. The NPV method is also employed for ranking of investment proposals in the order of their net present values, i.e., a project with highest positive net present value would be ranked first followed by others in the descending order.

Illustration 3.6

Compute the net present value for Project X which initially costs Rs. 2,500 and generates year-end cash inflows of Rs. 900, Rs. 800, Rs. 700, Rs. 600 and Rs. 500 in one through five years The required rate of return is assumed to be 10 per cent.

Net Present Value of Project X

Year	Cash inflows Rs.	Discounting factor at 10%	PV of cash inflows Rs.
1.	900	0.909	818
2.	800	0.826	661
3.	700	0.751	520
4.	600	0.683	410
5.	500	0.620	310
			2,725
	Less: Investment Outlay		2,500
	Net Present Value		225

Advantages

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

(1) Firstly, the NPV method recognises the time value of money. This is the most significant advantage since payback method and the ARR method have ignored this factor.

(2) This method considers all cashflows over the entire lifespan of the project in its calculation unlike the payback method.

(3) The changing discount rate can be built into the NPV calculations by altering the denominator. When the lifespan of the project is longer the value of money becomes low and the discount rate becomes higher. This method is used for the selection of mutually exclusive projects.

(4) Finally this method is consistent with the objective of maximising the wealth of the shareholders of the company.

Disadvantages

The NPV method also suffers from the following limitations:

(1) This method is difficult to understand as well as use, when compared to the payback method or even the ARR method.

(2) In the computation of net present value of project, the discount rate is the most important element used since different discount rates will give different present values. As such, the relative desirability of a proposal will change with a change in the discount rate. Again, the calculation of a required rate of return, often referred to as cost of capital, presents serious problems. In fact, there is a considerable difference of opinion to the exact method of calculation of the same.

(3) This method may not provide satisfactory solution when the projects compared involve different amounts of investment. For, a project with a higher net present value may not be desirable, since it may involve huge initial capital outlay.

(4) Finally, this method may not provide satisfactory result in the case of two projects having different useful lives. Normally, a project with shorter economic life is always preferred, other things remaining equal. Sometimes, it may also happen that a project with a higher present value may also have a larger economic life such that the funds will remain invested for a longer period, while the alternative proposal with a smaller present value may have a shorter life. In such cases the NPV method may not reflect the real worth of the alternative proposals.

Illustration 3.7

ABC Company Limited is willing to purchase a machine for the expansion of their existing factory. With this end in view they seek your advice as to which one of the following machines would be more profitable. For this you are supplied with the following data:

Cost of each type of machine Rs. 1,00,000

Discount rate for all types of investment 10%

Cash Flow

Years	Machine A Rs.	Machine B Rs.	Machine C Rs.	Machine D Rs.
1.	30,000	10,000	20,000	20,000
2.	40,000	30,000	40,000	30,000
3.	50,000	40,000	50,000	35,000
4.	30,000	60,000	35,000	40,000
5.	20,000	40,000	30,000	40,000

Solution:

Profitability Statement

Machine A		Machine B		Machine C		Machine D		
Cash inflow	Present value	Cash inflow	Present value	Cash inflow	Present value	Cash inflow	Present value	Discout actor (10%)
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
30,000	27,270	10,000	9,090	20,000	18,180	20,000	18,180	0.909
40,000	33,040	30,000	24,780	40,000	34,040	30,000	24,780	0.826
50,000	37,550	40,000	30,040	50,000	37,550	35,000	26,285	0.751
30,000	20,490	60,000	40,980	35,000	23,905	40,000	27,320	0.683
20,000	12,420	40,000	24,840	30,000	18,630	40,000	24,840	0.621
70,000	1,30,770	1,80,000	1,29,730	1,75,000	1,32,305	1,65,000	1,21,405	

This statement indicates that Machine C would be more profitable investment, though cash inflow in this machine is less than Machine B. Machine C has more or less standard cash inflow early in its working life. Hence, present value in case of C is relatively higher.

III. INTERNAL RATE OF RETURN METHOD

The Internal Rate of Return is defined as the interest rate that equates the present value of the expected future receipts (net profit plus depreciation) to the cost of the investment outlay. It is the time adjusted

rate of return as well as the maximum rate of interest that could be paid for the capital employed over the life of an investment without loss on the project. To put it differently, it is the discount rate that equates or breaks evenly the present value of initial outlay with the present value of the expected net cash flows or reduces the net present value to zero.

This method is popularly known as the "trial and error" method because it involves making a series of trial calculations in an attempt to compute the correct interest which discounts the cash flows to zero. This rate is also known as 'Solution' or 'Yield' rate of interest.

According to this method, internal rate of return should be compared with a required rate of return known as the cut-off or target rate or hundle rate. If the internal rate of return is not less than the required rate, a project is profitable; otherwise it should be rejected. Where, however, there are a number of alternative proposals, the acceptance criterion can be expressed in three steps as follows:

I. Find the internal rate of return in respect of sales alternative.

II. Compare internal rate of return with cut-off rate and reject those in which cases the internal rate of return is less than the cut-off rate.

III. Compare the internal rate of alternative after screening as in II above. The alternative with maximum rate should be selected as the most profitable one.

Calculation of IRR by Trial and Error Method

The procedure to calculate the IRR is as follows:

(a) Establishing the First Trial Rate: As already pointed out, this rate is found by trial and error from the present value tables. Where the earnings are equal or revenue for all years, to select a trial rate first of all divide the initial capital outlay by net cash flow per annum.

$$\text{i.e., } \frac{\text{Investment}}{\text{Earnings per annum}}$$

Secondly, look at Present Value Table II and pick out the line for the number of years of life of the investment. Thirdly, move across this line until you find a figure nearly equal to the amount calculated in the first step; the rate indicated by this column is the time adjusted rate of return. When the net cash flows is not too uneven, on the other hand, the trial rate may be selected with the formula given below:

$$= \frac{\text{Average excess cash flows over Capital Cost}}{\text{Average investment}} \times 100$$

where, Average excess cash flows

$$= \frac{\text{Total NCE less Capital Cost}}{\text{Project life}}$$

(b) The Second Trial Rate: The second trial rate is selected by considering whether the cash inflow is greater or less than the cash outflow. If the inflow is less than the outflow, the second trial rate will be less than the first trial rate; if the inflow exceeds the outflow, on the other hand, the second trial rate will be higher than the first trial rate. In this way, an area can be located where exact discount rate lies and this can be approximated by simple interpolation.

(c) Compare the IRR with with out-off Rate: Compare the internal rate of return, selected as above, with cut-off rate and if the former is not less than the latter, the project is financially profitable. Compare the internal rates of alternatives and the project with maximum rate should be selected as the most profitable one.

Illustration 3.8

Cost of investment Rs. 3,00,000

	Rs.
Expected income Year 1	80,000
Expected income Year 2	1,00,000
Expected income Year 3	1,00,000
Expected income Year 4	1,20,000
Expected income Year 5	1,20,000
	5,20,000

Let us try a rate of 15%. From the tables the multiplying factor for years 1 to 5 at a rate of 15% is selected and applied as given below:

Year	Cash flow Rs.	Discounting 15%	Present Value Rs.
1	80,000	0.870	69,000
2	1,00,000	0.756	75,600
3	1,00,000	0.658	65,800
4	1,20,000	0.572	68,640
5	1,20,000	0.497	59,640
	5,20,000		3,39,280

As the present value of net cashflows from the project i.e., Rs. 3,39,280 exceeds the original cost of the investment i.e., Rs. 3,00,000, the second tr al rate can be higher than 15%. Let us try a rate of 22%.

Year	Cash Flow Rs.	Discounting factor 22%	Present Value Rs.
1	80,000	0.820	65,600
2	1,00,000	0.672	67,200
3	1,00,000	0.551	55,100
4	1,20,000	0.451	54,120
5	1,20,000	0.370	44,400
	5,20,000		2,86,420

Since the present value of net cashflows of Rs. 2,86,420 is less than its capital cost of Rs. 3,00,000, the third trial rate must be lesser than 22%. In other words, the exact discount rate lies somewhere between 15% and 22%. Let us try with 20%.

Year	Cash flow Rs.	Discounting factor 20%	Present Value Rs.
1	80,000	0.833	66,640
2	1,00,000	0.694	69,400

3	1,00,000	0.579	57,900
4	1,20,000	0.482	57,840
5	1,20,000	0.402	48,420
	5,20,000		3,00,000

The present value of cashflow at 20% is the nearest as to its capital outlay, hence it is the internal rate of return for the investment. This may be compared with an alternative project to ascertain which yields better return, and all other things being equal the project yielding the highest return will be selected to the firm's capital budget.

Calculation of I.R.R. by Mathematical Formulae

I. When cash inflows are (even) same in each year:

(I) internal rate of return can be calculated by using the following formula:

$$P = \frac{E}{1+r} + \frac{E}{(1+r)^2} + \frac{E}{(1+r)^3} + \frac{E}{(1+r)^n}$$

$$= \frac{E}{r}\left[1-(1+r)^{-n}\right]$$

where,

P = Present value

E = Earning or cash inflows expected in each year

r = rate of interest i.e., internal rate of return

n = number of years.

Illustration 3.9

Suppose a project requires investment of Rs. 10,000 each year for five years. What is the internal rate of return?

Solution:

$$P = \frac{E}{r}\left[1-(1+r)^{-n}\right]$$

Suppose r = 10% & E = Rs. 3,000

$$r = \frac{\text{Rs. } 3{,}000}{10}\left[1(1+10)^{-5}\right]$$

= Rs. 11,250

As this amount is more than the initial outlay i.e. Rs. 10,000, we should now try for some higher rate of interest.

Then $P = \frac{\text{Rs. } 3,000}{20} \quad [1 - (+20)^{-5}]$

= Rs. 8970

From the above it is clear that actual rate of return is between 10% to 20%. We can now find out the actual rate of return by using the linear interpolation:

Formula:

$$L + \frac{P_1 - Q}{P_1 - P_2} \times D$$

where,

L = Lower rate of interest i.e 10%

P_1 = Present value at Lower rate of interest i.e. Rs. 11250

P_2 = Present value at higher rate of interest i.e. Rs. 8970

Q = Net cash outlay i.e. Rs. 10,000

D = Difference in rate $= 10 + \frac{11250 - 10000}{11250 - 8970} \times 10$

$$= 10 + \frac{1250}{2280} \times 10$$

$$= 15.4\%$$

(I B) Internal rate of return can also be calculated by using the value given in the present value Tables. This can be explained by solving the above example, as detailed below:

(a) Divide the investment required by annual cash inflow

i.e. $\frac{10,000}{3,000} = 3.3333$

(b) See the table 'B' in the fifth year row and find out the figure nearest to 3.333. The nearest figure in the fifth year row is 3.352 in the column

of 15%. As the 3.3522 is slightly more than 3.3333, the internal rate of return is slightly more than 15 per cent.

II. When cash inflows are not same (uneven) in each year:

(II A) Internal rate of return can be calculated by using the following formula:

$$P = \frac{E_1}{1+r} + \frac{E_2}{(1+r)^2} + \frac{E_3}{(1+r)^3} \quad \ldots\ldots + \frac{E_n}{(1+r)^{-n}}$$

where

P = present value

$E_1, E_2 \ldots E_n$ = Earnings or cash inflows in the Ist, 2nd ... nth year.

r = rate of interest or internal rate of return

n = number of years.

Illustration 3.10

An investment of Rs. 1,00,000 in a project 'A' gives the following cash inflows:

Years	Rs.
1	5,000
2	20,000
3	1,00,000
4	10,000
	1,35,000

What is the internal rate of return?

Solution:

Steps: (i) Calculate the average cash inflow i.e.

$$\frac{\text{Rs. } 135000}{4} = \text{Rs. } 33{,}750$$

(ii) Divide Rs. 1,00,000 by Rs. 33,750 = 2.963.

(iii) Now see the table 'II' in the 4th year row and find out a figure nearest to 2.963. The nearest figure in the 4th row is 2.9137 in column of 14%.

(iv) Now calculate the present value at 14% by applying the formula:

$$P = \text{Rs. } \frac{5000}{1+.14} + \frac{20000}{(1+.14)^2} + \frac{100000}{(1+.14)^3} + \frac{10000}{(1+.14)^4}$$

$$= (4{,}386 + 15{,}389 + 67{,}499 + 5{,}921)$$

$$= \text{Rs. } 93{,}195.$$

(v) As this amount i.e. Rs. 93,195 is less than Rs. 1,00,000 internal rate of return will be less than 14%. Now we can try taking another rate of interest say 10% then –

$$P = \text{Rs. } \frac{5000}{1+.10} + \frac{20000}{(1+.10)^2} + \frac{1{,}00{,}000}{(1+.10)^3} + \frac{10{,}000}{(1+.10)^4}$$

$$= \text{Rs. } (4{,}545 + 16{,}529 + 75{,}131 + 6{,}830)$$

$$= \text{Rs. } 1{,}03{,}035.$$

As this amount i.e. Rs. 1,03,035 is more than Rs. 1,00,000, it means internal rate of return is more than 10%.

(vi) Now we can calculate the actual rate of return by using the formula of linear interpolation given in the previous pages of this lesson.

$$\text{Internal rate of return} = 10 + \frac{1{,}03{,}035 - 1{,}00{,}000}{1{,}03{,}035 - 93{,}195} \times 4$$

$$= 11.2\%$$

(II B) Internal rate when the cash inflow are not same, can also be calculated by using the values given in the present value Tables. This is explained here by solving the example given in the previous page(s).

Steps (i) (ii) (iii): These are the same as explained in the previous page(s). (iv) and (v): now see the table 'A' in the column of 14%, the value

given in the 1st. 2nd, 3rd and 4th year row respectively. Similarly in the column of 10 per cent find out the discounting factor for various years.

Present Value of Cash Inflows of Project 'a'

Year	Cash inflow	Discount factor at 14%	Total Present value (2×3)	Discount factor at 10%	Total Present value (2×5)
(1)	(2)	(3)	(4)	(5)	(6)
	Rs.		Rs.		Rs.
1	5,000	0.877	4,385	0.909	4,545
2	20,000	0.769	15,380	0.826	16,520
3	1,00,000	0,675	67,500	0,751	75,100
4	10,000	0,592	5,920	0.683	6,830
		93,185			1,02,992

(vi) Internal rate of return $= 10 + \frac{102995 - 100000}{102995 - 93185} \times (14-10)$

$= 11.2$ per cent.

Merits of Discounted Cash Flow (IRR) Method

The method is regarded as superior to other methods of investment appraisal in several ways:

(1) The method takes into account the entire economic life of the project investment and income.

(2) It gives due weightage to time factor of financing.

(3) It produces a measure which is precisely comparable among projects, regardless of the character and time shape of their receipts and outlays.

(4) This approach provides for uncertainty and risk by recognising the time factor. It measures the profitability of capital expenditure by reducing the earnings to the present value.

(5) It is the best method of evaluating a project where the cash flows are uneven. Cash inflows and outflows are directly considered under this method while they are averaged under other methods.

Demerits of Discounted Cash Flow (IRR) Method

The method suffers from the following disadvantages:

(1) It involves a good amount of calculations, hence it is difficult and complicated.

(2) It does not correspond to accounting concepts for recording costs and revenues with the consequence that special analysis is necessary for the study of capital investment.

(3) The selection of cash inflows is based on sales forecasts which is in itself an indeterminable element.

(4) The economic life of an investment is very difficult to forecast exactly.

(5) The method considers discount on expected rate of return but the determination of rate of return is in itself a problem.

Despite the above defects, the method provides an opportunity for making valid comparisons between long-term competitive capital projects.

NPV vs IRR

NPV and IRR are the species of the same genus i.e., DCF Technique and are based on the concept that money has a time value. However, there are certain fundamental differences between them. Firstly, the present value treats the discount rate as a known factor while the internal rate of return rates it as an unknown factor. In most cases the business's known cost of capital is used for discounting under NPV method.

Secondly, the IRR method seeks to find the maximum rate of interest at which funds invested in any given project could be repaid with earnings generated by that project. But the present value method arrives at the amount to be invested in a given project, so that its anticipated earnings could recoup the amount with the market rate.

Thirdly, at a particular discount rate, there can be only one NPV and not multiple net present values of a project. But in the case of unconventional investments, where the capital outlays are incurred in different time periods, a project may have more than one IRR which may lead to baffling contradictions.

Fourthly, the present value method explicity recognises availability of a market for funds and assumes that business will use the market rationally to enhance their earnings that the IRR method does not recognise the existence of such a capital market.

Profitability Index

The profitability index (PI), is yet another method of evaluating the investment proposals. It is also known as the benefit-cost ratio (B/C). It represents a ratio of the present values of future cost benefit at the required rate of return to the intial cash outflow of the investment. This is to similar to NPV approach. The PI approach measures present values of returns per rupee invested while the NPV is based on the differences between the present value of cash outlays. Where projects with different initial investments are to be evaluated the PI method proves to be the best technique. The formula to calculate the profitability index is as follows:

$$PI = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outlay}}$$

The method is also known as benefit-cost ratio because the numerator measures the benefits and the denominator the costs.

This rule of acceptance or otherwise of the project, using the PI method, is to accept the project if its PI is greater than one and reject it if its PI is less than one.

The selection of the projects with the help of the PI method can also be effected on the basis of ranking. The project with the highest PI is given the first rank followed by others in the descending order.

Illustration 3.11

The initial outlay of the project is Rs.1,00,000 and it generates cash inflows of Rs.50,000, Rs.40,000, Rs.30,000 and Rs.20,000 in the four years of its lifespan. You are required to calculate the NPV and PI of the project assuming 10% rate of discount.

Year	Cash inflows Rs.	Discount factor a: 10%	Present value Rs.
1	50,000	0.909	45,450
2	40,000	0.826	33,040
3	30,000	0.751	22,530
4	20,000	0.683	13,660
			1,14,680
		Less: Cash outlay	1,00,000
		NPV	14,680

$$\text{PI (Gross)} = \frac{1,14,680}{1,00,000} = 1.1468$$

PI (Net) = 1.1468 – 1 = 0.1468

The PI method which is yet another discounted cashflow technique has the following merits:

1. This method takes into consideration the time value of money also the total benefits spread throughout the lifespan of the project. It can be employed safely as a sound investment criteria.
2. The PI method is a better evaluation technique than the NPV method in a situation of capital rationing. For example, two projects may have the same NPV of Rs.5,000. But project A requires an initial investment of Rs.40,000 whereas B requires only Rs.20,000. Project B should be preferred on the basis of PI method. But the NPV method will give identical ranking to both the projects. Thus, the PI method is superior to the NPV method as the former evaluates the worth of the projects in terms of the relative rather than absolute magnitudes.

PI method is not an unmixed blessing and the same suffers from the following serious drawback. The PI method is difficult to understand and use in practice. It involves more tedious calculations than the traditional method, but definitely less than that of IRR.

PRACTICAL PROBLEMS

Illustration 3.12

K.N.P. Ltd. is considering the purchase of a machine. Two machines are available M, and N, each costing Rs. 50000. In comparing the profitability of the machines, a discount rate of 10% is to be used. Earnings after tax are expected to be as follows:

Year	Cash flows	
	Machine 'M'	Machine 'N'
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

Indicate which machine would be profitable under the various of methods of ranking investment proposals.

Solution:

Profitability Statement

Year	Machine M			Machine N	
	Discount factor at 10%	Cash flow Rs.	PV of Cash flow Rs.	Cash flow Rs.	PV of Cash flow 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	10,000	6,210	20,000	12,420
		85,000	65,385	90,000	64,865
	Less cost	50,000	50,000	50,000	50,000
	NPV	35,000	15,385	40,000	14,865

According to this statement, Machine 'Machine' is more profitable as its NPV is greater than that of Machine N.

Comparison with Payback Period and Return in Investment

	Machine 'M'	Machine 'N'
Pay back period	$2\frac{3}{5}$ years	$3\frac{1}{2}$ years
Post pay back profitability	Rs 35,000	Rs 40,000
Return on investment	28%	32%
(Average Return/Average Investment)	(Rs. 7,000 × 100)	(Rs. 8,000 × 100)
	Rs. 25,000	Rs. 25,000
NPV	Rs. 15,385	Rs. 14,865

From the above figures it will be observed that Machine 'M' would be preferred under payback period and DCF method, while Machine 'N' would be preferred under post-payback profitability and return on investment method. These results are as can be expected. Machine 'M' yields a high return in the early part of its life and hence has a favourable image under the payback period or DCF methods. But, as the total return on Machine 'N' is greater than Machine 'M', the post-payback profitability and Return on-investment favour Machine 'N'.

Illustration 3.13

A Ltd. has two alternatives under consideration: the acquisition of electric typewriters for use in the office of the company and acquisition of machine to manufacture dolls. Data on two proposed capital expenditures are given as follows:

	Electric Typewriter	Doll making machine
	Rs.	Rs.
Investment cost	10,000	15,000
Economic life	3 yrs.	4 yrs.
Scrap value	1,000	Nil
Installation Cost	-	500
Additional working capital	-	4,000
Cash benefits before depreciation p.a.	6,000	10,000
Depreciation	3,000	4,000

Which project of the two proposals should be adopted? Assume (i) the company's cost of capital is 15% and (ii) corporate tax rate at 50%.

Solution:

Calculation of cash inflows:

	Electric Typewriter Rs.	Doll making machine Rs.
Net Cash benefits	6,000	10,000
Less: Depreciation	3,000	4,000
Cash benefits before tax	3,000	6,000
Less: Tax @ 50%	1,500	3,000
Cash benefits after tax	1,500	3,000
Add: Depreciation	3,000	4,000
Cash inflows	4,500	7,000

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Profitability Statement

Cash outflows	Electric Typewriter Rs.	Doll making machine Rs.
Investment Costs	10,000	15,000
Installation Cost	-	5,00
Additional Working capital	-	4,000
Total cost	10,000	19,500

Year	Cash inflows I	Cash inflows II	Discount factor at 15%	Present values of I	Present values of II
1	4,500	7,000	0.870	3,915	6,090
2	4,500	7,000	0.756	3,402	5,292
3	4,500	7,000	0.658	2,961	4,606
4	1,000	-	0.658	658	-
5	-	7,000	0.572	-	4,004
6	-	7,000	0.572	-	2,288
				10,936	22,280
	Less: Cash outflow			10,000	19,500
	N P V			936	2,780

Since the N P V of Doll-making machine is greater than the Electric Typewriter, the Doll-making machine should be acquired.

Illustration 3.14

Easy Ltd. is evaluating two mutually exclusive proposals for new capital investment. The following information about the proposals are available:

		Proposal A Rs.	Proposal B Rs.
Investment Cost		80,000	1,00,000
Economic Life (Years)		4 yrs.	5 yrs.
Earning before depreciation and taxes	Year		
	1	24,000	28,000
	2	28,000	32,000
	3	32,000	36,000
	4	44,000	44,000
	5	—	4,000

The company's cost of capital is 10 percent and tax rate is 50%. Advise the company as to which proposal would be profitable using D C F techniques.

Solution:

Calculation of cash inflows

Proposal A

Year	1	2	3	4
Earnings	24,000	28,000	32,000	44,000
Less: Depreciation	20,000	20,000	20,000	20,000
Earnings after Depreciation	4,000	8,000	12,000	24,000
Less: Tax @ 50%	2,000	4,000	6,000	12,000
Earnings after Tax	2,000	4,000	6,000	12,000
Add: Depreciation	20,000	20,000	20,000	20,000
Net Cash inflows	22,000	24,000	26,000	32,000

Proposal B

Year	1	2	3	4	5
Earnings (Rs.)	28,000	32,000	36,000	44,000	40,000
Less: Depreciation	20,000	20,000	20,000	20,000	20,000
Earnings after depreciation	8,000	12,000	16,000	24,000	20,000
Less: Tax (50%)	4,000	6,000	8,000	12,000	10,000
Earnings after tax	4,000	6,000	8,000	12,000	10,000
Add: Depreciation	20,000	20,000	20,000	20,000	20,000
Net Cash inflows	24,000	26,000	28,000	32,000	30,000

Profitability Statement

Year	Cash flows A Rs.	Cash flows B Rs.	Discount factor	Present Values A Rs.	Present Values B Rs.
0	(80,000)	(1,00,000)	(80,000)	(1,00,000)	
1	22,000	24,000	0.909	19,998	21,816
2	24,000	26,000	0,826	19,824	21,476
3	26,000	28,000	0,751	19,526	21,028
4	32,000	32,000	0,683	21,856	21,856
5	–	30,000	0.621	–	18,630
			NPV	1,204	4,806

$$\text{Profitability index} = \frac{\text{PV of Cash inflows}}{\text{PV of Cash outflo}}$$

Proposal A

$$\frac{81204}{80000} = 1.015$$

Proposal B

$$104806 = 1.048$$

Calculation of Internal Rate of Return

The first trial rate can be taken as 10% since it has been used for the calculation of N P V. In both the cases the N P V is positive and

therefore, a higher discount rate could be tried. Let us take 12% as the second trial rate.

Year	Cash flows A Rs.	Cash flows B Rs.	Discount factor	Present Values A Rs.	Present Values B Rs.
0	(80,000)	(1,00,000)	1	(80,000)	(1,00,000)
1	22,000	24,000	0.893	19,646	21,432
2	24,000	26,000	0.797	19,128	20,722
3	26,000	28,000	0.712	18,512	19,936
4	32,000	32,000	0.036	20,352	20,352
5		30,000	0.567	-	17,010
		NPV		(2,362)	(548)

At 12% discount rate the NPVs of both the proposals are negative. Hence, the actual rate should be below 12% but above 10%. The correct rate could be ascertained by interpolation.

$$\text{I R R of proposal A} = 10 + = \frac{1204 \times 2}{3566} = 10.66\%$$

$$\text{I R R of proposal B} = 10 + = \frac{4806 \times 2}{5354} = 11.80\%$$

Comparative Evaluation:	Proposal A	Proposal B
N P V	1204	4806
P I	1.015	1.048
I R R	10.66%	11.80%

Under all the three D C F methods, the proposal B shows better results. Hence, it should adopted.

Questions for Lessons 3.1 and 3.2

1. What is capital budgeting? Examine its need and significance.
2. What are the objectives of capital budgeting ?
3. Explain the concept of payback method of project evaluation.
4. State any two merits and demerits of payback method.

5. What are the advantages of the Average Annual Rate of Return method?
6. Discuss any three methods of ranking investment proposals indicating the relative merits and limitations in each case.
7. Make a comparative study of net present value and internal rate of return as tools for ranking of investment proposals.
8. (a). Why is the "Profitability index" more relevant in the evaluation and ranking of projects than internal rate of return?

   (b) "Despite all limitations of the method of payback period, it has still got significance in project appraisal." Explain.
9. What is meant by capital rationing?
10. ABC Ltd. is considering the purchase of a new machine which will carry out some operations performed by labour. A and B are alternative models. From the following information, you are required to prepare a profitability statement and work out the payback period in respect of each asset.

	Machine A	Machine B
Estimated life of machine (years)	5	6
	Rs.	Rs.
Cost of machine	1,50,000	2,40,000
Cost of indirect materials	6,000	8,000
Estimated savings in scrap	10,000	15,000
Additional cost of maintenance	19,000	27,000
Estimated savings in direct wages		
Employees not required (number)	150	200
Wages per employee (Rs.)	600	600

Taxation is to be regarded as 50% of profit. Which model would you recommend? State your reasons.

11. The economic life of machine No.1 is 2 years, while it is 3 years for the other two. The scrap values are Rs.40,000 Rs.25,000 and Rs.30,000 respectively.

Sales are expected to be at the rates shown for each year during full economic life of the machines. The costs relate to annual expenditure resulting from each machine.

Tax to be paid is expected at 50% of the net earnings of each year, it may be assumed that all payables and receivables will be settled promptly, strictly on cash basis with no outstandings from one accounting year to another. Interest on capital has to be paid 8% per annum.

You are asked to show which machine would be the most profitable investment on the principle of 'Payback method'.

12. ABC Co., Ltd., proposes to purchase a new machine to increase its present level of production. Two alternative machines are available, Type A and Type B. The details in respect of these two alternative machines are given below:

	Type A	Type B
Initial outlay (Rs.)	80,000	90,000
Estimated life	5 years	5 years
Net cash flows after tax:	Type A	Type B
Year	Rs.	Rs.
1	22,000	16,000
2	30,000	24,000
3	40,000	36,000
4	32,000	48,000
5	16,000	30,000
	1,40,000	1,54,000

As a cost accountant you are required to ascertain the more profitable machine. Assume that the minimum rate of return laid down by management is 15% p.a.

13. Excel Ltd. is considering the purchase of a new machine which would carry out some operations at present performed by manual labour. Two models are available.

The following estimates are made by experts:

	Machine X	Machine Y
	Rs.	Rs.
Estimated working life (years)	5	6
	Rs.	Rs.
Cost of machine	1,00,000	1,50,000
Savings in scrap p.a.	5,000	6,000
Indirect material p.a.	3,000	3,500
Savings in labour p.a.	50,000	60,000
Cost of maintenance p.a.	11,000	7,5000

The tax rate may be regarded at 40% of profits. Which model can be recommended for purchase? Give reason for your answer.

14. An investment of Rs.1,38,500 yields the following profits before charging Depreciation but after payment of Tax.

Year	Cash flows	Present value factor	
	Rs.	at 9%	at 10%
1	30,000	0.9174	0.9091
2	40,000	0.8417	0.8264
3	60,000	0.7722	0.7513
4	30,000	0.7084	0.6830
5	20,000	0.6499	0.6209

Calculate the internal rate of return.

15. Calculate the NPVs and BCRs of Machine A and Machine B from the following information:

		Machine A Rs.	Machine B Rs.
Initial Investment		40,000	60,000
Expected life		5 years	5 years
Salvage value		2,000	3,000
Cash inflows: Year	1	10,000	40,000
	2	20,000	20,000
	3	5,000	6,000
	4	5,000	4,000
		60,000	80,000

The management determines 10% as the desired date of return for the proposed investment project. Discount factors at this rate are given below:

Year	1	2	3	4	5
	0.909	0.826	0.751	0.683	0.621

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UNIT – IV

COST OF CAPITAL

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INTRODUCTION

Cost of capital, as noted in capital budgeting decision, is a major standard of comparison used in modern financial decisions. Acceptance or rejection of an investment project is dependent essentially on the cost the company is required to pay for financing it. If NPV method is being used to screen investment projects, the cost of capital serves as the discount rate to ascertain whether the project yields a positive net present value. In case of the IRR approach, internal rate of return of the project is compared with the cost of capital to determine whether the project is financially viable. Computation of the cost of capital is, thus, inescapable for taking logical investment decision. The present lesson is, therefore, devoted to provide a clear understanding of the concept of cost of individual capital components and overall cost of capital.

CONCEPT OF COST OF CAPITAL

The cost of capital represents the rate of return which the company must pay to the suppliers of capital for use of their funds. This would be the minimum rate of return that a project must pay to the suppliers of

capital for use of their funds. This would be the minimum rate of return that a project must yield to keep the value of the enterprise intact. A company's cost of capital is really a rate of return that will be required from an investment in order to maintain the value of the enterprise. In operational terms, this rate of return refers to the discount rate which is used to discount the estimated future cash inflows so as to determine their present value and compare it with investment outlay.

Economists define cost of capital in two senses, viz., (i) cost of capital in terms of cost of garnering funds needed to finance the project and (ii) cost of capital in terms of the opportunity cost of the funds to the firm. Cost of capital when used in the former sense refers to the borrowing rate. In economic terms, it denotes combined cost of capital which is nothing but the average of the costs of each sources of funds employed by the company properly weighted by the proportion of each source of funds to the total amount obtained. Cost of capital used in the sense of opportunity cost refers to the rate of return which the company would have earned if the funds were invested. Cost of capital used in the sense of combined cost of capital is explicit cost which exists when funds are raised, whereas cost of capital used in the sense of opportunity cost is implicit cost which arises when funds are used. Opportunity cost exist irrespective of the source of finance.

As a matter of fact, cost of capital in both the senses, connotes rate of return prevailing in the market and any body seeking capital from the market will have to promise to pay this rate to the suppliers or any one investing funds will receive returns at the same rate.

The required rate of return is established in financial markets. It is not set by the management, nor is it set by negotiation between the management and suppliers of funds. Rather this rate is set impersonally in the markets by the collective action of investors and lenders competing with each other. The management's job is to determine what it is. One way for the management to approach the task of determining the required

rate of return is to begin with the known rate of return available on riskless investments. The required return for a risky investment then is scaled up from this basic rate. Thus, the required return ensures that the stockholders will not be worse off if the company does nothing, i.e. rejects a proposal to purchase capital assets.

In sum, the cost of capital can be defined as either the minimum rate of return an investment project must earn to keep the value of the enterprise intact or the combined cost of financing the corporate enterprise. The two definitions are identical; they approach the subject from different points of view.

It is noteworthy that the cost of capital is always expressed in terms of percentage. Appropriate allowance is made for tax factor so that cost of capital may be compared with rates of return on capital expenditures that are based on cash benefits after taxes.

In should be recognized at the outset that the cost of capital is one of the most difficult and disputed topics in the finance theory. Financial experts express conflicting opinions as to the way in which the cost of capital can be measured. It should be noted that it is a concept of vital importance in the financial decision-making. It is useful as a standard for:

* evaluating investment decisions,
* designing a firm's debt policy, and
* appraising the financial performance of top management.

Investment evaluation: The primary purpose of measuring the cost of capital is its use as a financial standard for evaluating the investment projects. In the NPV method, an investment project is accepted if it has a positive NPV. The project's NPV is calculated by discounting its cash flows by the cost of capital. In this sense, the cost of capital is the discount rate used for evaluating the desirability of the investment project. In the IRR method, the investment project is accepted if the internal rate of return on the investment project is more than the company's cost of capital.

An investment project that provides NPV when its cash flows are discounted by the cost of capital makes a net contribution to the wealth of shareholders. If the project has zero NPV, it means that its cash flows have yielded a return just equal to the cost of holders. The Cost of capital is the minimum required rate of return on the investment project that keeps the present wealth of shareholders unchanged. It may be thus noted that the cost of capital represents a financial standard for allocating the firm's funds, supplied by owners and creditors, to the various investment projects in the most efficient manner.

Designing debt policy: The debt policy of a firm is significantly influenced by the cost consideration. In designing the financing policy, that is, the proportion of debt and equity in the capital structure, the firm aims at minimising the overall cost of capital. The relationship between the cost of capital and the capital structure decision is discussed later on.

The cost of capital can also be useful in deciding about the methods of financing at a point of time. For example, cost may be compared in choosing between leasing and borrowing. Of course, equally important considerations are control and risk.

Performance appraisal: Further, the cost of capital framework can be used to evaluate the financial performance of top management.

MEASUREMENT OF COST OF CAPITAL

In order to compute the composite cost of capital the finance manager must determine the cost of each type of funds needed in the capital structure of the company. Each company has ideal capital mix of various sources of funds: external sources (debt, preferred stock and equity stock) and internal sources (reserves and surplus). Cost of capital to a company is matter of determining the alternative uses to which the capital can be put and then determining cost from the return in that use. It may also be noted that in all cases the cost determination involves relating the expected outcomes of the specific sources of capital to the market or book value of that source which comprises interest, discount on debt, dividends, price

appreciation, earnings per share or similar other variables whichever is most suitable to the particular case. In the following discussions, we shall be concerned with the cost of debt, preferred stock, equity stock and retained earnings.

COST OF SHORT-TERM CAPITAL

Short-term debt is obtained from particular banks for a few months to meet temporary working capital requirements of the business. It does not constitute a source for financing capital expenditure projects. Cost of the short term debt should, therefore, be distinguished while computing the cost of capital budgeting analysis. However, when bank loans originally taken for short period are transformed subsequently into medium-term and ultimately into long-term loans through renewal process, such loans must enter into investment decision. A part of the permanent working capital requirements of the business is generally financed by means of such loans. In view of this, cost of some type of short-term loans must be computed and included in the company's overall cost.

Cost of short-term loan may be expressed as interest rate on such loan, as stated in the loan agreement. The interest rate on short-term debt must be adjusted after tax since interest is a tax deductible expense. Thus, in the case of a bank loan the formula for estimating the cost of capital is :

$$Kd = R (1-T) \quad \ldots\ldots \quad (4.1)$$

Where

Kd = cost of debt

R = Rate of interest

T = Tax Rate

Illustration 1

A company borrows short term loan on renewal basis at 7 per cent interest rate. The company's tax rate is 50 per cent. Determine the cost of debt.

Solution:

Using the formula, 4.1

Kd = R (1–T)

= 7 (1–0.05)

Cost of debt = 3.50%

The above rule applies in the respect all types of short term loans whether given in the form of the discounting of promissory notes or whether clean loan has been obtained from bank and is repaid in instalments or in one lump sum at the end of the payment period.

Illustration II

Sudarshan Plywood Company desires to borrow Rs. 1,000 from its banker. The banker has agreed to lend Rs. 940 against a promissory note of Rs.1,000 charging 6 per cent discount rate. Determine the cost of debt. Tax rate is 50 per cent.

Solution:

$$Kd = \frac{R}{SP} (1–T) \ldots\ldots \quad (4.2)$$

Where R = Annual interest payment

SP = Sale price of promissory note

Substituting the formula with figures given in the above illustration,

$$\frac{60}{940} (1–0.50)$$

Cost of debt = 3.2%

COST OF LONG-TERM DEBT

Cost of long-term debt may be defined as the minimum rate of return that must be earned on debt financed investment if the company's total wealth is to remain intact. This rate will be contractual rate of interest on debentures because if the company borrows funds and invests them elsewhere to earn a before tax return just equal to the interest rate, the earnings available to the residual stockholders and so also their wealth in the company remain unchanged.

Computation of cost of long-term debt is relatively easier because interest rate at which funds have been borrowed is fixed by agreement between the firm and its creditors and is known. The actual method of calculation of cost of long-term debt will depend upon the type and nature of debt. The debt can be perpetual and irredeemable or redeemable. Perpetual bond provides permanent capital to the firm because the capital remains in the business during its life time. In contrast, redeemable debt provides long-term funds and the company is under legal obligation to refund the money to its holders either at certain agreed intervals during the duration of loan or at the time of maturity of the loan in lumpsum. Further, the debentures may be sold at their par value. But very often bonds are sold at a premium or discount and this factor must be reckoned with while computing the cost of capital. We shall now discuss techniques of computation of each of these kinds of debentures. In all three techniques two-step process is involved, viz., calculation of the effective cost and conversion of the effective cost to an after tax basis.

Cost of Irredeemable Debt

When a company floats irredeemable debentures, it is not under legal obligation to refund the money borrowed through such securities during its life. There is no time limit within which the company must pay back the money. Sometimes the company follows the policy of maintaining certain proportion of debt in total capitalisation. In such company if the old debentures mature it is replaced by the new debt. Thus, there is a perpetual debt in the company.

Cost of the perpetual or irredeemable debt is the rate of return expected by the lenders on the funds supplied to the company. The interest rate or the market yield of debentures represents the cost of perpetual debt. Contractual annual interest or the cost of perpetual debt related to actual proceeds realised from the sale of debentures is the actual cost of the debt. When this cost of debt is adjusted after tax, we get effective cost of debt. The following formula can be used to determine the effective cost of perpetual debt:

$$Kd = \frac{R}{SP} \quad (1-T) \ldots\ldots \qquad (4.3)$$

Illustration III

Oriental Engineering Company Ltd decides to float a 12 per cent irredeemable debentures of Rs. 10,00,000. The tax rate is 50 per cent. Determine the cost of the debt.

Solution:

Using the formula 4.3

$$\frac{1,20,000}{10,000,000} \times (1 - 0.05)$$

$$= 6\%$$

Cost of Redeemable Debt

Redeemable debt has definite date of maturity and the company is under legal obligation to pay back the money when due. This repayment can be made in one lump sum at the time of maturity or in a number of instalments at regular time intervals.

The effective cost of redeemable debt payable in one lump sum can be computed with the help of the following formula:

$$Kd = \frac{R + (RV - SP)/Nm}{Rv + SP/2} \quad (1-T) \ldots \qquad (4.4)$$

Where R = Annual interest payment

RV = Redeemable value

SP = Sale proceeds from the issue of debt

Nm = Term of debt.

Illustration V

Rooplekha Steel Company is planning to float 12 per cent debentures worth Rs.1,50,000. The flotation cost is 0.5 per cent. The company will repay the debt in five equal instalments commencing at the end of the year 1. The company's tax rate is 50 per cent. Determine the cost of debt.

Solution:

Net proceeds received from issue of debentures is Rs. 1,42,500.

The amount of principal repayment per instalment would of Rs. 3,00,000.

The annual interest payment in the first year would be Rs. 18,000.

The annual interest payments in the second year would be Rs. 14,400 because outstanding amount of debt next year will be Rs. 1,20,000. The annual interest payment in the third year would be Rs. 10,800 because outstanding payment of debt next year will be Rs. 90,000.

The annual interest payment on the fourth and fifth year would be Rs. 7,200 and Rs. 3,600 respectively.

Using the formula 4.5 we can determine the cost of debt as follows.

$$\text{Rs. } 1,42,000 = \frac{\text{Rs. } 48,000}{(1+K)^1} + \frac{\text{Rs. } 44,000}{(1+K)^2} + \frac{\text{Rs. } 40,800}{(1+K)^3} + \frac{\text{Rs. } 37,200}{(1+K)^4} + \frac{\text{Rs. } 33,600}{(1+K)^5}$$

In order to determine value of K, we have to refer present value table and through trial and error method choose discount rate that will equate the present value of future cash payments with amounts of cash inflow received today. Let us try two rates and see if any of these rates could serve the purpose.

The discount rate of 14 per cent equates the present value of future cash outflows which is the amount of cash inflow received today. Therefore, 14 per cent is the cost of debt. The effective cost of debt will be

TABLE I

Present value at 14 and 15 per cent rates of discount

Cash Flow	Pv factor at		Total Pv at	
	14%	15%	14%	15%
Rs.			Rs.	Rs.
48,000	0.877	0.870	42,096	41,760
44,400	0.769	0.756	34,144	33,566
40,800	0.675	0.658	27,540	26,846
37,200	0.592	0.572	22,022	21,278
33,600	0.519	0.497	16,699	16,699
			1,42,501	1,40,149

$$Kd = R (1-T)$$
$$= 14\% (1-0.50)$$
$$= 7 \text{ per cent}$$

Cost of Preferred Stock

The definition of cost of preferred stock is analogous to the definition of debt. Thus, it represents the rate of return that must be earned on the preference stock financed investments to keep the earnings available to the residual stockholders unchanged. This rate of return is obtained by dividing the dividend stipulated per share by the current market price of the share. Actual method of calculation depends upon the type of preferred issue. Thus, preferred stock may be redeemable or irreedeemable. Redeemable preferred stocks mature at stipulated time and the company must pay back the money to its holders. In contrast, irreedeemable preferred stocks never mature. It is a perpetual security which provides permanent capital to the company.

Cost of Irredeemable Preferred Stock

The following formula can be used to determine the cost of the irredeemable stock:

$$KP = \frac{DP}{MP} \quad \ldots\ldots\ldots$$

Where KP = Cost of preferred stock

DP = Dividend per share

MP = Market price per share

Illustration VI

Hero fibres Ltd issues 15 per cent irredeemable preference shares of the face value of Rs.100 each. Compute the cost of preferred stock. What will be the cost of preferred stock if it is issued at 5 per cent premium and 10 per cent discount?

Solution:

(i) issued at par

$$KP = \frac{15}{100}$$

= 15 per cent approximately.

(ii) Issued at Premium

$$KP = \frac{15}{105}$$

= 14.29 per cent approximately.

(iii) Issued at Discount

$$KP = \frac{15}{90}$$

= 16.67 per cent approximately.

Cost of Redeemable Preferred Stock

The explicit cost of redeemable preferred stock is the discount rate that equates the net proceeds from the sales of preference with the present value of the future dividends and principal repayments. The formula to determine the cost of redeemable preferred stock is same as used to calculate cost of redeemable debentures with a slight modification as set out below

$$SP = \frac{dp1}{(1+Kp)^1} + \frac{dp2}{(1+Kp)^2} + \frac{dpn}{(1+Kp)^n} + \frac{Pn}{(1+Kp)^n}$$

$$= \frac{dpt}{(1+Kp)^t} + \frac{Pn}{(1+Kp)^n} \quad \ldots\ldots\ldots\ldots$$

Where

SP = Expected sale proceeds received per share from the issue of preferred stock

dp = Dividend payment per share

Pn = Repayment of preference share capital amount

It should be noted that the case of preferred stock is always after taxes. Since dividend on preferred stock is not a tax deductible expense, no tax adjustment is called for in this case. Because dividend on preferred stock is usually fixed by the contract, there is no problem to obtain the dividend figure, market price for preferred stock is also easily available.

Cost of Equity Stock

The cost of equity share capital is by far the most difficult to compute. It is also inexact since it is based on forecast which hardly turns out to be true. Unlike the preferred stock, dividend rate in case of equity stock is not stipulated. The agreement with the equity stockholders provides that in return for a fixed capital contribution the investors would participate prorata according to their investment in the future fortunes of the company.

The cost of the equity stock capital may be expressed as the minimum rate of return that must be earned on new equity stock financed investment in order to keep the earnings available to the existing residual owners of the company unchanged.

There are two approaches that can be employed to calculate the cost of equity capital:

(1) dividend approach and (2) earning approach.

Dividend Price Approach

Because dividends are all that the stockholders as a whole receive from their investment the cost of new equity stock would seem to be equal

to current dividends per share compared to current market rate per share. Thus, the formula used to determine the cost of equity capital is

$$Kd = \frac{Dp}{Mp} \quad \ldots\ldots$$

Where Kd = cost of new equity stock

Dp = dividend per share

Mp = Market price per share

Earning Price Approach

Earning-price is another measure of computing the cost of equity stock capital. In this approach earnings and not the dividends, per share are compared to the current price per share to find the cost of equity share capital. Advocates of this approach contend that earnings price approach is more useful than the dividend-price approach as it takes cognizance of a very vital fact that all the earnings of the company after payments of fixed shares legally belong to the common shareholders whether they are distributed or retained. Secondly and more importantly, it is earnings and not dividend that are more relevant in determining market price of common share.

Solution:

The problem in this instance is what rate of return must be earned internally to provide the shareholders with incremental earnings equal to what they would receive externally. We can resolve this problem by translating the above formula in figures in the illustration. Thus:

$$R = 0.10\ (0.6)\ (0.97) = 5.8 \text{ per cent}$$

The stockholders will not mind the company retaining earnings if the management promises a return of at least 5.8 per cent. If the management feels that the corporation will not be able to earn this rate of return, the earning should be distributed to the stockholders.

The foregoing approach presents formidable problems in respect of determination of the marginal tax rate for all the stockholders. Experience

tells us that the stockholders do not have uniform marginal tax rates. These rates normally range from very low rates to very high rates and assumption to the contrary is mirage. Only few companies particularly closely held companies may have stockholders who are all uniformly wealthy and are in the same tax bracket. It is therefore, a possible solution to this problem could be to poll the stockholders of the firm and estimate the average marginal tax rate and use this figure in determining the cost of retained earnings. Another solution may be to take the rate of all the stockholders. In all these we can only make a great estimate of the marginal tax rate.

To get over this problem, Prof. Ezra Solomon suggested external yield approach to measure cost of retained earnings. Thus, to measure cost of retained earnings would be equal to rate of return on the direct investment of funds by the company. It should be remembered that the external yield criterion is not affected by the personal income taxes. It represents simply an economically justifiable opportunity cost that can be applied consistently. The question of determination of the marginal tax rate of the stock holders does not arise in this approach. This approach is, therefore useful for a large company whose ownership is widely held. Many financial managers make downward adjustment of the external rate of return for a tax effect.

In actual practice, common stock and retained earnings are combined and their cost of capital is determined by price earning approach.

COMPOSITE COST OF CAPITAL

Once the cost of individual capital components has been determined, they are combined to determine average or composite cost of capital so that the same may be compared with the discounted rate of return of the projects. Such a cost of capital is termed as composite or weighted cost of capital. The composite cost of capital can, therefore, be defined as the average of the costs of each source of funds employed by the company, properly weighted by the proportion they hold in the capital structure of

the firm. Thus, to compute the composite cost of capital, the financial manager must know the relative proportion of each source of funds to the total amount obtained. The cost of each component of the proposed capital is then weighted by the relative proportion of that type of funds in the capital structure.

The sum of the multiplied figures of the different components of the capital structure is divided by the total number of weights. The resulting figure would be the weighted cost of capital. The problem of determination of the weighted cost of capital can be illustrated with the help of the following example:

Illustration

On January, 1, 1995, the total assets of Flex Company were Rs.100 crores. By the end of the year total assets of the company are expected to be Rs.150 crores. The company's capital structure, shown below, is considered to be optimal.

Debt (6 per cent bonds) Rs. 40 crores

Preferred stock (7 per cent) Rs. 10 crores

Net worth Rs. 50 Crores.

New bonds will have an 8 per cent interest rate and will be sold at par. Preferred stock will have a 9 per cent rate and will be sold at 5 per cent. Common stock currently selling at Rs. 50 a share can be sold to net the company Rs. 45 a share. Stockholders' required rate of return is estimated to be 12 per cent. Retained earnings are estimated to be Rs. 5 crores. The marginal corporation tax rate is 50 per cent. The stock holders have the average marginal tax rate of 25 per cent. Calculate the weighted cost of capital.

Solution:

In this problem the overall cost of new capital of Rs.50 crores has to be computed. The company's existing capital structure is considered optimal and hence weight to cost of each component of capital can be

assigned in terms of their proportion to the total capitalisation. The composite cost of capital of the company is computed below :

Computation of Composite cost of Capital

Structure of Funds	Proportion Total	After tax Cost	Weighted Cost 2 × 3/100
	%	%	%
Debt	40	4.00	1.60
Preferred Stock	10	9.47	0.95
Common Stock	40	26.67	10.67
Retained Earnings	10	20.00	2.00
	100		15.72
		Weighted average cost of capital:	8.87%

In the absence of break-up of net worth in the existing capital structure of the company, the relative proportion of common stock and retained earnings have been worked out in the following manner.

Since net worth represents 50 per cent of the proposed company's capitalisation it will amount to Rs. 25 crores in the proposed expansion of funds. Out of this, retained earnings are expected to be Rs. 5 crores which means equity stock capital will be Rs. 20 crores. Relative proportion of common stock capital and retained earnings in the capitalisation will then come to 40 per cent and 10 per cent, respectively.

Thus, the weighted average cost of capital of Flex Company will be 8.87 per cent. This figure may now be used to compare with internal rate of return of the project, and accept or reject the project on that basis. If the present value approach were used discount rate of 8.87 per cent might be adopted to compute present value of streams of cash earnings.

In view of the several estimates and assumptions underlying the determination of the cost of capital, many financial managers set the cut off-rate in terms of the range say 10-15 per cent.

Illustrative Problems

(1) Bright India Ltd is planning to issue equity shares of Rs 1,00,000. The company's shares are currently selling at Rs. 25 per share in the market. The company paid dividend of Rs. 5 per share last. The management expects that dividends are likely to grow at 6 per cent in the years to come. What would be the cost of equity capital?

Solution:

Using the following Equation we can determine the cost of equity capital:

$$Ke = \frac{DP}{MP} + g$$

$$= \frac{Rs.\ 5}{Rs.\ 25} = + 0.06$$

$$= 26\%$$

(2) Tata Engineering Company is planning to float equity shares worth Rs 5,00,000. The Company's equity shares are presently selling at Rs. 40 a share. The company has been paying dividends during the last five years at the following rates:

Year	Dividend Rs.
1977	5.50
1978	5.90
1979	6.20
1980	6.50
1981	7.00

Determine the growth rate in dividends and calculate the cost of equity capital.

Solution:

(i) Growth rate in dividends:

This rate can be calculated with the help of the compound interest formula:

$$DO\ (1+r)^n = Dn$$

$$Rs.\ 5.50\ (1+r)^4 = Rs\ 7.00$$

$$(1+r)^4 = \frac{Rs.\ 7.00}{Rs.\ 5.50}$$

$$(1+r)^4 = 1.2727$$

Appendix I (Compound value table) suggests that Rs. 1 compounds to Rs. 1.2727 in 4 years at the compound rate of 6 per cent. Therefore, growth rate in dividends is 6 per cent.

(ii) Cost of equity share capital:

$$Ke = \frac{DP}{MP} + 6\%$$

DP for 1982 would be equal to dividend paid in 1981 and then multiplied by growth factor 1.06. Thus, DP for 1982 would be Rs. 7.00 (1.06) = Rs. 7.42

$$Ke = \frac{Rs.\ 7.42}{Rs.\ 40} + 6\% \qquad = 24.5\%$$

The cost of equity capital is 24.5 per cent.

(3) The Surya Paper Mills Ltd is contemplating to expand its business and accordingly it desires to increase assets by 50 per cent by the end of the year 1982. The existing capital structure of the company which represents the optimal capital structure of the company is given as under:

	Rs.
8% Debentures (Par value Rs. 1000 per debenture)	8,00,000
9% Preference shares (Par value Rs. 100 per share)	2,00,000

Equity shares	
(Par value Rs. 100 per share)	10,00,000
	20,00,000

New debentures can be sold at par at 10 per cent interest rate. Preference shares will have a 12 per cent dividend rate and can be sold at par. Equity shares can be sold to net Rs. 90 per share. The shareholders' required rate of return is 8 per cent which is expected to grow at the rate of 4 per cent. Retained earnings for the year are estimated to be Rs. 100,000. You are required to determine the following:

(1) What is the required amount of new capital expenditure?

(2) What would be the optimal capital structure of new financing?

(3) Calculate the cost of individual capital components. Assume that the average shareholder's marginal tax rate is 30 per cent and corporate tax rate is 50 per cent.

(4) Calculate the weighted average cost of capital of the compan

Solution:

(1) Required amount of new capital expenditure: The company desires to expand its assets by 50 per cent. The present level of assets is Rs. 20,00,000 which will increase to Rs. 30,00,000. Hence, the required amount of new capital expenditures will be Rs. 10,00,000.

(2) Optimal Capital Structure of new financing: The existing pattern of capital structure is – Debts 40 per cent, preference shares 10 per cent and equity shares 50 per cent. The proposed capital expenditures are expected to be financed with external as well as internal sources. Since retained earnings available for the expansion purpose are expected to be Rs.1,00,000, the rest of Rs. 9,00,000 will have to be raised by external sources in the above proportion. Thus, the optimal capital of new financing will be as under:

	Rs	Percentage
Debentures	3,60,000	9.0

Preference share	90,000	36.0
Equity shares	4,50,000	45.0
Retained earnings	10,00,000	100.0

(3) *Cost of individual Capital Components*

1. Cost of Debentures = R(1–T)

$= 10(1–0.50)$

$= 5\%$

2. Cost of Preference shares:

$$= \frac{DP}{MP}$$

$$= \frac{12}{100}$$

$= 12\%$

3. Cost of equity shares $= \frac{DP}{MP} + g$

$$= \frac{8}{90} + 0.04$$

$= 12.9\%$ (approximately)

4. Weighted Average Cost of Capital (ko):

Source of capital	Percentage share	Specific cost	Total cost
Debt	36.0	5%	180.00
Preference shares	9.0	12%	108.00
Equity shares	45.0	12.9%	580.50
Retained earnings	10.0	12.9%	129.00
Total	100.00		997.50

$$Ko = \frac{997.50}{100}$$

$= 9.98\%$

The weighted average cost of capital is 9.98 per cent.

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(4) The Prasenna Textile Mills Ltd has the following capital structure which it considers as the optimal:

9% Debentures	Rs. 1,50,000
10% Preference shares (500 shares)	Rs. 50,000
Common equity shares (8,000 shares)	Rs. 8,00,000

The company's shares are selling at a current market of Rs. 125 per share. The expected dividend per share is 50 per cent of the 1981 EPS. Historical records of earnings per share of the company for the last 10 years are set out below. The past trends are very likely to follow in future.

Year	EPS	Year	EPS
	Rs.		Rs.
1982	2.00	1987	3.20
1983	2.20	1988	3.45
1984	2.40	1989	3.80
1985	2.60	1990	4.30
1986	2.80	1991	4.70

The company is contemplating to expand the business and for that matter it wants to raise funds of Rs. 10,00,000 by issue of equity shares, preference shares and debentures. The new debentures to be issued is expected to net Rs. 95. The new preference shares carrying Rs. 5 dividend per share are expected to fetch Rs. 90. The company's tax rate is 50 per cent. Determine the cost of debenture, preference shares and equity shares and also overall cost of capital.

Solution:

$$\text{Cost of debt} = \frac{\text{Rs. } 10}{\text{Rs. } 95} (1-0.5)$$

$$\text{Cost of preference shares} = \frac{\text{Rs. } 5}{\text{Rs. } 90} = 5.56\%$$

Cost of Equity Shares

In order to calculate cost of equity shares growth rate in dividend should be calculated. Using the following compound interest formula we can find out the growth rate:

$$Do\ (1+r)^n = Dn$$

$$Rs.\ 2.00\ (1+r)^9 = Rs.\ 4.70$$

$$(1 + r)^9 = \frac{Rs.\ 4.70}{Rs.\ 2.00}$$

$$(1+r)^9 = 2.35$$

Appendix 1 (Compound Value Table) suggests that Re. 1 compounds to Rs. 2.35 in 9 years at the compound rate of 10 per cent. Therefore, growth rate in dividends is 10 per

$$Ke = \frac{DP}{MP} + g$$

DP in 1982 is expected to be Rs. [illegible] (50 per cent of 1981 EPS) and then multiply it by growth factor of 1.. [illegible]us, DP in 1982 would be Rs. 2.59 approximately.

$$= \frac{Rs.\ 2.59}{Rs.\ 123} + 10\%$$

DP in 1982 is expected to be Rs. 2.35 (50 per cent of 1981 EPS) and then multiply it by growth factor of 1.10. Thus, DP in 1982 would be Rs. 2.59 approximately.

$$= \frac{Rs\ 2.59}{Rs\ 125} + 10\%$$

Calculation of Overall Cost of Capital

Since the existing pattern of capital structure is optimal, required amount of funds will be raised by different sources in the following proportions which will form weights for respective source of funds:

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	Amount	Percentage
Equity shares	8,00,000	80
Preference shares	50,000	5
Debt	1,50,000	15
	10,00,000	100

Source of capital	Percentage	Specific Cost	Total Cost
Equity Shares	80	12.07	965.60
Preference shares	5	5.56	27.80
Debt	15	5.25	78.75
Total	100		1072.15

$$Ko = \frac{1072.15}{100}$$

$$= 10.72$$

Thus, overall cost of capital would be 10.72.

QUESTIONS

1. What do you understand by cost of capital? Discuss its significance in capital budgeting decision.
2. What are the functions of the cost of capital in the capital budgeting process?
3. Explain how the cost of capital serves as a screening tool, when dealing with (a) the net present value method, and (b) the time adjusted rate of return method.
4. Describe briefly how you would compute a firm's weighted average cost of capital.
5. Explain the various approaches for computing the cost of equity capital. Discuss the merits of each.
6. Distinguish between the weighted average cost of capital and the marginal cost of capital. Which one should be used in capital budgeting decision?

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7. What is the weighted average cost of capital? Examine the rationale behind the use of weighted average cost of capital.

ROBLEMS

1. Modern Products has one series of bonds outstanding which is currently yielding 8 per cent to bondholders. The company is in the 50 per cent tax bracket. Compute the after tax cost of debt for Modern Products.
2. Bharat Products Company has one issue of preferred stock outstanding which pays a Rs. 10 dividend and sells for Rs. 50 per share. The company estimates that floatation costs will be approximately Rs. 2 per share. Compute the effective cost of preferred stock for Bharat Products Company.
3. Vijay Manufacturing Company wishes to determine its cost of capital. The company pays a Rs. 2.40 dividend on common stock with a price of Rs. 100 per share. Bigston anticipates a growth rate of 8.5 per cent for earnings and dividends. It is estimated that flotation costs for a new issues would be Rs. 2 per share.

   (a) Compute the cost of common stock and cost of new common stock for Vijay.

   (b) Assuming that the marginal tax rate of Vijay company is 50 per cent, what is the cost of retained earnings for the company?
4. Spic Fertilizer Company's dividends per share have historically grown at 5 per cent each year. The earnings per share is Rs. 8 and the pay-out ratio is 25 per cent. The company's common stock price is currently Rs. 40 per share.

   (a) What is the cost of common stock?

   (b) What is the cost of new common stock?

   (c) Assume that the Spic Fertilizer Company increases its pay out ratio to 50 per cent, what adjustment to the cost of common stock would occur if the price did not change? Do you think there will be an adjustment in the stock price? Why?

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5. National Drug Company has determined that its optimum capital structure is as follows:

New common stock 30 per cent

Long-term debt 20 per cent

Preferred stock 15 per cent

Retained earnings 35 per cent

The company has determined that the effective cost debt is 4.0 per cent, cost of new common stock 12 per cent, the cost of preferred stock 7 per cent, and the cost of retained earnings 8.5 per cent.

Compute the weighted cost of capital for the company.

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UNIT - V

CAPITAL STRUCTURE AND LEVERAGE

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INTRODUCTION

Having estimated the total funds requirements of the enterprise and examined the potentiality of different sources of financing and their utility to a company, the financial manager has to decide about the forms of financing their requirements and their relative proportion in total capitalisation so as to maximize the value of the company. Such type of decisions are collectively designated as capital structure decisions. In accomplishing this single overall goal, the finance manager must aim at taking advantage of favourable financial leverage without incorporating excessive amount of financial risk in the company. Thus, the finance manager must take extreme care and exercise considerable prudence bearing in mind the cardinal principles of financing environmental factors within which the company has to operate and the specific conditions of the company. Any negligence in this respect may prove costly to the company affecting adversely its value in the long run.

CAPITAL STRUCTURE PLANNING

The term 'Capital Structure' should not be confused with 'Financial Structure' and 'Assets Structure'. Whereas 'Financial Structure' refers to total liabilities while 'Assets Structure' refers to total assets. 'Capital Structure' refers to total assets less current liabilities. Having determined the finance required for a project to be undertaken, the question arises what shall be the sources of i.e., what are the securities to be issued, and what shall be the proportion of various securities. Deciding the proportion of securities is deciding capital structure. Thus, the capital structure refers to the proportion of Equity capital, Preference capital, Reserves, Debentures, and other long term debts to the total capitalisation.

Capital structure decision is not taken only when starting an enterprise. In the beginning the entrepreneur may decide a 'target capital structure'. But the capital structure decisions are made whenever additional finances are to be raised. Capital Structure planning is a very important part of the financial planning, as it plays an important role in minimising the cost of funds.

According to Grestenberg, "Capital structure of a company refers to the make-up of its capitalisation and it includes all long-term capital resources viz. loans, reserves, shares and bonds. While drafting a capital structure, care must be taken to see that it is flexible i.e., it should be able to incorporate any future changes, if necessary. It is often suggested that a capital structure should be such which can maximise the long run value per ordinary share in the market. For an individual company, there is necessity for attaining a proper balance among debt and equity sources in its capital structure.

FORMS OF CAPITAL STRUCTURE

(1) Equities only

Under this form, the entire capital is raised from shareholders and there is only one class of shares known as Equities.

Advantages:

(a) There are no fixed charges, dividends, etc. on the borrowings.

(b) The management can deal with the earnings as per their wish.

(c) No compulsion for directors to return the equity capital.

(d) Better public response as equity shares are cheap.

(e) If additional capital is needed, it can be readily arranged for by issuing some more shares.

Disadvantages:

(a) Over-subscription and over-capitalisation may take place if only equity shares are issued.

(b) Too much increase in the value of shares may lead to speculation.

(2) Equities and Preference Shares

Under this form, the capital structure of a company consists of a mixture of equity and preference shares.

Advantages:

(a) The market for the company's securities is widened.

(b) The capital structure no longer remains rigid, but instead it becomes elastic.

(c) Use of preference shares enables the company to arrange for additional funds more easily.

Disadvantages:

(a) The company's liability is increased since a fixed rate of preference dividend has to paid regularly to preference shareholders.

(b) It usually costs more to finance with preference shares than with debentures.

(3) Equities, Preference Shares and Debentures

In this form, the capital structure of a company is made up of equity shares, preferences shares and debentures.

Advantages:

(a) Financing with debentures is usually cheaper than financing with shares.

(b) It is advantageous for tax purposes because interest on capital is treated as an expenditures unlike payment of dividend.

(c) The company gains by trading on equity.

Disadvantages:

(a) Payment of interest on debentures during depression may prove difficult for the company.

(b) Trading on equity may give rise to more losses.

Every financial manager aims at developing a sound and most appropriate capital structure for the company. But can there be an optimum capital structure? There is diversity of opinion on this point.

Generally speaking, a sound optimum capital structure is one, which

(i) maximises the worth or value of the concern;

(ii) minimises the cost of funds;

(iii) maximises the benefit to the shareholders, by giving best earnings per share and maximum market price of the shares in the long run; and

(iv) is fair to employees, creditors and others.

There is no hypothesis which can determine the precise optimum capital structure. In practice, an optimum capital structure can be determined only empirically. It is better to determine a range of proportion of debt and equity, which could be termed as an appropriate capital structure rather than a precise ratio.

PRINCIPLES OF CAPITAL STRUCTURE DECISIONS

Having estimated the total funds requirements of the enterprise and examined the potentiality of different sources of financing and their utility to a company, it is necessary to decide about the forms of financing their requirements and their relative proportion in total capitalisation so as to

maximize the value of the company. Such types of decisions are collectively designated as capital structure decisions. In accomplishing this single overall goal the finance manager must aim at taking advantage of favourable financial leverage without incorporating excessive amount of finance risk in the company. Thus, the finance manager must take extreme care and exercise considerable prudence bearing in mind the cardinal principles of financing environmental factors within which the company has to operate and the specific conditions of the company. And negligence in this respect may prove costly to the company affecting adversely its value in the long run.

GUIDING PRINCIPLES OF CAPITAL STRUCTURE DECISIONS

While choosing a suitable pattern of capital structure for the company the finance manager should keep into consideration some fundamental principles. These principles are militant to each other. A prudent finance manager strikes a golden mean among them by giving weightage to them. Weights are assigned in the light of general state of the company, specific conditions obtaining in the industry and the circumstances within which the company is operating. Management's freedom to adjust debt-equity mix is primarily conditioned by availability of the various types of funds in the desired quantity. Supposing, the management decides to raise debenture loan to meet additional capital requirements of the company but owing to increased risk in the company, lenders may be reluctant to lend. Under such a condition the management finds it difficult to strike a desired adjustment in capital structure. In view of this, prudence of finance management lies in satisfactory compromise between management's desire for funds and constraints in supply of funds.

Cost Principle

According to this principle, ideal pattern of capital structure is one that tends to minimise cost of financing and maximise earnings per share. Cost of capital is subject to interest rate at which payments have to be made to suppliers of funds and tax status of such payments. Debt capital is cheaper than equity capital from both the points of view. In the first

instance, cost of debt is limited. Bondholders do not participate in higher profits if earned, rate of interest on bonds is usually much less than the dividend rate. Secondly, interest on debt is deductible for income tax purpose whereas no deduction is allowed for dividends payable on stock. Consequently effective rate of interest which the company has ultimately to bear would be less than the rate of interest at which bonds are issued.

Risk Principle

The principle suggests that such a pattern of capital structure should be devised so that the company does not run the risk of bringing on a receivership with all its difficulties and losses. Since bond is a commitment for a long period, it involves risk. If the expectations and plans on which the debt was issued change, debt may prove fatal to the company. If, for example, income of the company declines to such low levels that debt service which is a contractual obligation cannot be met out of current income, the debt may be highly risky for the company because the bondholders in that case may foreclose and consequently equity stockholders may lose part or all of their assets. Similarly, if the company issues large amount of preferred stock, residual owners may be left with no or little income after satisfying fixed dividend obligations in the year of low earnings. Assumption of large risk by the use of more and more debt and preferred stock affects the share values and share prices may consequently tend to nose-dive. This would result in capital loss to the common stockholders.

As against this, since common stock does not entail fixed charges nor the issuer is under legal obligation to declare dividends, the company does not incur risk of insolvency though of course issue of additional common stock may result in decline in earnings per share of the old common stock-holders owing to dilution of earnings.

In sum, risk principle places relatively greater reliance on common stock for financing capital requirements of the corporation and forbids as far as possible the use of fixed income-bearing securities.

Control Principle

While designing appropriate capital structure for the company and for that matter, choosing different types of securities the financial manager should also keep in mind that controlling position of residual owners remains undisturbed. The use of preferred stock and also bonds offers a means of raising capital without jeopardising control. The management desiring to retain control must raise funds through bonds.

Since common stock carries voting rights, issue of new common stock will dilute the control of existing shareholders. For example, a company is capitalised exclusively with equity share capital of Rs.100,000 divided in 10,000 shares of Rs.10 each. If the management contemplates to issue, 5,000 new shares, the existing voting rights will be reduced to 67 per cent (10,000/15,000). Now if one shareholder holds 60 percent of the old shares his holding would decline to 40 per cent of the total stock after floatation of new stock. Thus, a shareholder, who had predominant control over the affairs of the company, would lose this position because new stockholders would share control with him.

Flexibility Principle

According to flexibility principle, the management should strive toward achieving such combinations of securities that the management finds it easier to man every sources of funds in response to major changes in needs for funds. Not only several alternatives are open for assembling required funds but also bargaining position of the corporation is strengthened while dealing with the suppliers of funds. For example, if a company is top heavy with debt and has mortgaged all its fixed assets, to secure presently outstanding debt it may find it difficult to obtain loan further, even though market condition in respect of availability of debt is favourable because lenders feel shy of lending money to such highly risky concern. Accordingly, the company might be compelled to raise equity share capital at a time when there is scarcity of such capital in the market. Thus, for sake of manoeuvreability the company should not assume more debt. Further, the management should, as far as possible, avoid getting

cheaper loans on terms and conditions that limit the company's ability to procure additional resources. For example, if the company borrowed money in the past on the condition that no further borrowing would be made in future or dividend payments beyond certain limit would not be made to equity stockholders, it restricts its manoeuvreability in the capital funds.

Timing Principle

Timing is always important in financing and more particularly in a growing concern. Manoeuvreability principle is sought to be adhered to in choosing the types of funds so as to enable the company to seize market opportunities and minimise cost of raising capital and obtain substantial savings. Depending on business cycles, demand of different types of securities oscillates. In times of boom when there is all-round business expansion and economic prosperity and investors have strong desire to invest, it is easier to issue equity shares and raise ample resources. But in periods of depression bonds should be issued to attract money because investors are afraid to risk their money in stocks which are more or less speculative. Thus, timing may favour debt at one time and common stock or preferred stock at other times.

FACTORS INFLUENCING THE PATTERN OF CAPITAL STRUCTURE

It emanates from the above discussion that the principles determining the choice of different sources of capital funds are antagonistic to each other. For example, cost principle supports induction of additional doses of debt in the business which may not be favoured from risk point of view because with additional debt the company may run the risk of bankruptcy. Similarly, control factors supports strongly for issue of bonds but manoeuvreability factor discounts this step and favours the issue of common stock. Thus, to design a suitable capital structure finance manager must bring about a satisfactory compromise among these conflicting factors of cost, risk, control and timing. This compromise is to be reached by assigning weights to these factors in terms of economic and industrial characteristics and also in terms of specific characteristics of the company.

We shall now discuss as to how the significance of these principles are influenced by different factors.

Characteristics of the Economy

Any decision relating to the pattern of capital structure must be made in the light of future developments which are likely to take place in the economy because the management has little control over the economic environment. The financial manager should, therefore, make predictions of the economic outlooks and adjust the financial plan, accordingly. The following are some of the vital aspects of the economy which have strong bearing on the capital structure decision.

(a) Tempo of business activity: If the economy is to recover from current depression and the level of business activity is expected to expand, the management should assign greater weightage to manoeuvreability so that the company may have several alternative sources available to procure additional funds to meet its growth needs and accordingly, equity stock should be given more emphasis in financing programmes and avoid issuing bonds with restrictive covenants.

(b) State of capital market: Study of trends of capital market should be undertaken in depth since cost and availability of different types of funds is essentially governed by them. If stock market is going to be plunged in bearish state and interest rates are expected to decline, the management may provide greater weightage to manoeuvreability factor in order to take advantage of cheaper debt later on and postpone debt for the present. However, if debt will become costlier and will be scarce in its availability owing to bullish trend of the market, income factor may receive higher weightage and accordingly, the management may wish to introduce additional doses of debt.

(c) Taxation: The existing taxation provision makes debt more advantageous in relation to stock capital in as much as interest on bonds is a tax deductible expense whereas dividend is subject to tax. Although it is too difficult to forecast future changes in tax rates, there is no doubt

that the tax ranges will not be adjusted downwards. In view of prevailing high corporate tax rate in India the management would wish to raise degree of financial leverage by placing greater reliance on borrowing.

(d) State regulation: Decision as to the make-up of captialisation is subject to state control. Within the overall framework of government regulation the management should strive towards attaining appropriate capital structure.

(c) Policy of term-financing institutions: If financial institutions adopt harsh policy of lending and prescribe highly restrictive terms, the management must give more significance to manoeuvreability principle and abstain from borrowing from those institutions so as to preserve the company's manoeuvreability in capital funds. However, if funds can be obtained in desired quantity and on easy terms from the financial institutions it would be in fitness of things to assign more weight to cost principle and obtain funds from the institution that supplies cheaper funds.

Characteristics of the Industry

(a) Cyclical variations: There are industries whose products are subject to wider variation in sales in response to national income. For example, sales of refrigerators, machine tools and most capital equipments fluctuate more violently than the income. As against this, some products have a low income elasticity and their sales do not change in proportion to variation in national income. Non-durable consumer goods, inexpensive items like paper clips or items of habitual use are examples of such products which are fairly immune to changes in level of income.

The management should attach more significance to manoeuvreability and risk principles in choosing suitable sources of funds in an industry dealing in products whose sales fluctuate very markedly over a business cycle so that the company may have freedom to expand or contract the resources used in accordance with business requirements.

(b) Degree of competition: Public utility concerns are generally free from intra-industry competition. Accordingly, profits of these concerns in the absence of inroads of competitors are likely to be relatively more stable and predictable. In such concerns the management may wish to provide greater weightage to cost principle to take advantage of financial leverage. But where nature of industry is such that there is neck to neck competition among concerns and profits of the business are, therefore, not easy to predict, risk principle should be given more consideration. Accordingly, the company should insist on equity stock financing because it would incur the risk of not being able to meet payments on borrowed funds in case bonds are issued.

(c) Stage in life cycle: Factors influencing the pattern of capital structure are also influenced by stage of the life cycle of industry to which the company belongs. In an infant industry rate of failure is very high. The main source of funds to such industry is equity capital obtained through underwriters. Debt should be avoided by the infant industry because great risk is already associated with the industry. Thus, in the case of new industry, risk principle should be the sub-guide line in selecting sources of funds. During period of rapid growth, manoeuvreability factor should be given special consideration so as to leave room open for easy and rapid expansion of funds used. As the industry reaches its maturity, greater emphasis is given on research and development programmes in order to develop new products and to postpone ultimate decline in sales. These capital expenditure programmes must be financed out of common stock because of greater uncertainty in respect of improvement in the business earnings. If level of business activity is expected to decline in the long-run, capital structure should be designed in such manner that desired contraction in funds used is possible in future.

Characteristics of the Company

Finally, peculiar characteristics of the company affect the factors influencing the choice of different sources of funds. Accordingly, weights are assigned to different principles of manoeuvreability, cost, risk, control

and timing in the light of the peculiar features of the company. We shall confine our analysis to these characteristics which are distinct from the industry.

(A) Size of business: Smaller companies confront tremendous problem in assembling funds because of their poor credit-worthiness. Investors feel reluctant in investing their money in securities of these companies. Lenders prescribe highly restrictive terms in lending. In view of this, special attention should be paid to manoeuvreability principle so as to assure that as the company grows in size it is able to obtain funds when needed and under acceptable terms. This is why common stock represents major portion of the capital in smaller concerns. However, the management should also give special consideration to the factor of control because if the company's common stock were publicly available some large concern might buy a controlling interest. In view of this, the management might insist on debt for further financing so as to maintain control or common stock should be sold in closed circle so that control of the firm does not pass in to the hands of outsiders.

Larger concerns have to employ different types of securities to procure desired amount of funds at reasonable cost because they find it very difficult to raise capital at reasonable cost if demand for funds is restricted to a single source. To ensure availability of large funds for financing future expansion programmes, larger concerns may insist on manoeuvreability principle.

Contrary to this, in medium sized companies which are in a position to obtain the entire capital from single source, leverage principle should be given greater consideration so as to minimise cost of capital.

(B) Form of business organisation: Control principle should be given higher weightage in private limited companies where ownership is closely held in a few hands. This may not be so imminent in the case of public limited companies whose shareholders are large in number and so widely scattered that it becomes difficult for them to organise in order to seize

control. In such form of organisation manoeuvreability looms large because a public limited company in view of its inherent characteristics finds it easier to acquire equity as well as debt capital.

In proprietorship or partnership form of organisation manoeuvreability factor may not be helpful owing to limited access of proprietary or partnership concerns to capital market. Control is undoubtedly an important consideration in such organisations because control is concentrated in a proprietor or a few partners.

(C) Stability of earnings: With greater stability in sales and earnings a company can insist on leverage principle and accordingly it can undertake the fixed obligation debt with low risk, But a company with irregular earnings will not choose to burden itself with fixed charges. Such company should, therefore, pay greater attention to risk principle and depend upon the sale of stock to raise capital.

(D) Asset structure of company: A company which has invested major portion of funds in long life fixed assets and demand of whose products is assured should pay greater attention to leverage principle to take advantage of cheaper sources. But risk principle will outweigh leverage principle in companies whose assets are mostly receivables and inventory whose value is dependent on the continued profitability of the individual concern.

(E) Age of company: Younger companies find themselves in difficult situation to raise capital in the initial years because of greater uncertainty involved in them and also because they are not known to suppliers of funds. It would, therefore, be worthwhile of the management to give more weightage to manoeuvreability factor so as to have as many alternatives open as possible in future to meet their growth requirements. In a sharper contrast to this, established companies with good earning records are always in comfortable position to raise capital from whatever sources they like. Leverage principle should, therefore, be insisted upon in such concerns.

(F) Credit standing: A company with high credit standing has greater ability to adjust sources of funds upwards or downwards in response to major changes in need for funds than the one with poor credit standing. In the former case, the management should pay greater attention to manoeuvreability factor and should aim at improving credit standing of the latter by improving its liquidity, and earnings potential.

(G) Attitude of management: Attitude of the persons who are at the helm of affairs of the company should also be analysed in depth while assigning weights to different factors affecting the pattern of capitalisation. The management attitude towards control of the enterprise and risk in particular, have to be minutely observed. Where the management has strong desire for assured and exclusive control, preference will have to be given to borrowing for raising capital in order to be assured of continued control. Further, if principal objective of the management is to stay in office, they would insist more on risk principle and would be loath in issuing bonds or preferred stock which might plunge the company in greater risk and endanger their position. But members of the Board of Directors who have been in office for pretty long time feel relatively assured and they would prefer to insist on leverage principle and assume more risk by taking recourse to further borrowing in their attempt to improve the company's earnings.

LEVERAGE IN CAPITAL STRUCTURE

The term 'leverage' has been borrowed from physical science where it refers to a device (lever) by which heavy objects (weights) are lifted with a small force. In business parlance, it refers to the relationship between percentage business changes in fixed cost and in earnings before interest and taxes (EBIT), i.e., operating profit. Thus, leverage may be defined as the employment of assets or funds for which the firm pays a fixed cost or fixed return. The fixed cost or fixed return may be thought of as the fulcrum of a lever.

Leverage belongs to the category of capital-gearing. This is an American term which has approximately the same meaning as "gearing". It is one of the important tools in the hands of corporate financial mangers. If used judiciously it can maximise the return to equity shareholders.

Classification of Leverages

Leverage may be of three kinds:

(i) Financial leverage

(ii) Operating leverage

(iii) Combined or composite leverage.

Financial Leverage

Financial Leverage (also known as capital leverage) refers to the use of funds obtained by fixed cost or fixed return securities such as debentures, bonds, preference shares etc., in the hope of increasing the return to equity shareholders. It simply indicates the change that takes place in taxable income as a result of changes in operating income. It signifies the existence of fixed cost securities in the capital structure of a company such as Debentures, bonds, preference shares etc., whose rates of interest or dividend as the case may be prefixed and do not change with the level of profit. When in the capital structure of a company fixed cost/return securities are greater as compared to equities the leverage factor or degree of leverage is said to be large. That is, a favourable or positive financial leverage arises where the company earns more from assets purchased with the funds (raised through fixed cost securities) than return or costs payable for the use of the funds. An unfavourable or negative financial leverage arises when the earnings from such assets are less than the fixed cost of return payable on such funds.

Financial Leverage causes change in the earnings before interest and taxes (total earnings before interest and taxes may remain the same). When there is change in operating profit there will be a sharp change (i.e., at a greater rate) in the Earnings per (Equity) share (EPS). Increasing EPS is one of the reasons for higher market price of shares. Thus, a favourable

financial leverage causes the EPS to rise faster if other things remain the same.

By using an indifference chart, one can study the relationship between earnings before interest and taxes (EBIT) and earnings per share under various alternative methods of financing. The degree of sensitivity of earnings per share to EBIT is dependent upon the explicit cost of the method of financing, the number of common stocks to be issued, and the nearness to the difference point. Although an EBIT-EPCs chart is useful in analysing the explicit cost of various methods of financing, it does not take into account any implicit costs inherent in the use of a specific method of financing.

Financial Leverage and trading on equity: Quite often the terms financial leverage and trading-on-equity are used interchangeably. Although the concepts try to explain the impact on Return on Equity (ROE) of the capital structure there is a subtle difference between the two. As pointed out by one authority on financial management, financial leverage explains the impact in EPS (ROE) of changes in operating profit, given the capital structure proportions of debt, preference and equity. Trading-on-equity, on the other hand, explains the impact of ROE of change in capital structure proportions, given the level of operating profit.

Operating Leverage

The concept of operating leverage was in fact originally developed for use in the marketing capital budgeting decisions. Operating leverage occurs where a firm has fixed cost that must be met regardless of volume or value of output or sales. The degree of leverage depends on the amount of fixed costs. If fixed costs are high, even a small change in sales results in large change in operating systems. Operating leverage may be studied with the help of a break-even or cost-volume-profit analysis.

Composite or Combined Leverage

Operating and Financial leverage combine themselves in a multiplicative form to bring about a more proportionate change in EPS

(ROE) for a given percentage change in activity. This is because the dispersion and risk of possible earnings per share are increased. The two types of leverages may be combined in different ways to obtain the desired degrees of overall leverage and risks, i.e., a compromise between the total risk and the expected return.

For both operating and financial leverage one can determine the degree of leverage. The operating leverage and financial leverage are the two quantitative tools used to measure the returns to the owners viz., earnings per share (EPS) and market price of the operating shares; of the two tools, financial leverage is considered to be superior because it focuses attention on the market price of the share.

Between operating and financial leverage, operating leverage is less amenable to managerial control. This is so because operating leverage for a company is influenced to a greater extent by the magnitude of fixed costs. But fixed costs are very much linked to the nature of industry, choice of technology and the asset structure employed. Thus manufacturing (capital- intensive) industries like cement, steel and heavy engineering are likely to have level fixed costs and a high operating leverage when compared to a trading industry. The super imposition of a high financial leverage on an already high operating leverage will result in a higher combined leverage which is likely to expose the company to a greater risk and putting the interest of shareholders in danger.

From the above discussion it is evident that there is less scope to exercise greater control in respect of operating leverage, than one can exercise control in regulating the degree of financial leverage. To sum up, companies having a high operating leverage should plan for a capital structure having more equity and less debt to bring down the combined leverage to a reasonable level. Similarly, companies with a low operating leverage can bring up combined leverage to a more reasonable level by the planning for a high financial leverage, thereby the management can secure

for the shareholders the benefits of leverage without exposing them to great risk.

THEORIES OF CAPITAL STRUCTURES

A great deal of controversy has developed recently over whether the capital structure of a firm, as determined by its financing decision, affects its cost of capital, owners' wealth and society's wealth.

There are two approaches to the problems of capital structure and cost of capital. The first is the 'Traditional' or 'Static or Dependent' approach and the other is 'Modigliani-Miller' or Independent approach.

Traditional Approach

The traditional approach asserts that the cost of capital is not ir dependent of the capital structure of the firm and that there is an optional capital structure.

The contention of the traditional school is that there are two types of risks, viz., Business Risk and Financial Risk. While business risk (market fluctuations, availability of materials etc.,) will always be there more or less in the same measure, financial risk keeps on increasing after a certain stage as more and more debt capital commitments are undertaken.

According to this school, there is a correlation between the cost of capital (Composite) and Debt-Equity Ratio. The relation between the two, when graphically expressed, takes the form of an U-shaped curve. Cost of capital will be very high if Debt/Equity ratio is zero. Upto a certain stage the weighted cost of capital will progressively come down with the injection of debt element into the capital structure step by step. But after this lower (optimum) point cost of capital will go up (e.g., higher rate of interest may have to be offered to attract the subsequent debenture holders) along with further introduction of debt element.

Assumptions:

(i) The capital structure of a company consists of only two kinds of capital, viz., bonded debt and ordinary shares. This assumption is made for the sake of convenience.

(ii) The business risk of a company remains constant. This assumption is made with a view to focus attention exclusively on financial risk, associated with the capital structure decision.

(iii) The cost of debt capital remains the same irrespective of the amount of debt capital introduced by a company into its capital structure. Though this assumption helps simplify the analysis it is not particularly realistic.

(iv) Corporate income-tax is assumed not to exist, while this assumption is not realistic.

(v) The company follows a 100 per cent dividend pay-out policy. This assumption is made with a view not to complicate the capital structure issue with the effect of retained earnings

(vi) A company is free to repurchase and cancel its ordinary shares. This assumption is made with view to simplifying the analysis by confining it to the situation wherein a company can change its debt-equity ratio without at the same time, changing its total assets. Thus, the debt-equity ratio can be increased by issuing bonds to repurchase and cancel shares of an equal amount; the ratio can be decreased by issuing shares to retire debt.

(vii) Transaction costs are assumed to be nil.

(viii) The operating income of a company is assumed not to grow over time. As the company's total assets will not grow, and the depreciation amount is just sufficient to meet normal replacement, it may not be unrealistic to assume rigidity in the operating income. This would also simplify the analysis.

(ix) All the investors have identical (subjective) probability distributions of the future operating earnings of the company. This would simplify

the analysis as all the investors have identical views with regard to the future operating income of the company.

(x) The cost of equity capital is higher than the cost of debt capital. This is very realistic as shareholders' risks are greater than the risk of long-term creditors.

The traditional position on financial structure is that a financing pattern which includes a 'moderate' amount of debt would generally result in a least-cost financing solution. Further, increased debt in the capital structure did not cause creditors to experience any perceptible risk, and equity shareholders were also assumed to be unresponsive. The predicted result was that a capital structure with some debt would result in lower cost capital than a structure with no debt. The traditional theory of financial structure fails to take into account the increased financial risk arising out of debt after a 'moderate' point.

Thus the traditional position implies that the cost of capital is not independent of the capital structure of the firm. The firm can increase the total value of the firm, society and bring cost of capital down through the judicious use of 'leverage'.

Modigliani-Miller Approach

The Franco Modigliani and Merton H. Miller (M.M.) Approach on 'Cost of capital' suggests that there is no correlation between cost of capital and debt-equity ratio, i.e., average cost of capital of any firm is independent of its capital structure and equal to the capitalisation rate of pure equity stream of its class. This hypothesis explains that the value of the firm and cost of capital is same for all the firms irrespective of the proportion of debt included in a capital structure.

In this simplified model, they abstract away the effect of any taxes. The crucial support for this hypothesis is the presence of arbitrage in the capital markets. Arbitrage precludes perfect substitutes from selling at different prices in the same market. In their cases, the perfect substitutes

are two or more firms. Before we explain both the hypotheses the assumptions underlying M-M hypothesis are important to enumerate.

The assumptions underlying this approach are:

(a) The average expected future net operating income is represented by a subjective random variable and that all investors agree on the expected value of this probability distribution.

(b) All the firms can be placed in equivalent risk class, so that all firms in a class can be termed homogeneous.

(c) Capital markets are perfect; information is perfect to all investors; investors are rational; and no information cost exists.

(d) The absence of corporate income-tax.

(e) Personal and Corporate leverage are perfect substitutes.

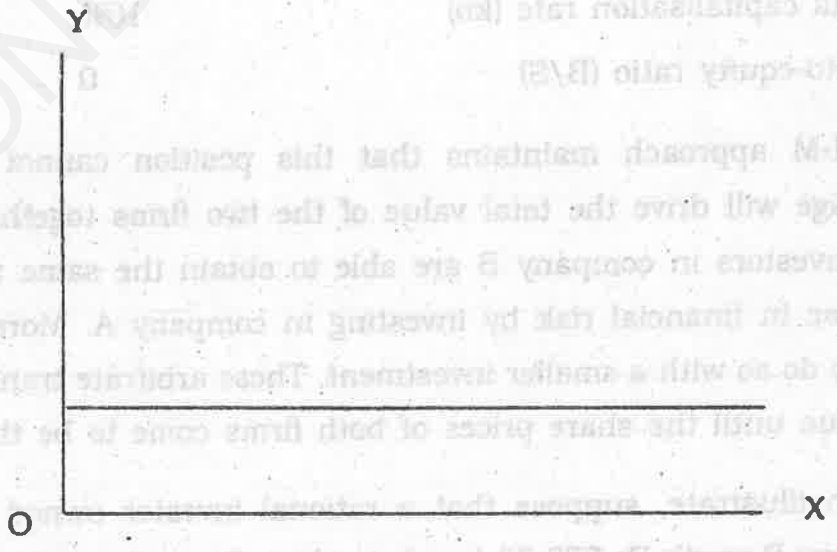
(f) Institutional investors are free to deal in securities.

(g) There does not exist transaction costs.

(h) Rate of interest at which company and individuals could borrow is the same.

(i) The dividend payout ratio is 100% .

When graphically expressed, the M.M. position would be as follows:



Debt Equity Ratio

The M.M. thesis accepts the inherent business risk, but rules out the existence of anything called financial risk. It also seeks to prove that the 'arbitrage' mechanism irons out the apparent differences in cost of capital consequent upon the injection of additional debt.

Example: Consider two firms that compromise a single risk class. These firms are identical in every respect expect that company A is not levered and company B has Rs.30,000 of 5% bonds outstanding. According to the traditional position, company B may have a higher total value and lower average cost of capital than company A. The valuation of the firms is assumed to be the following:

	Company A Rs.	Company B Rs.
Net operating income (O)	10,000	10,000
Interest on debt (I)	–	1,500
Earnings for equity shareholders (E)	10,000	8,500
Equity capitalisation rate (ke)	0.10	0.11
Market value of stock (S)	1,00,000	77,272
Market value of debt (B)	–	30,000
Total value of firm	1,00,000	1,07,272
Overall capitalisation rate (ko)	10%	9.3%
Debt-to-equity ratio (B/S)	0	38.8%

M-M approach maintains that this position cannot continue, for arbitrage will drive the total value of the two firms together. M-M argue that investors in company B are able to obtain the same return with no increase in financial risk by investing in company A. Moreover, they are able to do so with a smaller investment. These arbitrate transactions would continue until the share prices of both firms come to be the same.

To illustrate, suppose that a rational investor owned 1 per cent of company B worth Rs.772.72 (market value). Given this situation he should,

(a) Sell his stock in company B for Rs. 772.72.

(b) Borrow Rs.300 at 5 per cent interest

(c) Buy 1 per cent of the shares of the company A, per Rs. 1,000.

Prior to this series of transactions, investor's expected return on investment in company B was 11 per cent on Rs. 772.72 investment on Rs.85. Now his return in company A is Rs. 100 (10 per cent on Rs. 1,000) From this return they must deduct Rs.15 for interest charge on his personal borrowings (5 per cent of Rs. 300). Thus this net return is Rs. 85. Thus his return in both the companies is same. Moreover his cash outlay of Rs. 700 is less than Rs. 772.72 investment in company B. Because of the lower investment the investor would prefer to invest in company A under the conditions described. This action on the part of arbitragers would continue till the value of firms turns out to be the same. As a result their average cost of capital, ko, also must be the same.

Criticisms of M.M. approach: The approach has however, been criticised. According to David Durand, personal leverage is not equivalent to corporate leverage. Due to capital market imperfections, the cost of borrowings may be higher for individuals than that for the corporation. This proposition further concentrates on equilibrium state, which in actual practice is unrealistic.

M.M's theory seems to have ignored the vital fact that business risk is a function of the degree of financial leverage. If a firm fails to service the debt during the loan periods, it is very likely to collapse and will, therefore, not survive to reap the benefits of leverage during the loan periods. Further, bank policy involves high costs and the probability of the firm's having to bear these costs tends to rise with leverage.

Another objection hurled against the MM's proposition is that it is unrealistic to assume that there are no restrictions on institutional investors in respect of their dealing in securities. In real life situations, we find that many institutional investors are not allowed to engage in the 'home made leverage' that was described. Furthermore, the Reserve Bank

of India regulates margin requirements in respect of different types of loans and has stipulated the percentage of advances under a margin loan. As a result, a significant number of investors can not substitute personal for corporate leverage.

It is also unrealistic to presume that there are 'no transaction costs'. In actual practice security dealers have to incur brokerage, underwriting commission and similar other costs in buying and selling corporate securities. Consequently, effectiveness of the arbitrage mechanism may be impeded. Arbitrage will take place only upto the limits imposed by transaction costs, after which it is no longer profitable. As a result the leveraged firm could have a slightly higher total value.

The assumption of 'no corporate tax' is basically wrong. Nowhere in the world, corporate income has been untaxed. As a matter of fact, everywhere taxation laws have provided for deductibility of interest payments on debt for calculating taxable income. If this is so, debt becomes relatively much cheaper means of financing and the financial manager, is naturally encouraged to employ leverage. For that very reason debt may be preferred to preferred stock. In view of this controversy, Modigliani and Miller in their subsequent paper admitted that given the tax factor overall cost of capital can be lowered as more leverage is inducted in capital structure of the firm. Consequently, the total market value of the firm also increases with rising leverage.

To sum up, the Modigliani and Miller theory may be consistent with the assumption of perfect competition. But since this assumption rarely holds in practice, the financial manager should, therefore, strive to achieve optimal capital structure. But determination of optimal mix of debt in capital structure is not an easy matter. The most direct method is perhaps to let the firm's lenders locate that point. In negotiating with the firm seeking loan, the long-term lenders put restrictions as protective clause in loan convenient on the amount of additional debt the firm may acquire in future. The financial manager may also detect the optimal point by noting,

in course of negotiation for loan, reluctance of lenders to lend at the earlier rate of interest or without incorporating additional restrictions in the agreement. The market reaction to additional bond issues being contemplated by the firm is manifested in share prices. Hence, optimal amount of debt can be located by studying behavioural changes in share prices in response to the trends that additional debt financing by the firm is under consideration.

Illustration 1

The East-West Industries Ltd. has the following capital structure on December 31, 1995

	Rs.
7% Debentures	12,00,000
8% Bank Loan (Long-Term)	2,00,000
9% Preference Shares of Rs. 10 each	14,00,000
38000 Equity Shares of Rs. 50 each	19,00,000
Retained earnings	13,00,000
	60,00,000

The present earnings before interest and taxes are Rs. 9,00,000. The Company is contemplating an expansion programme requiring an additional investment of Rs. 10,00,000.

It is hoped that the Company will be able to maintain the same rate of earnings. The Company has the following alternatives:

(i) To issue Debentures at 8%

(ii) To issue Preference shares at 10%

(iii) To issue Equity shares at a premium of Rs.10 per share.

Examine these alternatives in all their bearings and advise the company. You may assume income tax rate 55%.

Solution:

Comparative Statement of Earnings Per Equity Share in Different Alternatives

	Earnings per Share at present	Alternative Issue of Equity shares	Alternative Issue of Preference Shares @ 10%	Alternative Issue of Debentures @ 8%
	Rs.	Rs.	Rs.	Rs.
Total Earnings (EBIT) on present Capital of Rs. 60,00,000	9,00,000	9,00,000	9,00,000	9,00,000
Total Earnings on new capital of Rs. 10,00,000 at present rate*	–	1,50,000	1,50,000	1,50,000
Total Earnings	9,00,000	10,50,00	10,50,00	10,50,000
Less-Interest on Bank loan @ 8% Rs. 16,000				
Interest on Debenture @ 7% Rs. 84,000	1,00,000	1,00,000	1,00,000	1,00,000
Less-Interest on proposed debenture under I alternative @ 8%	–	–	–	80,000
Profit before Tax (PBT)	8,00,000	9,50,000	9,50,000	8,70,000
Less-Tax @ 55%	4,40,000	5,22,500	5,22,500	4,78,500
Profit after tax (PAT)	3,60,000	4,27,500	4,27,500	3,91,000
Less Dividend on existing preference shares @ 9%	1,26,000	1,26,000	1,26,000	1,26,000
Dividend on proposed preference share @ 10%	–	–	1,00,000	
Earnings for equity shareholders	2,34,000	3,01,500	2,01,500	2,65,000
No. of equity shares	38,000	38,000	38,000	38,000
		+16,667		
		= 54,667		
Earnings per share	2,34,000	3,01,500	2,01,500	2,65,500
	38,000	54,667	38,000	38,000
	= 6.16	= 5.52	= 5.30	= 6.99

1. Present equity shares = 38,000

Add new equity shares

@ Rs. 60/- per share = $\frac{10,00,000}{60} = \frac{16,667}{54,667}$

Comments: The present rate of earnings per share is Rs.6.16. It will be in the interest of the company and the equity shareholders to raise additional amount of capital by issuing 8% debentures, because, the earnings per equity share will increase to Rs.6.99 under this alternative. Hence, the other two alternatives should be rejected because the earnings per equity share will be reduced to Rs.5.30 and Rs.5.52 respectively as compared to the present earnings per share of Rs.6.16.

Illustration 2

Remi Corporation is a new firm that wishes to determine an appropriate capital structure. It can issue 8% debt and 6% preferred stock and has a 50% tax rate. The initial capitalisation of the firm will be Rs.50 lakhs. The possible capital structure is:

Plan	Debt	Preferred stock	Equity
1	0	0	100%
2	30%	0	75%
3	30%	20%	50%
4	50%	0	50%
5	50%	20%	30%

If EBIT is 10%, calculate EPS.

Solution:

The capital structure of Rs.50,00,000 would be as follows in different plans.

Plan	Debt	Preferred stock	Equity
1	0	0	Rs. 50,00,000
2	Rs. 15,00,000	0	Rs. 35,00,000
3	Rs. 15,00,000	Rs. 10,00,000	Rs. 25,00,000

4	Rs. 25,00,000		Rs. 25,00,000
5	Rs. 25,00,000	Rs. 10,00,000	Rs. 15,00,000

Calculation of Earnings Per Share

Particulars	Plan1 Rs.	Plan 2 Rs.	Plan 3 Rs.	Plan 4 Rs.	Plan 5 Rs.
Total Capital isation	50,00,000	50,00,000	50,00,000	50,00,000	50,00,000
EBIT @ 10%	5,00,000	5,00,000	5,00,000	5,00,000	5,00,000
Less Interest on debentures @ 8%	–	1,20,000	1,20,000	2,00,000	2,00,000
Earnings Before tax (EBT)	5,00,000	3,80,000	3,80,000	3,00,000	3,00,000
Less: Corporate tax @ 50%	2,50,000	1,90,000	1,90,000	1,50,000	1,50,000
Earnings after tax (EAT)					
Less-preference Dividend @ 6%	–	–	60,000	–	60,000
Earnings available for equity holding	2,50,000	1,90,000	1,30,000	1,50,000	90,000
Total No. of equity shares of Rs. 100 each	50,000	35,000	25,000	25,000	15,000
Earnings Per Share (EPS)	5.00	5.60	5.20	6.00	6.00

Comments: Earning per share in Plan 4 and Plan 5 is the highest i.e., Rs.6. Thus the capitalisation Plan No. 4 and No. 5 may be adopted by the company. Both are equally good.

QUESTIONS

1. What do you understand by capital structure of a corporation?
2. What do you understand by a balanced capital structure? Explain the characteristics of balanced capital structure.

3. What is an optimal capital structure? Why should a company aim at an optimal capital structure?.
4. Distinguish capital structure from financial structure and Asset structure.
5. Discuss the important approaches to different theories of capital structure.
6. Discuss the factors that should enter into designing an ideal capital structure of a company.
7. What do you understand by "Trading on equity"? What are its limitations?
8. Is the M.M. theory realistic with respect to capital structures and the value of a firm? If not, what are its main weaknesses?
9. How can the effect of profitability on designing an appropriate capital structure be analysed? Illustrate your answer with the help of EBIT-EPS analysis.

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UNIT - V

LESSON - 6.1

DIVIDEND DECISIONS

Contents

- ☆ Introduction
- ☆ The Irrelevance of Dividends
- ☆ MM Hypothesis
- ☆ Relevance of Dividends
  Walter's Model
- ☆ Questions

INTRODUCTION

Dividends refer to that portion of a firm's net earnings which are paid out to the shareholders. Our focus here is on dividends paid to the ordinary shareholders because holders of preference shares are entitled to a stipulated rate of dividend. Moreover, the discussion is relevant to widely-held public limited companies, and the dividend issue does not pose a major problem for closely-held, private limited companies. Since dividends are distributed out of the profits, the alternative to the payment of the dividends is the retention of earnings/profits. The retained earnings constitute an easily accessible important source of financing the investment requirements of firms. There is, thus, a type of reciprocal relationship between retained earnings and cash dividends: Larger retentions, lesser dividends; Smaller retentions, larger dividends. Thus, the alternative uses of the net earnings – dividends and retained and earnings – are competitive and conflicting.

A major decision of financial management is the dividend decision in the sense that the firm has to choose between distributing the profits to the shareholders and ploughing them back into the business. The choice

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would obviously hinge on the effect of the decision on the maximization of shareholders' wealth. Given the objective of financial management of maximizing present value, the firm should be guided by the consideration as to which alternative use is consistent with the goal of the wealth maximization of shareholders' wealth. That is, the firm would be well-advised to use the net profits for paying dividends to the shareholders if the payment will lead to increased value rather retain them to finance investment programmes. The relationship between dividends and value of the firm should, therefore, be the criterion for taking a decision.

There are, however, conflicting opinions regarding the impact of dividends on the valuation of the firm. According to one school of thought, dividends are irrelevant so that the amount of dividends paid has no relevance to the value of the firm measured in terms of the market price of the shares.

The purpose of the present unit is, therefore, to present a critical analysis of some important theories representing these two schools of thought with a view to illustrating the relationship between dividend policy and the valuation of a firm. The major points are also summarized.

THE IRRELEVANCE OF DIVIDENDS

The crux of the argument supporting the irrelevance of dividends to valuation is that the dividend policy of a firm is a part of its financing decision. As part of the financing decision of the firm, the dividend policy of the firm is a residual decision and dividends are a passive residual. Let us elaborate this further.

If the dividends policy is strictly a financing decision, whether dividends are paid out of profits, or earnings are retained will depend upon the available investment opportunities. It implies that when a firm has sufficient investment opportunities, it will retain the earnings to finance them. Conversely, if acceptable investment opportunities are inadequate, the implication is that the earnings would be distributed to the shareholders. The test of adequate investment opportunities is the

relationship between the return on the investment (r) and the cost of the capital (k). As long as r exceeds k, a firm has acceptable investment opportunities. In other words, if a firm can earn a return (r) higher than its cost of capital (k) it will retain the earnings to finance investment projects. If the retained earnings fall short of the total funds required (r > k) it will raise external funds–both equity and debt–to make up the shortfall. If however, the retained earnings exceed the requirements of funds to fiance acceptable investment opportunities, the excess earnings would be distributed to the shareholders in the form of cash dividends. The amount of dividend will fluctuate from year to year depending upon the availability of acceptable investment opportunities. With abundant opportunities, the dividend payout ratio (D/P ratio, i.e., the ratio of dividends to net earnings) would be zero. When there are no profits extremes, the D/P ratio will be 100. For situations between these extremes, the D/P ratio will range between zero and 100.

That dividends are irrelevant, or are a passive residual, is based on the assumption that the investors do not differentiate between dividends and capital gains. So long as the firm is able to earn more than the equity capitalization rate (K) the investors would be content with the firm retaining the earnings. In contrast, if the return is less than the k investors would prefer to receive the earnings (i.e. dividends).

MODIGLIANI AND MILLER HYPOTHESIS

Miller and Modigliani (MM, hereafter) have advanced the view that the value of a firm depends solely on its earnings power and is not influenced by the manner in which its earnings are split between dividends and retained earnings. This view referred to as "MM dividend irrelevance theorem" is presented in their celebrated 1961 article. In this article MM constructed their argument on the following assumptions.

1. Capital markets are perfect and investors are rational: information is freely available, transactions are instantaneous and costless, securities are divisible and no investor can influence market prices.
2. Flotation costs are nil.

3. There are no taxes.
4. Investment opportunities and future profits of firms are known certainly (MM dropped this assumption later).

The substance of MM argument may be stated as follows: If a company retains its earnings instead of giving out as dividends, the shareholders enjoy capital appreciation equal to the amount of the earnings retained. If it distributes earnings by way of dividends instead of retaining it, the shareholders enjoy dividends equal to the amount by which his capital would have appreciated and had the company chosen to retain it is irrelevant from the point of view of the shareholders.

Criticism of MM Hypothesis

The critics of MM agree that under the assumptions made by the MM, dividends are irrelevant. They however, dispute the validity of the 'dividend irrelevant' theorem by challenging the assumptions used by the MM. According to them, dividends matter because of the uncertainty characterizing the future, the imperfections in the capital market, and the existence of taxes. The implications of these features are discussed below. For this discussion we consider one feature at a time.

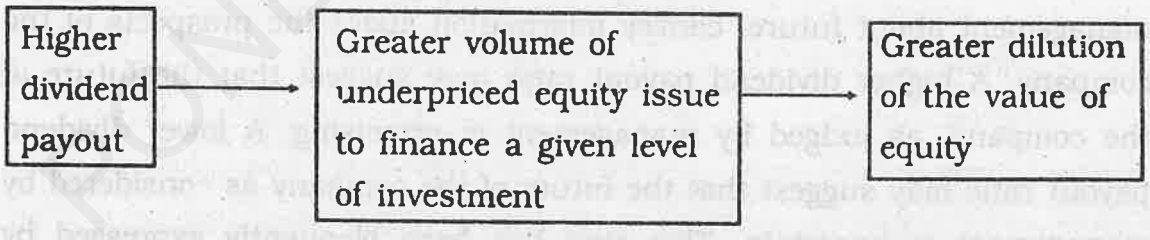
Information about prospects: In a world of uncertainty the dividends paid by the company, based as they are on the judgement of the management about future, convey information about the prospects of the company. A higher dividend payout ratio may suggest that the future of the company, as judged by management is promising. A lower dividend payout ratio may suggest that the future of the company as considered by management is uncertain. This view has been eloquently expressed by Gordon. An allied argument is that dividends reduce uncertainty perceived by investors. Hence other things being equal, command a higher price in the market.

MM do not dispute the information content of the dividends. They maintain that dividends merely serve as proxy for the expected future

earnings which really determine value. Hence, they argue, dividends policy per se is irrelevant.

Uncertainty and fluctuations: Due to uncertainty, share prices tend to the fluctuate, sometimes rather widely. When share prices fluctuate, conditions for conversions of current income into capital value and vice versa may not be regarded as satisfactory by investors. Some investors who wish to enjoy more current income may not be reluctant to sell a portion of their shareholding in a fluctuating market. Such investors would naturally prefer, and value more, a higher payout ratio. Some of the investors who wish to get less current income may be hesitant to buy shares in a fluctuating market. Such investors would prefer, and value more,. a lower payout ratio.

Offering of additional equity at lower prices: MM assume that a firm can sell additional equity at the current market price. In practice, firms following the guidelines of the Controller of Capital issues offer additional equity at a price lower than the current market price. This practice of 'underpricing' mostly at the instance of the Controller of Capital Issues and occasionally due to the market compulsions, *ceteras parbus* makes a rupee of retained earnings more valuable than a rupee of dividends. This is because of the following chain of causation:



Issue cost: The MM irrelevance proposition is based on the premise that a rupee of dividends can be replaced by a rupee of external financing. This is possible when there is no issue cost. In the real world where issue cost is incurred, the amount of external financing has to be greater than the amount of dividends paid. Due to this, other things being equal, it is advantageous to retain earnings rather than paying dividends and resort to external finance.

Transactions cost: In the absence of transactions cost, income (dividends) and capital grains are alike – a rupee of capital value can be converted into a rupee of current income and vice versa. In such a situation if a shareholder desires current income (from shares) greater than the dividends paid, he can buy the additional shares equal in value to the difference between dividends received and current income desired. In the real world, however, transaction costs are incurred. Due to this, capital value cannot be converted into an equal current income and vice versa. For example, a share worth Rs.100 may fetch a net amount of Rs. 98 after transaction costs and Rs.102 may be required to buy a share worth Rs.100. Due to transaction costs, shareholders who have preference for current income, would prefer a higher payout ratio and shareholders who have preference for deferred income would prefer a lower payout ratio.

Difference in rates of taxes: MM have assumed that the investors are indifferent between a rupee of dividends and a rupee of capital appreciation. This assumption is true when the rate of taxation is the same for current income and capital gains. In the real world, tax rate for capital gains is lower than that for current income. Due to this difference, investors may prefer capital gains to current income.

Rationing (Self-imposed or Market-imposed): MM have assumed that the investment policy of firms is independent of their financing policy and firms, rational as they are, invest up to the point where internal rate of return is equal to cost of capital. In the real world, however, the investment policy of firms do not, as a general policy, invest more than their retained earnings. In other words, their investment policy is linked with their dividend policy. Many firms are unable to obtain the required finances for their proposed investments because of the unwillingness of investors. Due to these restrictions dividend policy may become relevant. A firm which has many highly profitable investment opportunities and which is unwilling or unable to obtain finances from outside, would promote the interest of its shareholders by lowering the payout ratio.

Unwise investments: MM assumes that firms, rational as they are, do not invest beyond the point where internal rate of return is equal to cost of capital. In practice, however, many firms invest in sub-marginal projects because of easy availability of internally generated funds. If a firm has such a tendency its dividend policy matters. Its shareholders would benefit if liberal dividends are paid and would suffer if niggardly dividends are paid.

RELEVANCE OF DIVIDENDS: Some Theories

In sharp contrast to the MM position, there are some theories that consider dividend decision to be an active variable in determining the value of a firm. The dividend decision, is therefore, relevant. We critically examine below the two theories representing this notion:

(i) Walter's Model

(ii) Gordon's Model

Walter's Model

James Walter has proposed a model for share valuation which supports the view that the dividend policy of the firm has a bearing on share valuation. His model is based on the following key assumptions:

1. Retained earnings represents the only source of financing for the firm.
2. The return on the firm's investment remains constant
3. The cost of capital for the firm remains constant
4. The firm has an infinite life.

Valuation Formula: Based on the above assumptions, Walter put forward the following formula:

$$P = \frac{D + (E - D)\frac{r}{k}}{K}$$

Where P = price per equity share

D = dividend per share

E = earnings per share

(E-D) = retained earnings per share

r = internal rate of return on investments

k = cost of capital

As per the equation the price per equity share in the sum of these two components is:

$$\frac{D}{k} + \frac{(E - D)r}{K}$$

The first component is the present value of an infinite stream of dividends and the second component is the present value of an infinite stream of returns from retained earnings.

QUESTIONS

1. State the traditional position on the relationship between dividend policy and share valuation.
2. State the valuation formula put forward by James Walter. What is the logic behind this formula?
3. What are the implications of the Walter model?
4. State Gordon's basic valuation formula. How is it derived?
5. What is the substance of Miller and Modigliani 'dividend irrelevance' theorem?
6. Prove the dividend irrelevance theorem.
7. Discuss the criticisms of the Miller and Modigliani position

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LESSON - 12

DIVIDEND POLICIES

Contents

- ☆ Determinants of Dividend Policies
- ☆ Kinds of Dividend Policies
- ☆ Forms of dividends
- ☆ Legal and Procedural Aspects
- ☆ Questions

DETERMINANTS OF DIVIDEND POLICIES

The payment of dividend involves some legal as well as financial considerations. It is difficult to determine a general dividend policy which can be followed by different firms at different times because the dividend decision has to be taken considering the special circumstances of an individual case. The following are the important factors which determine the dividend policy of a firm.

1. Legal restrictions: Legal provisions relating to dividends as laid down in sections 93, 205, 205A, 206 and 207 of the Companies Act, 1956 are significant because they lay down a framework within which dividend policy is formulated. These provisions require that dividend can be paid only out of current profits or past profits after providing for depreciation or out of the moneys provided by Government for the payment of dividends in pursuance of a guarantee given by the Government. The Companies (Transfer of Profits to Reserves Act stipulates that when more than ten per cent dividend is declared a certain percentage of the current year's profits should be transferred to reserves. Companies' Act, further, provides that dividends cannot be paid out of capital, because it will amount to reduction of capital, adversely affecting the security of its creditors.

2. Magnitude and trend of earnings: The amount and trend of earnings is an important aspect of dividend policy. It is rather the starting point of

the dividend policy. As dividends can be paid only out of present or past year's profits, earnings of a company fix the upper limits on dividends. The dividends should, generally, be paid out of current year's earnings only as the retained earnings of the previous years become more or less a part of permanent investment in the business to earn current profits. The past trend, of the company's earnings should also be kept in consideration while making the dividend decision.

3. Desire and type of shareholders: Although, legally, the discretion as to whether to declare dividend or not has been left with the Board of Directors, the directors should give due importance to the desires of shareholders in the declaration of dividends as they are the representatives of the shareholders. Desires of shareholders for dividends depend upon their economic status. Investors, such as retired persons, widows and other economically weaker persons view dividends as a source of funds to meet their day to day living expenses. To benefit such investors, the companies should pay regular dividends. On the other hand a wealthy investor in a high income tax bracket may not benefit by high current dividend incomes. Such investor may be interested in lower current dividends and high capital gains. It is difficult to recognize these conflicting interests of the shareholders, but a company should adopt its dividend policy after taking into consideration the interests of its various groups of shareholders.

4. Nature of industry: Nature of industry, in which the company is engaged, also considerably affects the dividend policy. Certain industries have a comparatively steady and stable demand irrespective of the prevailing economic condition. For instance, people used to liquor continue to drink both in boom as well as in recession. Such firms expect regular earnings and hence can follow a consistent dividend policy. On the other hand, if the nature of industry is such that there are wide fluctuations in demand, such firms should retain a substantial part of their profits to pay adequate dividends in the recession periods. Thus, industries with steady demand for their products can follow a lower payout ratio.

5. Age of the company: The age of the company also influences the dividend decision of a company. A newly established concern has to limit payment of dividend and retain a substantial part of earnings for financing its future growth and development, while older companies which have established sufficient reserves can afford to pay liberal dividends.

6. Future financial requirements: It is not only the desires of the shareholders but also future financial requirements of the company that have to be taken into consideration while making a dividend decision. The management of a concern has to reconcile the conflicting interests of shareholders and those of the company's financial needs. If a company has highly profitable investment opportunities it can convince the shareholders of the need for limitation of dividends to increase the future earnings and stabilize its financial position. But when profitable investment opportunities do not exist, then the company may not be justified in retaining substantial part of its current earnings. Thus, a concern having few internal investment opportunities should follow high payout ratio as compared to one having more profitable investment opportunities.

7. Government's economic policy: The dividend policy of a firm has to be adjusted to the economic policy of the Government as was the case when the Temporary Restriction on Payment of Dividend Ordinance was in force. In 1974 and 1975, companies were allowed to pay dividends not more than 33 per cent of their profits or 12 per cent on the paid up value of the share, whichever was lower.

8. Taxation policy: The taxation policy of the Government also affects the dividend decision of a firm. A high or low rate of business taxation affects the net earnings of a company (after tax) and thereby its dividend policy. Similarly, a firm's dividend policy may be dictated by the income-tax status of its shareholders. If the dividend income of shareholders is heavily taxed being in high income bracket, the shareholders may forego cash dividend and prefer bonus shares and capital gains.

9. Inflation: Inflation acts as a constraint in the payment of dividends. Profits as arrived from the profit and loss account on the basis of historical cost has a tendency to be overstated in times of rise in prices due to over-valuation of stock-in-trade and writing off of depreciation on fixed assets at lower rates. As a result, when prices rise, funds generated by depreciation would not be adequate to replace fixed assets, and hence to maintain the same assets and capital intact, substantial part of the current earnings would be needed. Payment of dividends in the days of rising prices if not warranted by the real profits, would amount to payment out of the equity capital resulting in erosion of capital.

10. Control objectives: When a company pays high dividends out of its earnings, it may result in the dilution of both control and earnings for the existing shareholders. As in case of a high dividend pay-out ratio, the retained earnings are insignificant and the company will have to issue new shares to raise funds to finance its future requirements. The control of the existing shareholders will be diluted if they cannot buy the additional shares issued by the company. Similarly, issue of new shares shall cause increase in the number of equity shares and ultimately cause lower earnings per share and their price in the market. Thus, under these circumstances to maintain control of the existing shareholders, it may be desirable to declare lower dividends and retain earnings to finance the firm's future requirements.

11. Requirements of Institutional investors: Dividend policy of a company can be affected by the requirements of institutional investors such as financial institutions, banks, insurance corporations, etc. These investors usually favour a policy of regular payment of cash dividends and stipulate their own terms with regard to payment of dividend on equity shares.

12. Stability of dividends: Stability of dividends is another important guiding principle in the formulation of a dividend policy. Stability of dividend simply refers to the payment of dividend regularly and

shareholders, generally, prefer payment of such regular dividends. Some companies follow a policy of constant dividend per share while others follow a policy of constant payout ratio and still some others who follow a policy of constant low dividend per share plus an extra dividend in the year of high profits. A policy of constant dividend per share is most suitable to concerns whose earnings are expected to remain stable over a number of years or those who have built-up sufficient reserves to pay dividends in the years of low profits. The policy of constant payout ratio, i.e. paying a fixed percentage of net earnings every year may be supported by a firm because it is related to the firm's ability to pay dividends. The policy of constant low dividend per share plus some extra dividend in years of high profits is suitable to the firms having fluctuating earnings from year to year.

13. Liquid resources: The dividend policy of a firm is also influenced by the availability of liquid resources. Although, a firm may have sufficient available profits to declare dividends, yet it may not be desirable to pay dividends if it does not have sufficient liquid resources. Hence the liquidity position of a company is an important consideration in paying dividends.

KINDS OF DIVIDEND POLICIES

There exists a wide variety of dividend policies that may be followed by a company. The selection of a particular dividend policy is decided by the management after considering a large number of factors. The possible policies are:

(a) A stable dividend policy:

(b) Policy of no immediate dividends.

(c) Policy of regular and extra dividends.

(d) Policy of regular bonus shares.

(e) Policy of regular dividends plus bonus shares, and

(f) Policy of irregular dividends.

(a) Stable Dividend Policy: A stable dividend policy is one that maintains regularity in paying some dividend regularly even though the amount of

dividend may fluctuate from year to year and may not be related with earnings. More precisely, stability of dividends refers to the amount paid out regularly. Stability of dividends can take three distinct forms:

(i) *Constant dividend per share* i.e., paying a fixed amount per share as dividend every year irrespective of the fluctuations in the earnings.

(ii) *Constant percentage of net earnings* i.e., paying a fixed percentage of net earnings every year (with this policy the amount of dividend will fluctuate on direct proportion to earnings), and

(iii) *Small constant dividend per share plus extra dividend:* Generally when we refer to a stable dividend policy, we refer to the first form of paying constant dividend per share. A stable dividend policy, therefore, does not mean an inflexible policy, but involves the payment of a fair rate of returns taking into consideration the gradual growth of the business and the gradual evolution of external values.

Merits of Stable Dividend Policy:

1) A stable dividend policy brings various benefits to the company and shareholders. For instance, it helps in long-term financing. If a company anticipates having to raise additional funds some time in the future, it must keep in mind that today's operations will be part of the record that investors would like to examine critically in deciding whether to buy the company's securities. A stable dividend policy, in that event, would make financing easier.

(2) It improves the company's credit and increases as well as stabilises the market value of securities.

(3) It creates shareholders' confidence in the management and reduces investors' uncertainty. Dividends have informational value; through dividends, a company can make statements about its expected earnings' growth to inform shareholders in order to create a favourable impression on them.

(4) The benefits outlined above would bring a great relief to the management the formulating long-term planning for the company.

From what has been said above, one should not get an erroneous impression that the stable dividend policy is without any drawbacks. The greatest danger associated with a stable dividend policy is that once it is adopted by the firm, it cannot be changed without seriously affecting the confidence of shareholders in the management and credit-worthiness of the company. It is, therefore, prudent that the dividend rate is fixed at a lower level so that it can be maintained even in years of reduced profits.

(b) Policy of no immediate dividends: Payment of dividends is desirable from the company's and shareholders' points of view, but it is not compulsory. The Board of Directors may decide to pay no dividend, even though the earnings are substantial and available for the purpose. A company following this policy may justify it under the following conditions:

(i) The company is new and growing.

(ii) The needed capital cannot be raised except at very high cost and earnings, therefore, must be ploughed back in the business.

(ii) The shareholders are willing to wait for a return on their investment and in the meantime are content to have their holdings appreciate in value (capital gains).

The no dividend policy must be used with great caution as it may cause dissatisfaction to shareholders because of non-payment of current dividends. After a period of no dividend while the surplus is increasing, it may be a good policy to issue bonus shares (stock dividend) so that the net worth of the company is not affected.

(c) Policy of regular and extra dividends: This policy carries out the intention of regular (stable) dividend rate, and at the same time allows shareholders to share in additional earnings through extra dividends. It is not an unusual practice for companies to pay extra year-end dividends if the results of business operations indicate their justifiability. In order to avoid any possible misunderstanding, it is always advisable to clearly

indicate to shareholders the amounts of regular and extra dividends. In future if extra dividends are not paid, then the shareholders would not get disillusioned with the company. Large companies usually number their dividends and label them as regular or extra.

(d) Policy of regular stock dividends: A stock dividend policy refers to the distribution of shares in lieu of (or in addition to) cash dividends (known as bonus shares in India) to the existing shareholders. Such a policy results in increasing constantly the number of outstanding shares of the company.

The policy to pay regular stock dividends is justified when:

(i) There are earnings available with the company but the need is to retain cash in the business.

(ii) Companies have modernisation and extension programmes and the need is to finance them immediately.

The policy of regular stock dividends is not generally regarded advisable. The policy can apply however only temporarily. The constant cutting up of the corporate ownership into a large number of shares may prove harmful in periods of reduced earnings. Also the value of shares may fall below a desirable range from the standpoint of later financing. Those shareholders who have a strong preference for cash dividends would feel totally disillusioned with the company.

(e) Policy of regular dividends and stock dividends: The company using this dividend policy pays the regular (stable) dividend in cash and the extra dividend in stock. The dividend policy is adopted when a company:

(i) wants to continue its records of regular cash payments

(ii) has reinvested earnings that it wants to capitalise; and

(iii) wants to give shareholders a share in the additional earnings but cannot afford to use up its cash.

These reasons have already been fully explained.

(f) Policy of irregular dividends: This policy is based upon an attitude that shareholders are entitled to as much dividends as the earnings and

the financial condition of the company warrant. It is entirely appropriate for a company that has highly unstable earnings to follow this policy of dividend payment. If this dividend policy is adopted by a company with stable earnings, it will have disastrous consequences for the company and shareholders.

FORMS OF DIVIDENDS

1. Annual or regular cash dividend: It is the dividend being paid annually by the company. It is also known as final dividend. When annual accounts of the company have been finalised and audited, the Directors recommend the rate of dividend which can be distributed from the profits of the company. When approved by AGM, it is paid by the company. It is generally paid in cash and as a percentage of the paid-up capital, e.g. 10% or 15% of the capital. Though in some cases, dividend per share can also be distributed.

2. Interim dividend: When companies have heavy earnings during a year and the directors wish to pay them to the shareholders but at the same time, they do not wish shareholders to regard the amount as a precedent for later years, they can distribute interim dividends. So, it is an extra dividend paid during the year. Such dividends are immediately paid after the recommendation of the board of directors, there being no need of approval of AGM. Interim dividends are also cash dividends.

3. Scrip dividends: Scrip dividends are used when earnings justify a dividend, but the company's cash position is temporarily weak. So, shareholders are issued transferable promissory notes, which may or may not be interest bearing. Depending upon its maturity, the scrip constitutes either a current or fixed liability. The use of scrip dividends is proper if the company has really earned a profit and has only to wait for the conversion of other current assets into cash in the course of operations. However, the Indian Companies Act does not allow such dividends.

4. Bond dividends: In rare instances, dividends are paid in bonds or notes that have a long enough term to fall beyond the current liability group.

Except that the date of payment is postponed, the effect is the same as that of paying dividends in scrip. The shareholders become secured creditors if the bond has a lien on assets.

5. Property dividends: Property dividends involve a payment in assets other than cash. Such a distribution may be made whenever there are assets that are no longer necessary in the operation of the business. The investment held by the company can also be distributed by the company in the form of property dividends.

However, it is important to note that only cash dividends and stock dividends (i.e., bonus shares) are permissible in India. Other types of dividends are not allowed. The Indian Companies Act, 1956 governs the declaration and payment of dividends in India.

6. Stock dividends: It is a form of dividend in which the surplus of a company is transferred to capital account and shareholders are given the dividend in the form of shares rather than cash Such shares are called Bonus Shares. This dividend is declared to only Equity Shareholders and it may take two forms:

(i) Making the partly paid equity shares fully paid up without asking for cash from the shareholders, or

(ii) Issuing and allotting shares to existing equity shareholders in a definite proportion out of profits (of surplus).

Thus, the shareholders receive stock or share certificate instead of the dividend. This process is also known as capitalisation of profits'. Thus stock dividend does not alter the cash position of the company. It serves to commit the retained earnings to the business as a part of its fixed capitalisation.

Advantages of Bonus Shares

Prima facie the bonus shares do not affect the wealth of the shareholders. In practice however, it carries certain advantages both to shareholders and the company.

Shareholders: The following are advantages of the bonus shares to shareholders. One of the advantages to shareholders in the receipt of bonus shares is the beneficial treatment of such dividends with regard to income tax. When a shareholder receives cash dividend from company, this is included in his ordinary income and taxed at ordinary income tax rate. But the receipt of bonus shares by the shareholder is not taxable as income. Further, the shareholder can sell the new shares received by way of bonus issue to satisfy his desire for income and pay capital gain tax, which are usually less than the income tax on the cash dividends. The shareholders could sell a few shares of his original holding to derive capital gains. But selling the original shares are considered as a sale of principal by some shareholders. They do not mind selling the shares received by way of the bonus shares as they consider it a windfall gain and not a part of the principal.

Indication of higher future profits: The issue of bonus shares is normally interpreted by shareholders as an indication of higher profitability. When the profits of a company do not rise, and it declares a bonus issue, the company will experience a dilution of earnings as a result of the additional shares outstanding. Since a dilution of earnings is not desirable, bonus shares are usually declared by directors only when they expect a rise in earnings to offset the additional outstanding shares. The bonus shares, thus, may convey some information which may have a favourable impact on the value of the shares. But it should be noticed that the impact on value is that of the growth expectation and not the bonus shares which simply conveys the information.

Future dividends may increase: If a company has been following a policy of paying a fixed amount of dividend per share and continues it after the declaration of the bonus issue, the total cash dividends of the shareholders will increase in future. For example, a company may be paying a Re. 1 per share dividend and pays 1:10 bonus shares with the announcement that the cash dividend per share will remain unchanged. If a shareholder originally held 100 shares, he will receive additional 10 shares. His total

cash dividend in future will be Rs. 110 (Rs. 1 x 110) instead of Rs. 100 (Rs. 1 x 100) received in the past. The increase in the shareholders cash dividend may have a favourable effect on the value of the share. It should however, be realised that the bonus issue per se has no effect on the value of the share.

Psychological value: The declaration of the bonus issue may have a favourable psychological effect on shareholders. The receipt of bonus shares gives them a chance to sell the shares to make capital gains without impairing their principal investment. They also associate it with the prosperity of the company. Because of these positive aspects of the bonus issue, it is usually received positively by the market. The sale of the shares, received by way of bonus shares, by some shareholders widens the distribution of the company's shares. This tends to increase the market interest in the company's shares, thus supporting or raising its market price.

Company: The bonus share is also advantageous to the company. The advantages are:

Conservation of cash: The declaration of a bonus issue allows the company to create opportunities within the company.

The company is, thus, able to retain earnings and at the same time satisfy the desires of shareholders to receive dividend. We have stated earlier that directors of a company must consider the financial needs of the company and the desires of shareholders while making the dividend decision. These two objectives are often in conflict and the use of bonus issue represents a compromise. But the receipt of bonus shares satisfies shareholders psychologically. Also their total cash dividend can increase in future, when cash dividend per share remains the same.

Only means to pay dividend under financial difficulty and contractual restrictions: In some situations, even if the company's intention is not to retain earnings, the bonus issue is the only means to pay dividends and

satisfy the desires of shareholders. When a company is facing a stringent cash situation, the only way to replace the cash dividend is the issue of bonus shares. The declaration of the bonus issue under such a situation should not convey a message of the company's profitability, but financial difficulty. The declaration of the bonus issue is also necessitated when there are restrictions to pay the cash dividend under loan agreements. Thus, under the situations of financial stringency or contractual constraints the bonus issue is meant to maintain the confidence of shareholders in the company.

More attractive share price: Sometimes the intention of a company in issuing bonus shares is to reduce the market price of the share and make it more attractive to investors. If the market price of a company's share is very high, it may not appeal to small investors. If the price could be brought down to a desired range, the trading activity would increase. Therefore, the bonus issue is used as a means to keep the market price of the share within a desired trading range.

Limitations of Bonus Shares

Bonus shares are considered valuable by most shareholders. But they fail to realise that the bonus shares do not affect their wealth and therefore, by itself it has no value for them. The declaration of bonus shares is a method of capitalising the past earnings of the shareholders. Thus, it is a formal way of recognising something (earnings) which the shareholders already own. It merely divides the ownership of the company into a large number of share certificates. Bonus shares represent simply a division of corporate pie into a large number of pieces. In fact, the bonus issue does not give any extra or special benefit to a shareholder. His proportionate ownership in the company does not change. As discussed in the preceding section, the chief advantage of the bonus share issue is that it has a favourable psychological impact on shareholders. The issue of bonus shares gives an indication of the company's growth to shareholders. Therefore, they welcome the distribution of bonus shares.

The disadvantage of bonus issues from the company's point of view is that they are more costly to administer than cash dividend. The bonus issue can be disadvantageous if the company declares periodic small bonus shares. The investment analysts do not adjust the earnings per share for small issues of bonus shares. Only the significant issues of bonus shares are adjusted by them. When the earnings per share are not adjusted, the measured growth in the earnings per share will be less than the true growth based on the adjusted earnings per share. As a result, the price-earnings ratio would be distorted downwards.

Conditions for the Issue of Bonus Shares

In India, bonus shares are issued in addition to, and not in lieu of, cash dividends. A company is not allowed to declare bonus shares unless partly paid-up shares have been converted into fully paid-up shares. Bonus shares are made out of share premium and free reserves which includes investment allowance reserves but excludes capital reserves on account of assets revaluation. In no time the amount of bonus issue should exceed the paid-up capital. A company can declare bonus shares once in a year. A resolution approving the proposal of the bonus issue, clearly indicating the rate of dividend payable on the increased capital should be passed by the company's shareholders. Company intending to issue bonus shares should not be in default of payments of statutory dues to employees and term loans to financial institutions.

Generally the maximum bonus share ratio is 1:1; that is, one bonus share for one fully paid-up share held by the existing shareholders.

LEGAL AND PROCEDURAL ASPECTS

Legal Aspects: The amount of dividend that can be legally distributed is governed by company law, judicial pronouncements in leading cases, and contractual restrictions. The important provisions of company law pertaining to dividends are described below.

1. Companies can pay only cash dividends (with the exception of bonus shares).

2. Dividends can be paid only out of the profits earned during the financial year after providing for depreciation and after transferring to reserves such percentage of profits as prescribed by law. The Companies (Transfer to Reserves) Rules, 1975, provide that before dividend declaration a percentage of profit as specified below should be transferred to the reserves of the company.

(a) where the dividend proposed exceeds 10 per cent but not 12.5 per cent of the paid-up capital, the amount to be transferred to the reserves shall not be less than 2.5 per cent of the current profits;

(b) where the dividend proposed exceeds 12.5 per cent but not 15 per cent, the amount to be transferred to reserves shall not be less than 5 per cent of the current profits;

(c) where the dividend proposed exceeds 15 per cent but not 20 per cent, the amount to be transferred to reserves shall not be less than 7.5 per cent of the current profits; and

(d) where the dividend proposed exceeds 20 per cent, the amount to be transferred to reserves shall not be less than 10 per cent.

3. Due to inadequacy or absence of profits in any year, dividend may be paid out of the accumulated profits of previous years. In this context, the following conditions, as stipulated by the Companies (Declaration of Dividend out of Reserves) Rules 1975, have to be satisfied:

(a) the rate of the dividend declared shall not exceed the average of the rate at which dividend was declared by it in 5 years immediately preceding that year or 10 per cent of its paid-up capital.

(b) the total amount to be drawn from the accumulated profits earned in previous years and transferred to the reserves shall not exceed an amount equal to one-tenth of the sum of its paid-up capital and free reserves and the amount so drawn shall first be utilised to set off the losses incurred in the financial year before any dividend in respect of preference or equity shares is declared, and

(c) Dividends cannot be declared for past years for which accounts have been closed.

Procedural Aspects

The important events and dates in the dividend payment procedure are:

1. Board resolution: The dividend decision is the prerogative of the board of directors. Hence the board of directors should in a formal meeting resolve to pay the dividend.

2. Shareholders' approval: The resolution of the board of directors to pay the dividend has to be approved by the shareholders in the annual general meeting.

3. Record date: The dividend is payable to shareholders whose names appear in the Register of Members as on the record date.

4. Dividend payment: Once a dividend declaration has been made, dividend warrants must be posted within 42 days. Within a period of 7 days, after the expiry of 42 days, unpaid dividends must be transferred to a special account opened with a scheduled bank.

QUESTIONS

1. Explain the significance of dividend decisions in financial management.
2. What are the different types of dividends that can be paid by a company. Explain in brief.
3. What are the advantages and disadvantages of stock dividend to the company and to the shareholders? Explain.
4. "A firm should follow a policy of very high dividend payout": Do you agree? Why or why not?
5. As a firm's financial manager, would you recommend to the board of directors that the firm adopt as policy a stable dividend payment per share or a stable payout ratio?
6. Explain the various external and internal factors which influence the dividend decision of a firm.
7. Describe in brief the various provisions of the Companies Act, 1956 governing the declaration and payment of dividend.

UNIT - VII

LESSON - 7.1

WORKING CAPITAL MANAGEMENT

Contents

- ☆ Introduction
- ☆ What is working capital?
- ☆ Significance of working capital management
- ☆ Classification of working capital
- ☆ Operating cycle concept
- ☆ Determinants of working capital
- ☆ Adequacy of working capital
- ☆ Techniques of forecasting working capital requirements
- ☆ Questions.

INTRODUCTION

In practice, a firm has also to employ short-term assets and short-run sources of financing. The management of such assets, described as working capital management or current assets management, is one of the most important aspects of the overall financial management. Technically, working capital management is an integral part of the overall financial management. To that extent, it is similar to the long-term decision-making process because both entail an analysis of the effect of risk and profitability.

The problems involved in the management of working capital differ from those in fixed assets. In the first place, fixed assets are acquired to be retained in the business over a period of time and yield returns over the life of the assets. Probably, the most notable feature of such assets, from the view-point of financial analysis, is the time dimension. The operational implication is that discounting and compounding techniques to adjust the value of benefits accruing from such assets over time play a

fairly significant role in financial management. In contrast, the stock-in-trade of working capital management, by definition is short-term assets which lose their identity fairly quickly, usually within a year. In the management of working capital, therefore, the time factor is not crucial as a decision-variable.

Yet another notable feature of short-term assets is the question of profitability versus liquidity and the related aspect of risk. If the size of such assets is large, the liquidity position would improve, but profitability would be adversely affected as funds will remain idle; conversely, if the holdings of such assets are relatively small, the overall profitability will no doubt increase, but it will have an adverse effect on the liquidity position and make the firm more risky. Working capital management should, therefore, aim at striking a balance such that there is an optimum amount of short-term assets.

WHAT IS WORKING CAPITAL?

Working Capital is the Capital required for running day to day operation of a business. It may be expressed as excess of Current Assets over Current Liabilities.

Current Assets are assets like Cash, Stock, Debtors or Short Term Investments which are either readily available cash or are convertible into cash within a relatively short time during the normal course of business.

Different elements of working capital may be summarized as:

1. Cash on hand and in the bank.
2. Easily convertible securities held for short term.
3. Raw Material stocks.
4. Work in progress stocks.
5. Finished goods stocks.
6. Sundry Debtors.

Less: Current Liabilities including trade creditors.

SIGNIFICANCE OF WORKING CAPITAL MANAGEMENT

Working capital management is a significant part of business decisions and is of major concern to the financial manager in as much as accomplishment of value maximization goal depends essentially on the present working capital decisions. Maintaining optimal level of working capital is the crux of the problem with which the financial manager is seriously concerned because the problem of trade-off between risk and return is involved. A firm is required to carry adequate amount of working capital so as to carry on the productive and distributive activities smoothly. Thus, holding adequate amount of raw materials in stock ensures uninterrupted production activity. Likewise, sufficient stock of finished goods has also to be maintained in anticipation of future demand and for this purpose the firm would need funds. Goods usually sold on credit do not turn into cash immediately. The firm will have to arrange for funds to finance accounts receivables for the period until they are collected. Alongside this, a minimum level of cash is required for the ordinary operations of the business opportunities and for absorbing shocks of business vicissitudes. However, these assets will have to be maintained at appropriate level because both surplus and shortage of working capital are detrimental to the financial health of the enterprise. The excess of current assets is a constraint to the all-out pursuit of earnings. Lesser the liquid resources held in the firm to satisfy operational requirements, the more can be invested in income-producing fixed assets. This does not imply that the firm should reduce the holdings of current assets even below the minimum required level because that would mean interrupted production and sales because of frequent stockouts and inability to sell goods on credit, to restrictive credit policy and loss of credit standing in the market owing to failure on the part of the firm to pay creditors in time. The financial manager is, therefore, in dilemma between liquidity and profitability. An astute financial manager has to manage working capital in such a way as to maximise profitability of the firm without impairing its liquidity. This calls for setting optimal level of working capital. Setting optimal level of working capital requires an exercise of determining that

level of current assets where total costs – cost of liquidity and cost of illiquidity – is minimum. This is why management of working capital calls for careful attention of the financial manager.

Working capital management is particularly important to the small firm. A small firm may reduce its fixed assets requirements by renting or leasing plant and equipment, but there is no way for the firm to avoid an investment in current assets. The financial manager should therefore, devote considerable time to manage the current assets. Further, owing to limited access to the capital market, the small firm has to rely heavily on trade credit and short-term bank loans. Both affect net working capital by increasing current liabilities.

CLASSIFICATION OF WORKING CAPITAL

Working capital can be classified on the basis of its composition. Thus, we can have *Gross Working Capital* comprising current assets and *Net Working Capital* representing current assets minus current liabilities. From the view of the financial manager this basis of classification is helpful since it categorises the various areas of financial responsibility. For instance, funds invested in cash, inventories and receivables require careful planning and control if the firm is to maximize its return on investment.

While the above classification is very significant to the financial management it is not completely adequate as it does not mention about time. This is an important variable influencing pattern of financing capital requirements. Using time as a basis, working capital may be categorized as *Permanent and Variable Working Capital.*

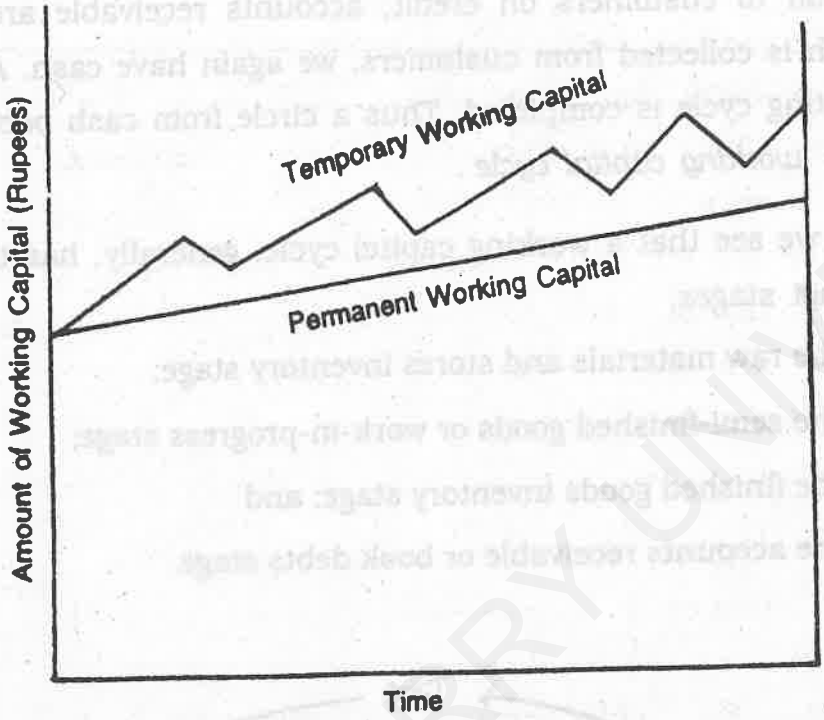
Permanent Working Capital represents current assets required on a continuous basis over the entire year. A manufacturing enterprise has to carry irreducible minimum amount of inventories necessary to ensure uninterrupted production and sales. Likewise, some amount of funds remain tied up in receivables when the firm sells goods on credit terms. Some amount of cash has also to be held by the firm so as to exploit business opportunities, meet operational requirements and to provide

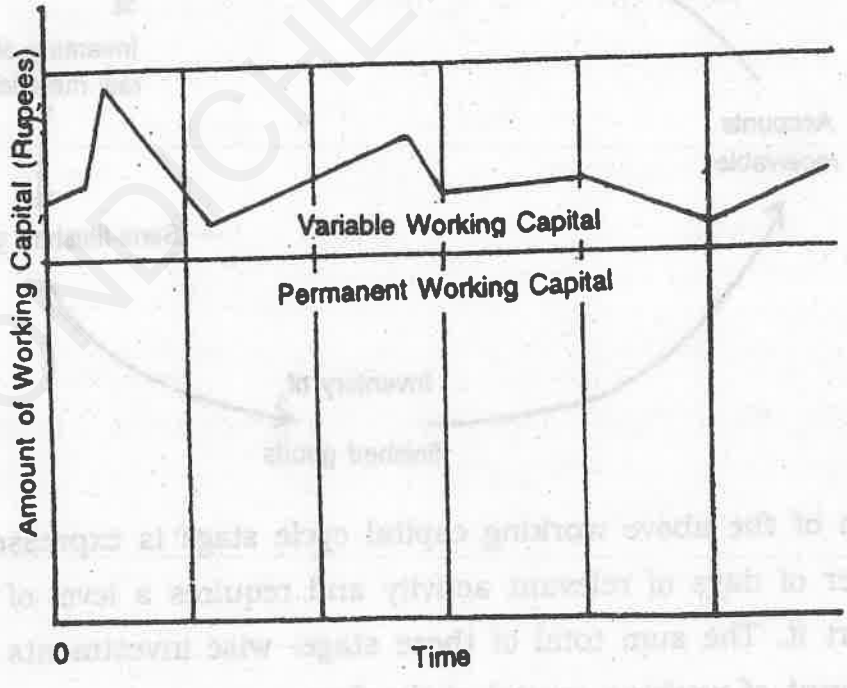
insurance against business fluctuations. Thus, minimum amount of current assets which the firm has to hold for all the time to come to carry on operations at any time is termed as permanent or regular working capital. It represents *'hard core'* of the working capital. Financing of this portion of working capital should be made on the line of fixed assets. However, permanent working capital changes constantly its form from one asset to another whereas fixed assets retain their form over a long period of time. Further, fund of value representing permanent working capital never leaves the business process and therefore, the suppliers should expect its return until the business ceases to exist. Finally, permanent working capital will tend to expand so long as the firm experiences growth in its operations.

Over the above permanent working capital, the firm may need additional current assets temporarily to satisfy seasonal/cyclical demands. Thus, for example, added inventory must be held to support the peak selling periods. Receivables increase following periods of high sales. Extra cash may be needed to pay for additional supplies following expansion in business activity. Similarly in period of dull business conditions when most of the produce remains in stock due to precipitous fall in demand, the company would require additional cash to tide over the crisis. Excess amount of working capital may be carried to face cut-throat competition or any other contingencies like strikes and lockouts.

The additional amount of working capital represents *Variable or Temporary working capital*, size of which depends upon changes in levels of production and sales resulting from changes in market conditions. Funds requirements for this purpose are of short duration.

Figure 1 and 1A depict graphically permanent and temporary working capital needs for stable and growing firms.





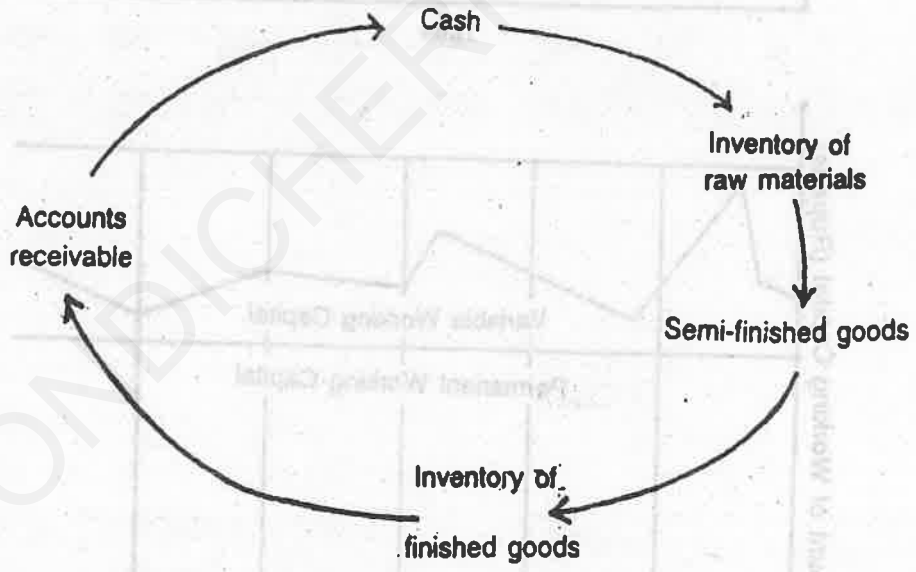
OPERATING CYCLE CONCEPT

The working capital cycle refers to the period that a business enterprise takes in converting cash back into cash. As an example, a manufacturing

firm uses cash to acquire inventory of materials that is converted into semi-finished goods and then into finished goods. When finished goods are disposed off to customers on credit, accounts receivable are generated. When cash is collected from customers, we again have cash. At this stage one operating cycle is completed. Thus a circle from cash back to cash is called the *'working capital cycle*.

Thus we see that a working capital cycle, generally, has the following four distinct stages:

1. The raw materials and stores inventory stage;
2. The semi-finished goods or work-in-progress stage;
3. The finished goods inventory stage; and
4. The accounts receivable or book debts stage.



Each of the above working capital cycle stage is expressed in terms of number of days of relevant activity and requires a level of investment to support it. The sum total of these stage- wise investments will be the total amount of working capital of the firm.

DETERMINANTS OF WORKING CAPITAL

A host of factors influencing the level of working capital needs of a firm can be categorised into two groups, viz., *internal factors* and *external factors.*

A. Internal Factors

1. Nature of business: Different industrial undertakings may have varying levels of working capital because of the differences in the nature of business and the technology of the industry in which a company operates. Concerns engaged in rendering public utility services require little amount of working capital but abundant amount of fixed assets, partly because of cash nature of their business and partly because of selling their services instead of products. No funds are tiedup in receivables and inventories. In a striking contrast to this, trading concerns need very little fixed assets but they have to invest large amount of funds in working capital since a large amount of funds are required for carrying stocks and for investing in receivables. Working capital requirements of manufacturing concerns lie between the above two extreme requirements of trading concerns and public utilities. Such concerns require large amount of working capital depending upon the total asset structure and other variables.

2. Size of business: Firm's size, either in assets or sales has an important role in its working capital needs. A small firm may employ additional current assets as a cushion against cash flow interruptions. Small firms having cash inflow from relatively fewer services are more affected by the defaults on the part of customers to pay in time. Larger firms with many sources of funds may require less working capital in relation to total assets or sales.

3. Firm's production policy: A firm following uniform production policy will have to pile stocks of materials during the off-season periods and thus incur greater inventory costs and risk. The effect of seasonal fluctuations upon working capital can be offset by pursuing the policy of adjusting production plan to seasonal changes. In this case, inventories are kept at

minimum levels but the production manager must shoulder the responsibility of constantly varying production schedules in accordance with the changing demand. Obviously, working capital needs of a firm with continuous production plans will be higher than the one with varying production plans.

4. Firm's credit policy: The credit policy of a firm also influences the magnitude of working capital. A firm following liberal credit policy and accordingly granting credit facilities to all customers without evaluating in detail their credit-worthiness will require plenty of funds to carry book-debts. If the firm has not been aggressive in collection of accounts, it will experience substantial defaults resulting in liquidity problem. On the contrary, the firm adopting strict credit policy and granting credit facilities to customers who enjoy high and unflinching credit standing will require less amount of working capital as the funds locked up in receivables will be released soon for further uses.

5. Access to money market: The working capital requirements of a firm are conditioned by the firm's access to different sources of money market. Thus, the firm with readily available credit from banks and trade credit facilities at liberal terms will be able to manage with less working capital than a firm without such facilities.

6. Growth and expansion of business: Working capital requirements of an enterprise tend to increase corresponding to growth in volume of sales. Although there is no definite relationship between the volume of a company's business and growth in its working capital, it is usually found in actual practice that a growing firm requires additional funds to acquire additional fixed assets so as to sustain its growing production and sales. Besides, additional current assets will be needed to support increased scale of operations. It can further be noted that a growing enterprise requires additional funds continuously to fulfil the increasing needs of the business.

7. Profit margin and dividend policy: Magnitude of working capital in a firm is dependent upon its profit margin and dividend policy. As a matter

of fact, a high net profit margin reduces the working capital requirements of the firm because it contributes towards the working capital pool. To the extent net profit has been earned in cash, it becomes a source of working capital. However, it should be noted that the whole of the profit earned is not available for working capital purposes. The availability of net profits for working capital purposes depends essentially upon the dividend policy pursued by the company.

Distribution of high proportion of profits in the form of cash dividend results in a drain on cash resources and thus reduces the company's working capital to that extent. Where the management follows conservative dividend policy and retains larger portion of net profits, the company's working capital position is strengthened.

8. Depreciation policy: The depreciation policy influences the level of working capital by affecting tax liability and retained earnings of the enterprise. Since depreciation is a tax deductible expense item, higher amount of depreciation results in lower tax liability and greater profits. Similarly, the amount of net profits will be less if higher amount of depreciation is charged. If the dividend policy is linked with net profits, the firm can pay less dividend by providing more depreciation. This will result in increased retained earnings and strengthen the firm's working capital position.

9. Operating efficiency of the firm: Operating efficiency of the firm results in optimum utilization of resources at minimum cost. If a firm successfully controls operating costs, it will be able to improve net profit margin which will, in turn, release greater funds for working capital purposes.

10. Co-ordination of activities in the firm: Where production and distribution activities are coordinated, pressure on working capital will be minimized. In the absence of coordination in production and distribution policies demand for working capital is increased.

B. External Factors

1. Business fluctuations: Business enterprises usually experience fluctuations in demand for their products and services because of changes in economic conditions. In view of this, working capital requirements of these enterprises are affected. Thus, in the event of economic prosperity, general demand for the goods and services tends to shoot up. To cope with increased demand and consequently increased production, the firm will require additional working capital. On the contrary, if the economy is caught in recession, the business enterprises will experience decline in sales. Consequently, production requirements will decrease with the result that working capital needs of these enterprises will tend to decline.

2. Technological developments: Technological developments in the area of production can have sharp effect on the need for working capital. If a firm switches over to a new manufacturing process and instals new equipments with which it is able to reduce the time-lag involved in converting raw materials into finished goods, permanent working capital requirements of the firm will decrease. If the new machine can utilize less expensive raw materials, the inventory needs may be reduced

3. Transport and communication developments: Where the means of transport and communication in a country are not well developed, industries may need additional funds to maintain big inventory of raw materials and other accessories which would otherwise not be needed where the transport and communication systems are highly developed.

4. Import policy: Import policy of the government may also have its bearing on the levels of working capital of the enterprises since they have to arrange funds for importing goods at specified times.

5. Taxation policy: Working capital needs of business enterprises are affected sharply by the taxation policy of the government. In the event of regressive taxation policy of the government, as it exists today in India, imposing heavy tax burdens on business enterprises, they are left with very little profits for distribution and retention purposes. Consequently,

they have to borrow additional funds to meet their increased working capital needs. Pressure on working capital is minimized particularly when liberal taxation policy is followed. This is why government in its bid to provide financial support to newly set up undertakings and priority sector organisations, announces from time to time tax concessions providing tax holidays, substantial tax rebates and tax deduction facilities.

ADEQUACY OF WORKING CAPITAL

The firm should maintain a sound working capital position. It should have adequate working capital to run its business. Both excessive as well as inadequate working capital positions are dangerous from the firm's point of view. Excessive working capital means idle funds which earn no profits for the firm. Paucity of working capital not only impairs a firm's profitability but also results in production interruptions and inefficiencies.

The dangers of excessive working capital are as follows:

* It results in unnecessary accumulation of inventories. Thus, chances of inventory mishandling, waste, theft and losses increase.
* It is an indication of defective credit policy and slack collection period. Consequently, higher incidence of bad debts results, which adversely affects profits.
* Excessive working capital makes management complacent which degenerates into managerial inefficiency.
* Tendencies of accumulating inventories to make speculative profits grow. This may tend to make dividend policy liberal and difficult to cope with in future when the firm is unable to make speculative profits.

Inadequate working capital is also bad and has the following dangers:

* It stagnates growth. It becomes difficult for the firm to undertake profitable projects due to non-availability of working capital funds.
* It becomes difficult to implement operating plans and achieve the firm's profit target.
* Operating inefficiencies creep in when it becomes difficult even to meet day-to-day commitments.

Fixed assets are not efficiently utilised due to the lack of working capital funds. Thus, the firm's profitability would deteriorate.

Paucity of working capital funds renders the firm unable to avail attractive credit opportunities etc.

The firm loses its reputation when it is not in a position to honour its short-term obligations. As a result, the firm faces tighter credit terms.

An enlightened management should, therefore, maintain a right amount of working capital on a continuous basis. Only then a proper functioning of the business operations will be ensured. Sound financial and statistical techniques, supported by judgment, should be used to predict the quantum of working capital needed at different time periods.

A firm's net working capital position is not only important as an index of liquidity but it is also used as a measure of the firm's risk. Risk in this regard means chances of the firm being unable to meet its obligation on the due date. Lender considers a positive net working Capital as a measure of safety. All other things being equal, the more the net working capital a firm has, the less likely that it will default in meeting its current financial obligations. Lenders such as commercial banks insist that the firm should maintain a minimum net working capital position.

TECHNIQUES OF FORECASTING WORKING CAPITAL REQUIREMENTS

After taking into consideration myriads of external and internal variables that influence working capital needs of the firm, the finance manager prepares a working capital forecast. In preparing such a forecast, first of all, an estimate of all the current assets should be made. Then, estimate of amount of raw materials and finished goods to be held in stock and amount of materials that will remain in process and outstanding receipts from different parties and other receipts will have to be made. This should be followed by estimate of current liabilities comprising outstanding payment of wages, stores, materials, rent, administrative expenses, and other expenses. Difference between the forecasted amount of current assets and current liabilities gives net working capital requirements of the firm.

To this amount, a flat percentage would be added by way of provision for contingencies.

The rationale behind making this provision lies in the fact that most of the figures required to build up a composite figure of working capital can only be guess estimates even with the provision for contingencies.

In preparing working capital forecast, the following information are required:

1. Costs to be defrayed on materials, wages and overheads.
2. Length of time during which raw materials are to remain in stock before they are put to production.
3. Length of the production cycle.
4. Length of sale cycle denoting the period of time finished products have to stay in the warehouse before sale.
5. Period of credit allowed to debtors.
6. Period of credit availed from creditors.
7. Time-lag involved in the payment of wages and overhead expenses.

The above method of forecasting the working capital needs is known as *'Cash Cost'* technique of forecasting. In this method all transactions are shown in this Working Capital forecast on cost basis.

There is another technique of forecasting working capital requirements and it is *'Balance Sheet Method'*. In the balance sheet method of forecasting, a forecast is made of the various assets and liabilities. Afterwards, the difference between the assets and liabilities is taken out. This difference will indicate the deficiency or surplus of cash.

The Working Capital forecast based on cash cost technique is likely to differ from the one determined on the balance sheet method. This is to be explained by the fact that the current assets shown in the balance sheet also indicate the amount which the firm is likely to realise sooner or later and this amount will be partly towards recovery of depreciation and the

other non-cash charges and partly towards profit. When the cash is realised, it is for the firm to decide upon its utilisation. It may be used for acquiring fixed assets or for redeeming liabilities, it is not at all necessary that the whole of the cash should be kept as a liquid asset.

We can illustrate the above techniques with the help of suitable examples.

ILLUSTRATION I

The management of East Coast Steels Private Limited desires to determine the quantum of working capital required to finance the programme formulated to be put into operation with effect from 1st April 1998.

The following percentages, which the various elements of cost bear to the selling price, have been extracted from the proforma cost sheet:

Materials	50%
Labour	20%
Overhead	10%

Production in 1997 was 2,00,000 units and it is proposed to maintain the same during 1998.

Following further particulars are available:

1. Raw materials are expected to remain in the stores for an average period of one month before issue to production.
2. Finished goods are to stay in the warehouse for two months on the average before being sold and sent to customers.
3. Each unit of production will be in process for one month on the average.
4. Credit allowed by suppliers form the date of delivery of materials is one month.
5. Debtors are allowed two months' credit from the date of the sale of the goods.

6. Selling price is Rs. 9 per unit.

7. Sales and production follow a consistent pattern.

The relevant items of the Balance Sheet are:

	Rs.
Paid-up share capital	20,00,000
6% Debentures	2,00,000
Fixed Assets as on 1st April, 1997	15,00,000

Prepare an estimate of the Working Capital requirements as well as projected Profit and Loss account and Balance Sheet of East Coast Steels Limited.

Solution:

Statement of Working Capital Requirements

Current Assets:		Rs.
1. Stock of Raw Materials (1 month)		75,000
2. Stock of Finished Goods (2 months)		
Materials 75,000 × 2 =	1,50,000	
Labour 30,000 × 2 =	60,000	
Overhead 15,000 × 2 =	30,000	2,40,000
3. Work-in-Progress (1 month)		
Materials 75,000		
Labour 30,000		
Overhead 15,000		1,20,000
4. Debtors (at cost equivalent for 2 months)		
Materials 75,000 × 2 =	1,50,000	
Labour 30,000 × 2 =	60,000	
Overhead 15,000 × 2 =	30,000	2,40,000
		6,75,000

Less Current Liabilities: Creditors (one month)	75,000
Net Working Capital Required	6,00,000

Projected Profit and Loss Account for the year ending 31st March 1998

	Rs.		Rs.
To materials consumed	9,00,000	By Cost of goods manufactured c/d	14,40,000
To Wages	3,60,000		
To Overheads	1,80,000		
	14,40,000		14,40,000
To Cost of goods manufactured	14,40,000	By Sales	18,00,000
To Gross Profit c/d	3,60,000		
	18,00,000		18,00,000
To Debenture's interest	12,000	By Gross Profit	3,60,000
To Net Profit	3,48,000		
	3,60,000		3,60,000

Notes:

1. Calculation of amount locked up in Materials, Labour and Overhead per month:

Sales for one month = Rs. 18,00,000 × 1/12 = 1,50,000

Materials cost for one month = 50% of Rs. 1,50,000 = Rs. 75,000

Labour cost for one month = 20% of Rs. 1,50,000 = Rs. 30,000

Overhead cost for one month = 10% of Rs. 1,50,000 = Rs. 15,000

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2. Profit locked up in closing debtors will not increase the amount of working capital needed to carry on the business.

Projected Balance Sheet, as on 31st March, 1998

Liabilities		Assets		Rs.
Share Capital issued. subscribed and paid up	20,00,000	Fixed Assets		15,00,000
		Working capital stocks:		
P/L a/c balance	3,48,000	Raw Materials	75,000	
6% Mortgage Debentures	2,00,000	Work in Progress	1,20,000	
		Finished Stock	2,40,000	4,35,000
		Debtors		2,40,000
		Cash at Bank (Balancing Figure) Less Creditors 75,000		3,73,000
	25,48,000			25,48,000

Note-1: The difference of Rs. 4,48,000 (Rs. 10,48,000 – Rs. 6,00,000) in the estimate of working capital requirements under the two methods can be reconciled as follows:

Working Capital as per projected balance sheet	10,48,000
Less Cash at Bank (being balancing figure) not considered in the former method	3,88,000
	6,60,000
Less excess of sales value of closing debtors and their cost equivalent because debtors have been taken at sales value in projected B/S (3,00,000 – 2,40,000)	
Estimated Working Capital requirement as per former method	60,000
	6,00,000

2. It is assumed that the interest on debentures has been paid and hence not shown in the projected B/S.
3. Balance Sheet has been prepared according to the form prescribed by law in order to clearly bring out the Working Capital position of the business for management.

QUESTIONS

1. Discuss the importance of working capital for a manufacturing concern.
2. Explain the various determinants of working capital of a concern.
3. What are the advantages of having sample working capital funds?
4. Differentiate between fixed working capital and variable working capital.
5. Discuss in detail the various techniques of estimating working capital requirements of a firm.

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LESSON – 7.2

FINANCING OF WORKING CAPITAL

Contents

- ☆ Sources of Financing working capital
- ☆ Different approaches to financing of working capital
- ☆ Working capital control and Banking policy
  - (a) Dehejia Committee Report
  - (b) Tandon Committee Report
  - (c) Chore Committee Report
  - (d) Marathe Committee Report
  - (e) Chakravarthi Committee Report
- ☆ Questions

SOURCES OF FINANCING WORKING CAPITAL

A firm can adopt different financing policies vis-a-vis current assets. Three types of financing may be distinguished:

(a) long-term

(b) short-term

(c) spontaneous financing

(a) Long-term: Important sources of long-term financing are shares, debentures, preference shares, retained earnings and long-term debt from financial institutions.

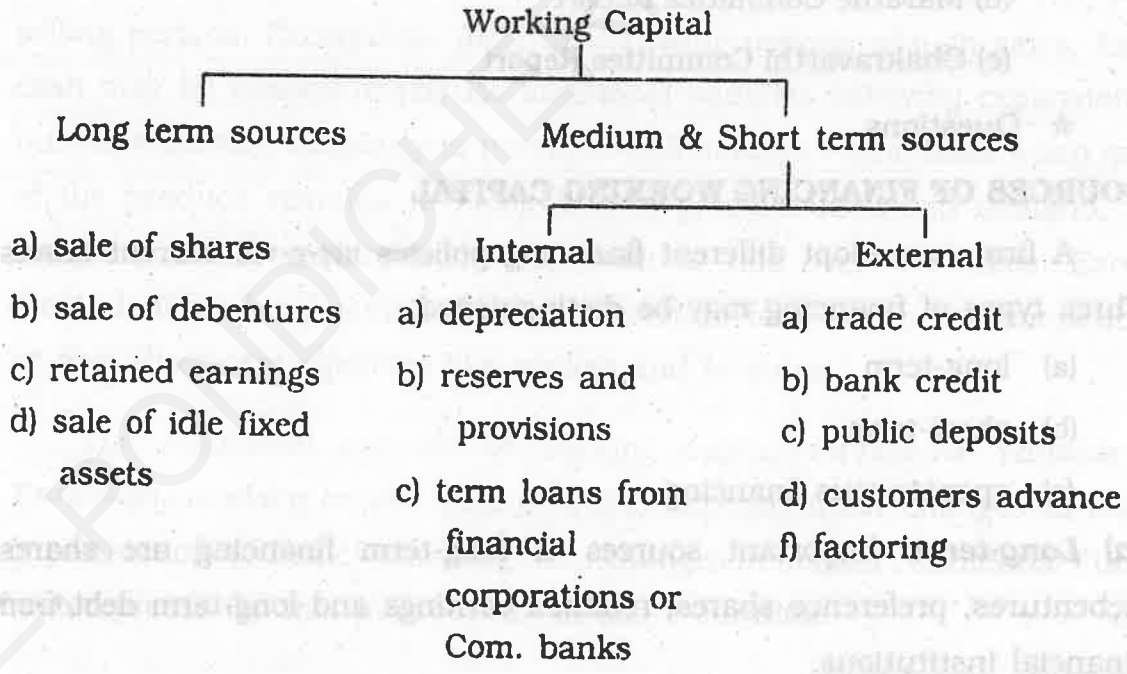
(b) Short-term: Short-term financing refers to the sources of short-term debt from financial institutions. Short-term financing refers to the source of short-term credit that the firm must arrange in advance. These sources include short-term bank loans, commercial papers, factoring receivables,

and public deposits. Commercial papers and factoring are just taking roots in India.

(c) Spontaneous financing: Spontaneous financing refers to the automatic sources of short-term funds arising in the normal course of business. The major sources of such financing are trade credit (creditors and bills payable) and outstanding expenses. Spontaneous sources of finances are cost free. Therefore, a firm would like to finance its current assets with spontaneous sources as much as possible. Every firm is expected to utilise spontaneous sources to the fullest extent. Thus, the choice of financing current assets (not financed with spontaneous sources) is between short-term versus long-term financing.

Sources of Working Capital

The following is a snapshot of various sources of working capital available to a concern:



The long term working capital can be conveniently financed by

(a) owner's equity e.g. shares and retained earnings,

(b) lenders' equity e.g., debentures and

(c) fixed assets, depreciation on fixed assets etc.

This capital can be preferably obtained from owners' equity as they do not carry with them any fixed charges in the form of interest or dividend and so do not throw any burden on the company.

Intermediate working capital funds are ordinarily raised for a period varying from 3 to 7 years through loans which are repayable in instalments e.g., term loans from the commercial banks or from finance corporations. Short term working capital funds can be obtained for financing day-to-day business requirements through trade credit, bank credit, discounting bills and factoring of account receivables.

DIFFERENT APPROACHES TO FINANCING OF WORKING CAPITAL

Depending on the mix of short and long-term financing, the approaches followed by a company may be referred to as

1. Matching approach
2. Conservative approach
3. Aggressive approach

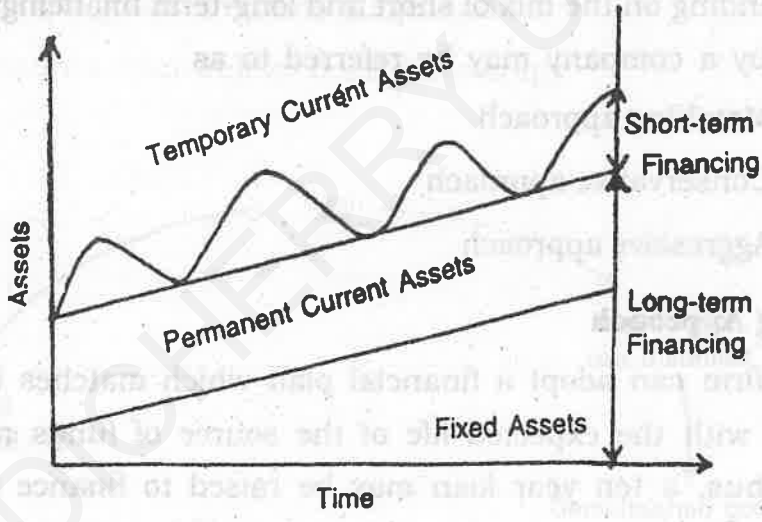
Matching Approach

The firm can adopt a financial plan which matches the expected life of assets with the expected life of the source of funds raised to finance assets. Thus, a ten year loan may be raised to finance a plant with an expected life of ten-years; stock of goods to be sold in thirty days may be financed with a thirty-day bank loan and so on. The justification for the exact matching is that, since the purpose of financing is to pay for assets, the source of financing and the assets should be relinquished simultaneously. Using the long-term financing for short-term assets is expensive as funds will not be utilised for the full period. Similarly, financing long-term assets with short-term financing is costly as well as inconvenient as arrangement for the new short-term financing will have to be made on a continuing basis.

When the firm follows matching approach (also known as hedging approach), long-term financing will be used to finance fixed assets and

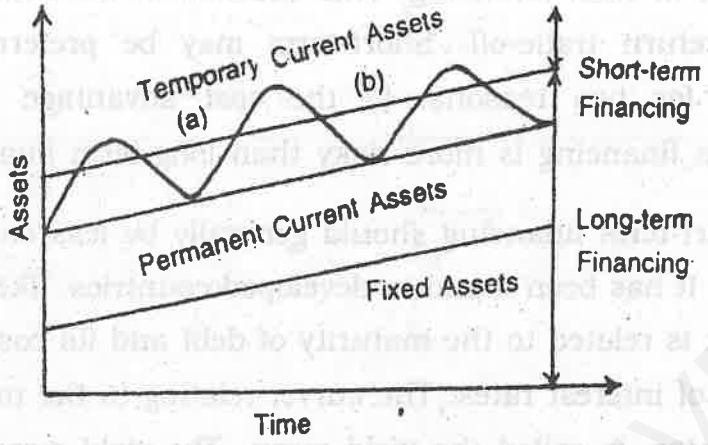
permanent current assets and short-term financing to finance temporary or variable current assets. However, it should be realised that exact matching is not possible because of the uncertainty about the expected lives of assets.

The firm's fixed assets and permanent assets are financed with long-term funds and as the level of these assets increases, the long-term financing level also increases. The temporary or variable current assets are financed with short-term funds and as their level increases, the level of short-term financing also increases. Under matching plan, no short-term financing will be used if the firm has fixed current assets need only



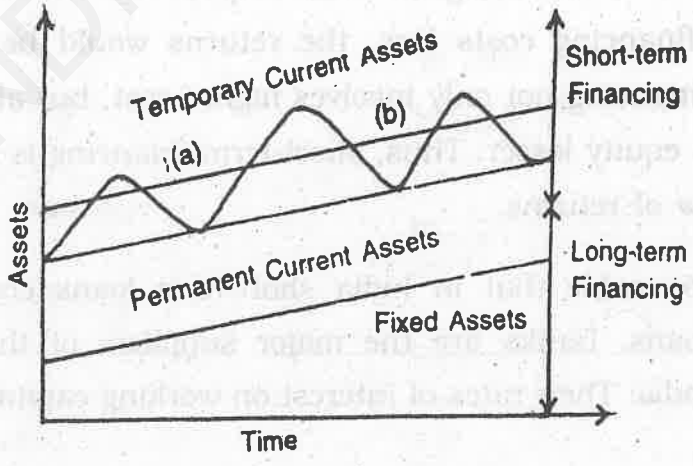
Conservative Approach

A firm may adopt a conservative approach in financing its current assets. The financing policy of a firm is said to be conservative when it depends more on long term funds for financing needs. Under a conservative plan, the firm finances its permanent assets and also a part of temporary current assets with long-term financing. In the periods when the firm has no need for temporary current assets, the idle long-term funds can be invested in the tradeable securities to conserve liquidity. The conservative plan relies heavily on long-term financing and, therefore, the firm has less risk of facing the problem of shortage of funds. The conservative financing policy is shown below:



Aggressive Approach

A firm may be aggressive in financing its assets. An aggressive policy is said to be followed by the firm when it uses more short-term financing than warranted by the matching plan. Under an aggressive policy, the firm finances a part of its permanent current assets with short-term financing. Some extremely aggressive firms may even finance a part of their assets with short-term financing. The relatively more use of short-term financing makes the firm more risky. The aggressive approach to financing is illustrated below:



Short-term Vs Long-term Financing

The Firm should first decide whether it should use the short-term financing. If short-term financing has to be used, the firm must determine

its portion in total financing. This decision of the firm will be guided by the risk-return trade-off. Short-term may be preferred over long-term financing for two reasons: (i) the cost advantage and (ii) flexibility. Short-term financing is more risky than long-term financing.

Cost: Short-term financing should generally be less costly than long-term financing. It has been found in developed countries, like the USA, that rate of interest is related to the maturity of debt and its cost is called the term structure of interest rates. The curve, relating to the maturity of debt and interest rates, is called the yield curve. The yield curve may assume any shape, but it is generally sloping upward. The figure indicates that more the maturity, greater the interest rate.

The justification for the higher rate cost of long-term financing can be found in the liquidity preference theory. This theory says that since lenders are risk averse, and risk generally increases with length of lending time (because it is more difficult to forecast the more distant future), most lenders would prefer to make short-term loans. The only way to induce these lenders to lend for the longer periods is to offer them higher rates of interest.

The cost of financing has an impact on the firm's returns. As short-term financing costs less, the returns would be relatively higher. Long-term financing not only involves higher cost, but also makes the rate of return on equity lesser. Thus, short-term financing is desirable from the point of view of returns.

It is noticeable that in India short-term loans cost more than the long-term loans. Banks are the major suppliers of the working capital finance in India. Their rates of interest on working capital finance are quite high.

WORKING CAPITAL CONTROL AND BANKING POLICY

In recent years the availability of bank credit to industry has been the subject-matter of regulation and control, the idea being to secure alignment

of bank credit with planning priorities and ensure its equitable distribution to various sectors of the Indian economy. The following committee reports are of special significance in this respect.

Dehejia Committee Report

A study group under the chairmanship of V.T. Dehejia was constituted in 1968 by the National Credit Council to examine the extent to which credit needs of Industry and Trade were inflated and to suggest ways and means of curbing this phenomenon.

Findings:

To examine whether the credit needs of industry were inflated, the Dehejia Committee, inter alia, analysed

(i) the relative growth rates of short-term trade credit and the value of the Industrial production;

(ii) the relative growth rates of short-term trade credit and inventories with industry and trade;

(iii) the diversion of short-term credit for assets, for fixed assets acquisition and for loans and investments;

(iv) the incidence of multiple financing;

(v) the elongation of the credit period.

The major findings of the Dehejia Committee were:

(i) Bank credit to industry grew at a higher rate than the rise in industrial output. For example, between 1961-62 and 1966-67, short-term bank credit to industry increased by 130 per cent, whereas the rise in the value of the inventories with industry was much lower.

(ii) Banks, in general, related credit limits to the security provided by the borrower without properly assessing their needs, based on the projected financial requirements.

(iii) Short-term bank credit was diverted to some extent for acquiring fixed assets and for other purposes.

(iv) The prevailing lending system facilitated industrial units to rely on short-term bank credit to finance no-current assets.

Suggestions:

The principal suggestions made by the Dehejia Committee were as follows:

1. Credit applications should be appraised on the basis of the financial situation, current and projected, as reflected in the cash flow analysis and forecasts provided by the borrowers.
2. Cash credit accounts should be segregated into two components:

   (i) The hard core component representing the minimum level of the current assets required for maintaining the given level of the production, and

   (ii) the strictly short-term component representing the fluctuating part of the account.
3. To eliminate multiple financing, a customer should be required to deal with only one bank. If the credit requirement of a customer is high, a 'consortium' arrangement should be adopted.
4. The trade credit period should normally not exceed 60 days; in special cases it may go upto 160 days.
5. To check the tendency to seek more than required credit limit, a commitment charge should be levied with a provision to impose a minimum interest charge.
6. Commercial banks, industry, and trade should promote the practice of issuing bills as this strengthens the financial discipline of the purchaser and also helps the supplier (or producer) to plan his financial commitments more realistically.
7. Proper attention should be paid to the question of adequacy or otherwise of inventories held by the various industries, and, the scope for minimising the stocks required by the industry must be examined.

Tandom Committee

In July, 1974, RBI appointed a committee under the chairmanship of Sri Bakash Tandon to frame necessary guidelines on bank credit particularly the following:

(a) Guidelines for commercial banks for the safety of the fund vis-a-vis supervise credit for optimum end use of funds, to develop an information base required by the banks periodically from borrowers and also by RBI on such lending banks.

(b) To suggest inventory norms for different industries.

(c) To suggest sources for financing the minimum working capital requirements.

(d) To suggest methods based on which future cash credit norms will be guided.

(e) To suggest/recommend any other related matters.

The committee went through the problems in detail and recommended accordingly. Some of the recommendations were far-reaching and most of the recommendations were accepted by RBI in 1975 and banks were advised to follow them.

The committee analysed the inventory of different companies and classified the inventory as follows:

(a) Flabby inventory arising out of poor working capital management and inefficient distribution.

(b) Stock of raw materials and finished goods built up by units for realising stock profits.

(c) Safety stock built up as a hedge or insurance against unforeseen increase in demand and to cope with failure to provide supplies in time.

(d) Normal inventory which are maintained for carrying out day-to-day production and are not influenced by any of the factors mentioned above.

To suggest normal level of inventory, the committee gave guidelines to 15 different kinds of industries.

The Committee suggested deviations of norms in respect of inventory in certain circumstances.

Committee's recommendation on lending (working capital):

The committee suggested three methods for lending:

Method I: 25% of net working capital should be funded by the borrower from owned fund and long-term liabilities.

Method II: 25% of all current assets should be funded by the borrower from owned fund and long-term liabilities.

Method III: The borrower should fund current assets which are permanently required along with 25% contribution of balance current assets.

In all three cases, balance working capital will be financed by the bank.

The interpretation of the three methods have been given in the form of illustrations.

Illustrations:

Current liabilities		Current Assets	
Sundry creditors	400	Raw materials	400
Other current liabilities	100	Work in progress	250
Bank borrowings	500	Finished goods	180
		Sundry debtors	250
		Other current assets	50
	1000		1130

Thus current assets = 1130, current Liabilities other than Bank borrowings = 500.

Method I

(a)	Total Current assets	1130
(b)	Less other current liabilities	500
(c)	Working Capital gap	630
(d)	Less: 25% margin on working capital gap (to be funded from long-term sources)	157
(e)	Maximum permissible Bank Finance (c–d)	473
(f)	Excess borrowing (Bank Borrowing –e) i.e. 500–473)	27

Method II

(a)	Total Current Assets	1130
(b)	Less 25% margin on (a) to be funded from long-term sources	283
(c)	Less other current liabilities	847
(d)	Maximum permissible Bank Finance	500
(e)	Excess Borrowings	347
	(Bank Borrowings –d i.e 500-347)	153

Method III

(a)	Total current assets	1130
(b)	Less: Permissible Current Assets or Core Current Assets (say) to be funded from long-term sources	250
(c)	Effective current assets for this purpose	880
(d)	Less 25% of (c)	220
(e)	Less other current liabilities	660
(f)	Maximum permissible Bank Finance	500
(g)	Excess Borrowings (Bank Borrowings–f i.e. 500-160)	160
		340

It may be noted that demand from borrower for long term funds is increasing as we go from Method I to Method II and to Method III. It is

157, 283 and 470 (250+220) respectively in Method I, Method II and Method III.

Chore Committee

Reserve Bank in 1979 appointed Chore Committee to find out and review,

(1) The Cash Credit operation particularly with reference to vacuum created between credit limits as sanctioned and credit limit as utilised.

(2) To recommend subsequently an amendment of the existing system of Cash credit over and above those suggested by Tandon Committee so that a better and balanced credit policy can be introduced for utilisation of credit facilities in more productive ways.

Recommendations

(a) Instead of Cash credit facilities above the whole working capital facility should be corroborated by Cash Credit, loans and bills facilities taken together.

(b) For continuous assessment of present status for all working capital loan as sanctioned of Rs.10 lakhs and above (whether disbursed or not) and for assessment of their future requirement, all concerned loan limits as above must be put to scrutiny annually.

(c) Those who are sanctioned working capital limit of Rs.50 lakhs and above will have to submit to bank their projected requirement of working capital for next quarter in Form - I prior to ensueing quarter. Similarly, Form II will have to be submitted to banks within six weeks of the completion of a particular quarter detailing the actual performance of the previous quarter. Subsequently, banks compare the projections given in the Form-I with actual performance given in Form-II to find out the quality of borrower. The bank, based on such analysis, will be able to bring better discipline among borrowers and will control the credit sanctioned accordingly. Besides, another recommendation was to ensure submission by borrowers Form - III

detailing half yearly actual profitability statement along with Fund Flow statement within two months of the completion of correspon ling half year.

(d) All the borrowers enjoying working capital credit limit of Rs.50 lakhs and above will have to bring gradually additional contribution based on the 2nd method of lending as prescribed by the Tandon Committee.

(e) In case borrowers fail to bring additional contribution immediately, a Working Capital Term Loan will have to be sanctioned to such borrowers for meeting the above guidelines at an enhanced rate by 1% (discretionary) over the rate of interest of Cash Credit.

(f) Due cognizance should be given for fixing separate credit limits during peak level and normal non-peak level to cater to the varied needs of industries.

(g) Though normally no adhochism should be encouraged even for short period, however in extra-ordinary situations such sanctions may be allowed on an enhanced interest rate of 1% over normal rate.

(h) Drawer bill scheme may be allowed to operate as under:

(a) when the vendor will draw bill on Purchaser's banker so that on acceptance the vendor can discount the same from own banker,

(b) a system when purchaser's banker will discount bills drawn by vendor.

Marathe Committee

In 1982 the Reserve Bank of India appointed a committee under the chairmanship of Marathe to review the working of the Credit Authorisation Scheme. Before discussing the recommendations of the Marathe Committee, let us look into the background of the Credit Authorisation Scheme (CAS, hereafter).

Background of the CAS: The CAS was introduced in November 1965 by RBI to regulate the end use of credit. Under the CAS all scheduled commercial banks are required to obtain the prior authorisation of RBI for

sanctioning credit limits (including bill discounting limit but excluding letters of credit and guarantee limits) of Rs.1 crore or more. The minimum limit was raised subsequently on various occasions and presently it stands at Rs. 6 crores.

In 1978 the objectives of the CAS were amplified and redefined as follows:

1. To ensure that additional bank credit is in conformity with the approved purposes and priorities and that the bigger borrowers do not pre-empt scarce resources.
2. To enforce financial discipline on the large borrowers where necessary, on uniform principles.
3. Where a borrower is financed by more than one bank, to ensure that the customer's proposal is assessed in the light of the information available with all the banks.
4. To bring about information in the techniques of credit appraisal by banks and their systems of follow up.

Recommendations: The Marathe Committee which was asked to examine the CAS from the point of view of operational process stressed the following:

(i) The CAS should not be looked upon as a mere regulatory measure which is confined to large borrowers.

(ii) The basic purpose of the CAS is to ensure the following of orderly management and improve the quality of bank lending so that all borrowings, whether large or small are in conformity with the policies and priorities laid down by the Central Banking Authority.

(iii) If the CAS scrutiny has to be determined to a certain segment of the borrowers, it is not only because of administrative limitations or convenience; and it should not imply that there are to be different criteria for lending to the borrowers above the cut-off point as compared to those who do not come within the purview of the CAS.

(iv) It is not possible to avoid delays or improve quality of lending merely by concentrating on a single point. The borrowers have to do their bit

by providing all the necessary and relevant information in time and in adequate detail.

(v) The long time taken by commercial banks in processing applications has to be reduced by suitable organisational changes. Similarly the time taken for scrutiny in the Reserve Bank of India also requires attention.

The principal recommendations of the Marathe Committee was to provide incentive to the borrowers to comply with all the requirements of the CAS and to improve the quality of credit appraisal in the banks. It recommended that commercial banks be given discretion to deploy credit in their in CAS cases where the following requirements are fulfilled, without the prior authorisation of RBI:

1. The estimates/projections in regard to production, sales, chargeable current assets other current assets, current liabilities (other than bank borrowing) and net working capital are reasonable in terms of past trends during the future projected period.
2. The classification of assets and liabilities as 'current' and 'non-current' is in conformity with the guidelines issued by the RBI.
3. The projected current ratio is not below 1.33:1 (except for exempted categories) and slip back in it, if any, from higher level on account of permissible activities indicated by the RBI and not due to any diversion of funds outside the company.
4. The borrower has been submitting quarterly operating statements for the past 6 months within the stipulated time and undertakes to do so in future also.
5. The borrower undertakes to submit his annual accounts promptly and whether the bank borrower needs enhancement in credit facilities or not.

Chakravathy Committee

A high-powered committee under the chairmanship of Sukhamoy Chakravathy was appointed by the Reserve Bank of India to review the

working of the monetary system of India. In its report, submitted in April 1985, the committee examined the monetary system in India and offered wide-ranging suggestions for its improvement. In respect of finance for working capital, the committee made two major recommendations:

Penal Interest for Delayed Payments: The Committee observed that delayed payments by public sector units, some big private sector units, and government departments continues unabated. To check this the committee has suggested that the government must insist that all public sector units, large private sector units, and government departments in their purchase contracts with suppliers must include a penal interest payment clause for payments delayed beyond a pre-specified period, say 4 months. The penal rate of interest may be fixed at two percentage points higher than the basic minimum lending rate of the supplier's banker.

Segregation of credit limit under three different heads: The total credit limit to be sanctioned to a borrower should be considered under three heads:

(a) Cash credit I to cover supplies to the government.

(b) Cash Credit II to cover special circumstances or contingencies.

(c) Normal working capital limit to cover the balance of the credit facilities.

The committee proposed the following interest rate for assistance under various heads:

Cash Credit I : Basic (minimum) lending rate of the bank

Cash Credit II : Maximum prevailing lending rate of the bank

Normal working capital limit:

1.	Loan Portion	:	A rate that may vary between the basic (minimum) and the maximum lending rate of the bank
2.	Bill Finance Limits	:	2 per cent below the basic (minimum) lending rate of the bank

3. Cash Credit Portion : Maximum prevailing lending rate of the bank

QUESTIONS

1. What are the different sources of working capital finance? Explain.
2. Critically examine different approaches to financing working capital requirements.
3. Explain risk-return trade-off of current assets financing.
4. What were the major findings and suggestions of the Dehejia Committee?
5. What were the terms of reference for the Tandon Committee?
6. Discuss the methods suggested by the Tandon Committee for determining the maximum permissible amount of bank finance.
7. What were the suggestions of the Tandon Committee with respect to
   (i) Style of lending and
   (ii) Information and reporting system.
8. Discuss the important recommendations of the Chore Committee?
9. What were the recommendations of the Marathe Committee with respect to the credit authorisation scheme?
10. Discuss the recommendations of the Chakravathy Committee in respect of bank finance for working capital.

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UNIT – VIII

LESSON – 8.1

CASH MANAGEMENT

Contents

- ☆ Introduction
- ☆ Motives for holding Cash
- ☆ Cash Budgeting
- ☆ Long-term cash forecasting
- ☆ Monitoring collections and disbursements
- ☆ Questions

INTRODUCTION

Cash is a strange current asset essential for the successful operation of the product cycle. A firm seeks to receive cash in shortest possible time but does not retain it for any longer period because that will entail additional cost to the firm. Adequate cash enables the firm to pay trade bills readily and take advantage of trade discount. If, for instance, terms of trade provide that extra discount @ 2 per cent will be given to the buyer paying the bill in 10 days, otherwise full payment will be required in 30 days in any event (alternatively, it may be expressed as 2/10, net 30). Failure to pay within 10 days means foregoing the discount and paying additional 2 per cent for every 20 day period. Thus, if for every 20-days, additional 2 per cent is paid, the firm is required to pay extra 36 per cent in a year (360 days/20 days = 18 x 2 per cent = 36 per cent). Besides, ample cash is helpful to satisfy unexpected adversities and useful to exploit favourable opportunities that may come along from time to time. Furthermore, Credit standing of the firm with sufficient stock of cash is strengthened. A strong credit position of the firm helps it to secure from

banks and other sources generous amount of loans on softer terms and to procure supplies on easy terms.

However, keeping any excess stock of cash is largely a wastage of resource because it is a non-carning asset and the same could be invested elsewhere to earn some income. This means that the firm will be failing to maximise its profits for the sake of high liquidity. If, on the other hand, more and more cash is put to profitable use, the company's liquidity will be impaired causing the firm to sacrifice benefits of cash discount, liberal lending facilities from financial institutions and easy supplies from reputed suppliers. Thus, the dilemma between liquidity and profitability sets in. A shrewd finance manager is one who strikes a golden mean between these two conflicting goals of the firm by managing cash flows into the company, cash flows out of the company and intra-company cash flows as well as cash balances held by the company.

If cash inflows and cash outflows were perfectly synchronized and could be forecast with certainty, a company would need no cash balances. Since such an ideal situation does not exist at all, the finance manager must develop suitable strategies for cash management.

MOTIVES FOR HOLDING CASH

The firm's need to hold cash may be attributed to the following three motives:

1. The transactions motive
2. The precautionary motive
3. The speculative motive.

Transactions Motive

The transactions motive requires a firm to hold cash to conduct its business in the ordinary course. The firm needs cash primarily to make payments for purchases, wages and salaries, other operating expenses, taxes, dividends etc. The need to hold cash would not arise if there were perfect synchronisation between cash receipts and cash payments, i.e.,

enough cash is received when the payment has to be made. But cash receipts and payments are not perfectly synchronised. For those periods, when cash payments exceed cash receipts, the firm should maintain some cash balance to be able to make required payments. For transactions purpose, a firm may invest its cash in marketable securities. Usually, the firm will purchase securities whose maturity corresponds with some anticipated payments, such as dividends, or taxes in future. Notice that the transaction motive mainly refers to holding cash to meet anticipated payments whose timing is not perfectly matched with cash receipts.

Precautionary Motive

The precautionary motive is the need to hold cash to meet contingencies in future. It provides a cushion or buffer to withstand some unexpected emergency. The precautionary amount of cash depends upon the predictability of cash flows. If cash flows can be predicted with accuracy, less cash will be maintained for an emergency. The amount of precautionary cash is also influenced by the firm's ability to borrow at short notice when the need arises. Stronger the ability of the firm to borrow at short notice lesser the need for precautionary balance. The precautionary balance may be kept in cash and marketable securities. Marketable securities play an important role here. The amount of cash set aside for precautionary reasons is not expected to earn anything; therefore, the firm should attempt to earn some profit on it. Such funds should be invested in high-liquid and low-risk marketable securities. Precautionary balance should, thus, be held more in marketable securities and relatively less in cash.

Speculative Motive

The speculative motive relates to the holding of cash for investing in profit-making opportunities as and when they arise. The opportunity to make profit may arise when the security prices change. The firm will hold cash, when it is expected that interest rates will rise and security prices will fall. Securities can be purchased when the interest rate is expected to fall; the firm will benefit by the subsequent fall in interest rates and

increase in security prices. The firm may also speculate on materials prices. If it is expected that materials prices will fall, the firm can postpone materials purchasing and make purchases in future when prices actually fall. Some firms may hold cash for speculative purposes. By and large, business firms do not engage in speculations. Thus, the primary motives to hold cash and marketable securities are: the transactions and the precautionary motives.

The firm must decide the quantum of transactions and precautionary balances to be held. This depends upon the following factors:

1. The expected cash inflows and outflows based on the cash budget and forecasts, encompassing long and short-range cash needs of the firm.
2. The degree of deviation between the expected and actual net cash flows.
3. The maturity structure of the firm's liabilities.
4. The firm's ability to borrow at short notice in the event of any emergency.
5. The philosophy of management regarding liquidity and risk of insolvency.
6. The efficient planning and control of cash.

All these factors, analysed together, will determine the appropriate level of the transactions and precautionary balance.

CASH BUDGETING

Cash Budgeting or short-term cash forecasting is the principal tool of cash management. Cash budgets, routinely prepared by the business firm, are helpful in:

(i) estimating cash requirement

(ii) planning short-term financing

(iii) scheduling payments in connection with capital expenditure projects

(iv) planning purchases of materials

(v) developing credit policies

(vi) checking the accuracy of long-term forecasts.

Firms use multiple short-term forecasts, of varying length and detail, suited to meet different needs. The commonly used designs for short term cash forecasts are:

(i) one year divided into quarters or months

(ii) one quarter divided into months

(iii) one month divided into weeks.

A firm, hard pressed with liquidity crunch, may even prepare a weekly cash forecast divided into days. The point to be emphasised here is that these multiple formats serve different purposes and should not be regarded as mutually exclusive.

The principal method of short-term cash forecasting is the receipts and payments method. Sometimes the adjusted net income method is used though this method is employed mainly for long-term cash forecasting.

Receipts and Payments Method

The cash budget prepared under this method, shows the timing and magnitude of expected cash receipts and payments over the forecast period. It includes all expected receipts and payments irrespective of how they are classified in accounting.

LONG-TERM CASH FORECASTING

The dividing line between short-term cash forecasts and long-term cash forecasts is usually one year, though this distinction is somewhat arbitrary. Long-term cash forecasts are generally prepared for a period ranging from two to five years and serve to provide a broad brush picture of a firm's financing needs and availability of investible surplus in future. Such forecasts are helpful in planning capital investment outlays and long-term financing.

While the receipts and disbursements methods can theoretically be used for preparing the long-term cash forecasts, the method that is generally used for this purpose is the adjusted net income method.

Adjusted Net Income Method

This method of cash forecasting, resembling the funds flow statement, seeks to estimate the firm's need for cash at some future date and indicate whether this need can be met from internal sources or not. A format for preparing the adjusted net income forecast is derived mainly from the budgets prepared by the firm.

Table 1: A format for the adjusted Net Income Method

	19×0	19×1	19×2	19×3	19×4
Sources:					
Net Income after taxes					
Non-cash Charges (Depreciation, Amortisation, etc.)					
Increase in Borrowings					
Sale of Equity Shares					
Miscellaneous					
Uses:					
Capital expenditure					
Increase in Current Assets					
Repayment of Borrowings					
Dividend Payment					
Miscellaneous					
Surplus/Deficit:					
Opening Cash Balance					
Closing Cash Balance					

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MONITORING COLLECTIONS AND DISBURSEMENTS

To enhance the efficiency of cash management, collections and disbursements must be properly monitored. In this respect, the following are helpful:

Prompt Billing

Often there is a time lag between the dispatch of goods or provision of service and the sending of bills. By preparing and sending the bills promptly, a firm can ensure earlier remittance. It should be realised that it is in the area of billing that the company's control is high and there is a sizeable opportunity to free up cash. To tap this opportunity the treasurer should work with the controller and others in

(i) accelerating invoice data

(ii) mailing bills promptly

(iii) identifying payment location.

Expeditious Collection of Cheques

An important aspect of efficient cash management is to process the cheques received very promptly. Yet many firms deposit cheques received with some delay.

In addition to quick handling of cheques, a firm receiving remittances by cheques from different parts of the country might decentralise its collection and cut down the delay in the conversion of cheques into cash. Instead of asking its customers to deposit their remittances in a regional/local office of the company they are advised to deposit the remittances in the regional/local office of its bank. The regional/local office of the bank may be instructed to remit the collections (beyond a certain minimum balance) to the head office account by telegraphic transfer or telex transfer. With the vast network of branches set up by the major banks, regional/local collection centres can be easily established. To ensure that the system of collection works according to plan, it is helpful to periodically audit the actual transfers by the collecting banks and see whether they are in conformity with the instructions given to them.

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Control of Payables

By a proper control of payables, a firm can conserve its cash resources. This involves several things:

1. Payments should be made only as and when they fall due.
2. Payables and their disbursement may be centralised. This helps in consolidating funds at the head office, scheduling payments more effectively, reducing unproductive bank balances at the regional/local offices, and investing surplus funds more effectively.
3. Arrangements may be made with suppliers to set due dates of their bills to match with the company's period of peak receipts. Synchronisation of cash outflows and inflows helps a company to get greater mileage from its cash resources.

Playing the Float

When a firm issues a cheque it reduces the balance in its books. The balance in the bank's books, however, is not reduced till the payment is made by the bank. The amount of cheques issued by the firm but not paid by the bank is referred to as the 'payment float'. Now consider what happens when a firm receives a cheque and deposits it with its bank. When the cheque is deposited with the bank the firm increases the balance in its books. the balance in the bank's books, however, is not increased until the cheque is cleared. The amount of cheques deposited by the firm in the bank but not cleared is referred to as the 'collection float'. The difference between the 'payment float' and 'collection float' is referred to as the net 'float'. When the 'net float' is positive the balance in the books of the bank is higher than the balance in the books of the firm. When the 'net float' is negative the balance in the books of the bank is less than the balance in the books of the firm.

As long as the books of the bank show a positive balance, a negative cash balance in the books of the firm need not be viewed with alarm. So, if a firm enjoys a positive 'net float' it may issue cheques even if it means having an overdrawn bank account in its books. Such an action is referred

to as 'playing the float'. It is considered risky. However, within limits a firm can play this game reasonably safely and get a higher mileage from its cash resources.

QUESTIONS

1. What do you mean by Cash?
2. Explain the nature of cash and state the scope and objectives of cash management
3. Why does a firm need cash?
4. What are the uses of the Short-term cash forecasts (budgets)?
5. Discuss the receipts and payments method of cash budgeting.
6. Discuss the adjusted net income method of cash forecasting.
7. What steps would you take to improve the efficiency of cash management?
8. What is meant by 'Playing the float'? Explain with a suitable example.

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LESSON - 8.2

RECEIVABLES MANAGEMENT

Contents

- ☆ Problem of Receivables management
- ☆ Goal of Receivables management
- ☆ Formulating suitable credit and colection policies
- ☆ Credit analysis
- ☆ Collection procedures
- ☆ Questions

PROBLEM OF RECEIVABLES MANAGEMENT

Problem of management of receivables arises only when merchandise is sold on credit. If a company makes all sales for cash, it would have no accounts receivables and therefore, the question of management of such assets does not arise at all. Although concessions like price discount are granted to induce customers to make immediate cash payments, the practice of extending credit to the customers is very popular. If other concerns engaged in the same line of business activity are selling goods on liberal credit terms, the firm will have to pursue liberal lending policy to maintain volume of sales and there is a greater possibility of business profits to expand. But it should be remembered that flow of the funds from cash back to cash does not cycle as rapidly in credit sales as if credit were not offered.

If the firm decides to sell on cash, it will save costs of carrying receivables. However, the firm in that situation may lose some of its precious customers who will turn to other concerns extending credit facilities. Consequently, volume of sales of the firm and so also its earnings may decline. The firm should not expect to survive long by pursuing the policy of cash sales while other similar firms are following liberal credit policy. It would not be unwise to increase profit possibilities by assuming

some credit risks and incurring certain costs. The finance manager should find ways and means of reducing the volume of receivables without impairing the firm's sales potential associated with receivables.

GOAL OF RECEIVABLES MANAGEMENT

The prime goal of the receivables management is to maximise the value of the enterprise by striking a golden mean as among liquidity, risk and profitability. As noted above, credit sale is a marketing device employed to bolster up the sales and thereby increase profits. However, grant of credit is not cost free. The major costs associated with extension of credit facilities and collection of accounts receivables are

(i) Cost of investigatory credit worthiness of the parties;

(ii) Cost of collecting receivables

(iii) Cost of delinquency

(iv) Opportunity cost, i.e., on use of additional funds required to finance credit sales which alternatively could be profitably employed elsewhere.

The finance manager must match these additional costs within incremental benefits emanating from increased sales due to extension of credit facilities and then reach a decision whether to grant credit or not. Thus, rational decision about the credit policy of a firm lies in matching incremental profits arising from increased credit sales with incremental costs associated with receivables. The management should aim at formulating optimal level of profits by increasing the volume of sales upto the level where costs of carrying receivables are kept at the minimum level.

Once the credit policy of the firm is decided, level of receivables will vary depending on the volume of credit sales which, in turn, is conditioned by the general level of business activity and changes in the proportion of credit to cash sales.

In the present lesson we shall discuss several ways of improving receivables turnover. This can be done by formulating suitable credit and collection policies and improving credit and collection procedures.

FORMULATING SUITABLE CREDIT AND COLLECTION POLICIES

In formulating credit and collection policies of a firm, the finance manager must decide about the following aspects:

1. The quality of the trade accounts to be accepted i.e., credit standards.
2. The length of the credit period.
3. Cash discount to be given or not.
4. Provision for any special terms, such as seasonal ratings, should be made or not.
5. Collection programme.

These aspects together determine the average collection period and the proportion of bad debt losses.

We shall now discuss the above facts of credit and collection policies and strive to find ways and means of reducing the volume of receivables without impeding the firm's sales potential.

1. Quality of Trade Accounts to be accepted

A firm's credit terms influence, in the main, its volume of sales. By liberalising credit policy, the firm can stimulate sales and so also its gross earnings. But the increased sales may be accompanied by added costs. One of such costs is the enlarged credit department and the clerical expenses involved in investigating additional accounts and servicing added volume of receivables. The most important cost which a firm incurs in relaxing credit terms is increased bad debt losses resulting from extension of credit facilities to less credit-worthy customers. Finally, owing to acceptance of more marginal accounts there is a greater possibility that less credit-worthy customers will delay payment longer than stronger customers and if this is so, the firm will have to incur higher costs for capital tied up in receivables. Thus, the expected increase in gross profits is likely to be offset by the added costs associated with the more liberal credit policy, leaving the firm's earning position unchanged. If on the other hand, the firm decides to provide credit facilities to stronger customers, the firm will save many costs, such as bad debt losses and additional

investigation and collection costs but it will be deprived of profits resulting from lost sales. Thus, the major problem facing the financial manager in managing receivables in a firm is to decide as to what extent credit terms of the firm should be liberalised.

With the help of incremental analysis of costs and earnings, the financial manager should strive to determine credit standards for the firm. Thus, incremental earnings resulting from increased sales must be matched with incremental costs associated with relaxation of credit terms before taking any final decision. It would tend to be profitable for the firm to accept accounts up to the point where the expected revenue equals the variable cost of the goods sold plus cost of investigation and collection of accounts.

Designing Credit Terms

Credit terms specify the length of the credit period and size of the cash discount offered for quick payment. There is no legal restriction on a firm to set terms of sale. The firm can fashion its own terms and use them as a dynamic instrument in its bid to stimulate sales. But the freedom to determine the terms of credit is constrained by the customs of an industry. Each trade has its customary terms of credit which frequently dictate the nature of the credit terms to be offered by a firm. The competitive pressures also compel a firm to have uniformity in respect of cash discount and period of credit extension. New firms are forced to offer as liberal terms of credit as are being already given. Sometimes a firm may offer still more favourable terms in order to hold old customers and to attract new ones. As observed in the prior paragraph, credit policy as to the length of credit period and the size of the cash discount essentially determines the average collection period and hence magnitude of investment in receivables. We shall now discuss in detail the two policy variables, viz., credit period and cash discounts.

Credit Period: A firm in its hope for stimulating sales and so also its profits may offer more liberal credit facilities by lengthening the credit period. Lengthening of credit period involves cost. The cost that is usually associated with lenghtening credit period is a cost involved in tying up investment in receivables for a longer period of time that would otherwise have been invested elsewhere to earn income. Besides, the firm may experience increases in both its collection costs and bad debt losses. If additional costs associated with lengthening credit period is less than the increase in earnings, the finance manager should liberalise credit policy by increasing credit period. There is no prudence in lengthening the credit period if this involves more cost than revenue. The finance manager should strive for locating that period where additional earnings equate additional costs. This would be an optimal credit period for the firm.

Cash Discount: Cash discount is a powerful device to speed up collection of receivables. This would result in reduction of investment in receivables. But offering cash discount involves cost. The finance manager should match the earnings resulting from investment of funds released by reducing the level of receivables with the cost of the discount to decide whether or not cash discount should be offered.

Evaluating the Credit Applicant

Mere determination of appropriate credit policy for the firm will not help accomplish the overall objective of minimising investment in receivables and reducing bad debt losses, unless credit worthiness of applicants is evaluated to ensure that they conform to the credit standards prescribed by the firm. Credit evaluation process involves three steps, viz., gathering credit information about the credit applicants, determining the credit-worthiness of the applicants on the basis of information so collected and finally, taking decisions to grant credit facilities. The following paragraphs will deal with these aspects.

Gathering Credit Information

The finance manager gathers requisite information from different sources on which customer's evaluation must necessarily be based. Two important factors that should be kept in mind while searching for credit information are cost and time. A firm cannot afford to spend a lot of money in investigation of some credit applicants particularly smaller ones and in such case the finance manager should take a decision on the basis of limited information about the applicant. It is true that with larger expenditure on gathering information, there is greater possibility for the firm to reach better judgement on the credit-worthiness of the applicant causing reduction in bad debt losses. But beyond a certain point additional costs on investigation outweigh the expected gains caused by reduction in bad debt losses. This again is a matter of matching incremental costs and revenues.

Further, how much time the credit department of the firm will spend on analysis of the credit applicant must also be considered by the finance manager. Spending a lot of time in investigation may be justified in case of new credit customers. It must, however, be remembered that the customer may not wait for long pending detailed credit investigation and turn elsewhere for his requirements.

There are a number of sources of credit information that lend insight into credit-worthiness of the potential borrowers. Their use will depend upon the nature of business of the applicant and the economical limit of credit investigation costs.

(a) Financial Statements: Financial statements are, in general, the most useful source of credit information about the credit applicant. They are required of most applicants especially when the amount of credit involved is relatively large. In case of new customers, the firm may require the customers to supply audited balance sheet statements and profit and loss accounts for several years prior to the current year. Much can be learnt from a balance sheet about the liquidity of the business of the customer,

its credit policy and paying habits. It also reveals whether or not the business has sufficient assets to produce the income that will be necessary to repay the requested credit. Besides, profit and loss statement presents a moving picture of the customer's business during certain periods, showing the source of income, cost of goods sold, operating expenses and net profits or losses. Information about the productive ability of the business and its debt paying potentiality can be had from this report. It is also possible to evaluate the management – whether the concern is high or low cost producer and its competitive ability within the industry.

(b) Report of credit rating agencies: Where the customer insists on prompt delivery, the finance manager cannot afford to devote much time in securing financial statements of the customer and interpreting them. In such cases financial reports of credit rating agencies can be relied upon to gather information about the credit-worthiness of the applicant. These agencies collect information about the finance, managerial and other aspects of a large number of business concerns and keep them up-to-date. It is their full time job to get information from all possible sources, viz., marketplace, private agencies, newspapers, etc. to analyse, arrange and incorporate the information in their periodical reports.

(c) Bazar reports: Reports about the applicant can be obtained from the various markets particularly from businessmen carrying on the same trade. Some of the businessmen may be his friends, others his rivals. Some may, therefore, give exaggerated figures about the applicant's means while others may try to run him down. All such reports, sometimes contradictory to each other, have to be weighed independently and a balanced opinion has to be formed about the credit-worthiness of the credit customer.

(d) Reports from banks: Information about the customer can be obtained from different banks with which the customer deals. Most commercial banks maintain credit rating departments of their own to perform credit investigations for their customers. Ordinarily, a firm seeking credit information on a potential customer located in another city will request

his bank to the collect from the other bank situated in the customer's area, data relating to the level of bank balances maintained by the customer and extension of bank credit to him.

(e) Firm's own records: If the applicant is not a new customer the firm can depend on its own experience to study about promptness of past payments by the customer. The firm can also ask its salesmen to submit a report on the quality of the management of the business owned by the customer.

(f) Other sources: Other sources of credit information on business firms, especially the large ones, might be trade journals, periodicals, newspapers, trade directories, public records such as income tax statements, wealth tax returns, sales tax returns, reports about actions and decrees in government gazettes, registration, revenue and municipal records.

CREDIT ANALYSIS

After assembling credit information about the potential customer, the finance manager analyses this information to evaluate the credit-worthiness of the customer and to determine whether he satisfies the standard of acceptability or not. Such an analysis is known as credit analysis. Thus, credit analysis involves credit investigation of the potential customer to determine the degree of risk associated with the account. For that matter, capacity of the applicant to borrow and his ability and willingness to repay the debt in accordance with the terms of the agreement must be studied. Analysis of credit-worthiness of the applicant, therefore, calls for detailed study of the five C's of credit:

(a) Character

(b) Capacity

(c) Capital

(d) Collateral

(e) Conditions

Character: 'Credit character' refers to the reputation of the applicant in meeting obligations of the company upon maturity. Credit character is a relative matter. It is not difficult for a person to be honest and have willingness to repay his obligations when income is high, business is good and profits are plentiful. Hard times with poor business and low profits are the real test of credit character.

Capacity: 'Capacity' measures the ability of the potential customer to utilise the loan effectively and profitably. This is a very important variable of credit analysis as the customer's ability to repay is essentially dependent upon his earning capacity.

Capital: 'Capital' represents the general financial position of the customer's firm with special emphasis on tangible net worth and profitability (which indicates ability to generate funds for debt repayment continuously over time). The net worth figure in the business enterprise is the key factor that governs the amount of credit that would be made available to the customer.

Collateral: 'Collateral' is represented by assets which may be offered as pledge against credit extension. Collateral, thus, serves as a cushion or shock absorber if one or several of the first three 'Cs' are insufficient to give reasonable assurance of repayment of the loan on maturity. Collateral in the form of a pledged asset serves to compensate for deficiency in one or several of the first three 'Cs' are insufficient to give reasonable assurance of repayment of the loan on maturity. Collateral in the form of a pledged asset serves to compensate for deficiency in one or several of the first three 'Cs'.

Conditions: Finally, 'Conditions' include the present status of the business cycle and general credit and business conditions throughout the country and also the intensity of competition. These together affect a potential customer's ability to earn income and repay the debt.

Credit Decision

After determining the credit-worthiness of the applicant, the finance manager has to decide whether or not credit facilities should be provided to him. For that matter, the credit-worthiness of the applicant should be matched against established credit standards. If the applicant is above or upto the standard, obviously credit facilities would be provided, otherwise not. The difficulty in taking credit decision arises where the applicant is marginally credit-worthy at best. In such cases, a decision should be taken only after matching potential profitability against cost of bad debt losses.

COLLECTION PROCEDURES

Another aspect of management of receivables is to establish suitable procedures for collecting accounts which are past due. Utmost care needs to be exercised in this regard because both too much ladity and severity affect the business. Procedure should be such that does not choke off sales and yet does not result in substantial defaults. In this regard the most important problem that the finance manager has to face is, which past dues need aggressive and stringent collection procedure because the same cannot be followed in all the cases, as otherwise some good customers may be lost. In the light of paying habits of customers and their financial position the finance manager has to lay down the procedure. In all politely worded letter is sent to the customers requesting to make the payment already due. But if the first letter fails to evoke any response, additional letters of a more serious tone may be sent. If these letters too fail to bring any response, the next course of the action is to ask the customer on the telephone to clear the overdue account and then to turn over the account to a collection agency who charges commission at an exorbitant rate for collecting the account. If all these fail to evoke any response, as last course of action, the firm may file a suit in a court of law against the delinquent customer.

In this connection it must be remembered that pressure to collect debts from customers who are able but unwilling to pay must be exercised to the point of losing the account. In such a case, legal action as a final

remedy will prove effective. But when debtors are willing to repay but are financially handicapped. pressure to collect debts from them may not be so effective. Even dragging the party in a court of law may not be helpful to collect the payment because the debtor will seek legal relief from his financial distress and accordingly, declare bankruptcy.

QUESTIONS

1. What is the principal problem faced by the finance manager while managing receivables? How should credit and collection policies be designed to solve this problem?
2. What two basic factors determine the level of a firm's investment in accounts receivables?
3. Discuss the important variables that enter into the decision making quality of trade accounts to be accepted ?
4. Discuss the effects of lengthening of the credit period on a firm's profitability and level of investment in receivables.
5. What is the basic reason for offering cash discounts? Discuss the factors that should be taken into account while formulating suitable discount policy of a firm.
6. What is the fundamental objective of the collection policy? Bring out the factors that should be borne in mind while designing the collection policy of the firm.
7. What do you mean by credit evaluation? Discuss the different steps of credit evaluation.
8. Discuss the factors limiting the extent to which firms may gather credit information on prospective customers.
9. What are the five C's of credit? How do they relate to the process of evaluating credit risk?
10. Describe how a firm's allocation policies can affect the level of its investment in receivables.

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LESSON – 8.3

INVENTORY MANAGEMENT

Contents

- ☆ Introduction
- ☆ Cost of holding Inventory
- ☆ Role of finance manager in Inventory management
- ☆ Inventory management techniques
- ☆ Questions

INTRODUCTION

Inventories constitute the most significant part of current assets of a large majority of companies in India. On an average, inventories are approximately 60 per cent of current assets in public limited companies in India. Because of the large size of inventories maintained by firms, a considerable amount of funds is required to be committed to them. It is, therefore, absolutely imperative to manage inventories efficiently and effectively in order to avoid unnecessary investment. An undertaking neglecting the management of inventories will be jeopardising its long-run profitability and may fail ultimately. It is possible for a company to reduce its levels of inventories to a considerable degree, e.g., 10 to 20 per cent, without any adverse effect on production and sales, by using simple inventory planning and control techniques. The reduction in "excessive" inventories carries a favourable impact on a company's profitability.

The purpose of this lesson is to discuss the techniques of managing inventories and to emphasise the role of financial manager in inventory management.

NATURE OF INVENTORIES

Inventories are stocks of the product a company is manufacturing for sale, and components that make up the product. The various forms in which inventories exist in a manufacturing company are:

(a) raw materials,

(b) work in process

(c) finished goods.

1. Raw materials are those basic inputs that are converted into finished product through the manufacturing process. Raw materials inventories are those units which have been purchased and stored for future production.

2. Work in process inventories are semi-manufactured products. They represent products that need more work before they become finished products for sale.

3. Finished goods inventories are those completely manufactured products which are ready for sale. Stocks of raw materials and work in process facilitate production, while stock of finished goods is required for smooth marketing operations. Thus, inventories serve as a link between the production and consumption of goods.

The levels of the three kinds of inventories for a firm depend on the nature of its business. A manufacturing firm will have substantially high levels of all three kinds of inventories, while a retail or wholesale firm will have a very high level of finished goods inventories and no raw material and work in process inventories. Within manufacturing firms there will be differences. Large heavy engineering companies produce long production cycle products, and therefore, they carry large inventories. On the other hand, inventories of a consumer product company will not be large because of short production cycle and faster turnover.

A fourth kind of inventory, supplies, are also maintained by firms. Supplies include office and plant cleaning materials (soap, brooms etc.), oil, fuel, light bulbs and the like. These materials do not directly enter production, but are necessary for production process. Usually, these supplies are a small part of the total inventory and hence control may not be maintained for them.

NEED TO HOLD INVENTORIES

The question of managing inventories arises only when the company holds inventories. Maintaining inventories involves tying up of the company's funds and incurrence of storage and handling costs. If it is expensive to maintain inventories, why do companies hold inventories? There are three general motives for holding inventories.

1. ***Transactions motive*** emphasises the need to maintain inventories to facilitate smooth production and sales operations.

2. ***Precautionary motive*** necessitates holding of inventories to guard against the risk of unpredictable changes in demand and supply forces and other factors.

3. ***Speculative motive*** influences the decision to increase or reduce inventory levels to take advantage of price fluctuations.

A company should maintain stock of materials for a continuous supply to the factory for uninterrupted production. It is not possible for a company to procure raw material whenever it is needed. A time lag exists between demand for materials and its supply. Also, there exists uncertainty in procuring raw materials in time on many occasions. The procurement of materials may be delayed becaused of such factors as strike, transport disruption or short supply. Therefore, the firm should maintain sufficient stock of raw materials at a given time to streamline production. Other factors which may necessitate purchasing and holding of raw material inventories are quantity discounts and anticipated price increase. The firm may purchase large quantities of raw materials than needed for desired production and sales levels to obtain quantity discount of bulk purchasing. At times, the firm would like to accumulate raw materials in anticipation of price rise.

Work in process inventory builds up because of the production cycle. Production cycle is the time span between introduction of raw material into production and emergence of finished product at the completion of

production cycle. Till production cycle completes, stock of work in process has to be maintained. Efficient firms constantly try to improve production techniques.

Stock of finished goods has to be held because production and sales are not instantaneous. A firm cannot produce immediately when goods are demanded by customers. Stock of finished goods has also to be maintained for sudden demands from customers. In case the firm's sales are seasonal in nature, substantial finished goods inventories should be kept to meet the peak demand. Failure to supply products to customers, when demanded, would mean loss of the firm's sales to competitors. The levels of finished goods inventories would depend upon the coordination between sales and production as well as on production time. If there is close link between sales and production, a small finished goods inventory could be maintained and still customers' needs could be met.

OBJECTIVE OF INVENTORY MANAGEMENT

In the context of inventory management, the firm is faced with the problem of meeting two conflicting needs:

1. To maintain a large size of inventory for efficient and smooth production and sales operations.
2. To maintain a minimum investment in inventories to maximise profitability.

Both excessive and inadequate inventories are not desirable. These are two danger points within which the firm should operate. The objective of inventory management should be to determine and maintain optimum level of inventory investment. The optimum level of inventory will lie between the two danger points of excessive and inadequate inventories.

The firm should always avoid a situation of over-investment or under-investment in inventories. The major danger of over-investment are:

(a) unnecessary tie-up of the firm's funds and loss of profit.

(b) excessive carrying costs

(c) risk of liquidity.

The excessive level of inventories consumes funds of the firm, which cannot be used for any other purpose, and thus, it involves an opportunity cost. The carrying costs, such as the costs of storage, handling, insurance, recording and inspection, also increase in proportion to the volume of inventory. These costs will impair the firm's profitability further. It may not be possible to sell inventories in time and at full value. Raw materials are generally difficult to sell as the holding period increases. There are exceptional circumstances where it may pay for the company to hold stocks of raw materials. This is possible under conditions of inflation and scarcity. Work in process is far more difficult to sell. Similarly, difficulties may be faced in disposing of finished goods inventories as time lengthens. The downward shifts in market and the seasonal factors may cause finished goods to be sold at low prices. Another danger of carrying excessive inventory is that physical deterioration occurs with the passage of time, or it may be due to mishandling and improper storage facilities. These factors are within the control of management; unnecessary investment in inventories can, thus, be cut down.

Maintaining an inadequate level of inventories is also dangerous. The consequences of under-investment in inventories are:

(a) production hold-ups

(b) failure to meet delivery commitments.

Inadequate raw materials and work in process inventories will result in frequent production interruptions. Similarly, if finished goods inventories are not sufficient to meet the demands of customers regularly, customers may shift to competitors, which will amount to a permanent loss to the firm.

COST OF HOLDING INVENTORY

One operating objective of inventory management is to minimise cost. Excluding the cost of merchandise, the cost associated with inventory fall into two basic categories:

(a) Ordering or Acquisition or Set-up costs

(b) Carrying Costs.

These costs are relevant to the optimum level of inventory decision.

Ordering Costs

Such costs are also known as acquisition or set-up costs. This category of cost is associated with the acquisition or ordering of inventory. Firms have to place orders with the suppliers to replenish inventory or raw materials. The expenses involved are referred to as ordering costs. Apart from placing orders outside, the various production departments have to acquire materials from the stores. An expenditure is also involved here in (1) preparing a purchase order to requisition form and (2) receiving, inspecting, and recording the goods involve labour costs and costs of stationery. It is therefore, called a set-up cost. They are generally fixed per order placed, or the more frequent the acquisition of inventory is made, the higher are such costs. From a different perspective, the larger the inventory, the fewer the acquisition costs which are inversely related to the size of the inventory: they decline with the level of inventory. Thus, such cost can be minimised by placing fewer orders for a larger amount. But acquisition of a larger quantity would increase the cost associated with the maintenance of inventory, i.e., carrying costs.

Carrying Costs

The second broad category of costs associated with inventory are the carrying costs. They are involved in maintaining or carrying inventory. The cost of holding inventory may be divided into two categories:

(a) Those that arise due to storing the inventory. The main components of this category of carrying costs are :

(1) storage cost, i.e., tax, depreciation, insurance, maintenance of the building, utilities and sanitary services;

(2) insurance of inventory against fire and theft;

(3) detraction in inventory because of pilferage, fire, technical obsolescence, style obsolescence and price decline;

(4) serving cost, such as, labour for handling inventory, clerical and accounting costs.

(b) The opportunity cost of funds: This consists of expenses in raising funds (interest on capital) to finance the acquisition of inventory. If funds were not locked up in inventory, they would have earned a return. This is the opportunity cost of funds or the financial component of cost.

The carrying costs and the inventory size are positively related and move in the same direction. If the level of inventory increases, the carrying costs also increase and vice-versa.

The sum of the order and carrying costs represent the total cost of inventory. This is compared with the benefits arising out of the inventory o determine the optimum level of inventory.

ROLE OF FINANCE MANAGER IN INVENTORY MANAGEMENT

Inventory represents by far the largest portion of current assets in business organisations. Accordingly, the accomplishment of profit maximisation goal of a firm calls for efficient management of inventories. While the finance manager has direct responsibility of managing cash, marketable securities and accounts receivable, operating responsibility on managing inventories in a firm is well within the realm of the production manager and the purchase manager and outside the province of the finance manager. Thus, purchase and production managers are more directly concerned with raw materials policies, production manager with work-in-progress and production and sales managers with finished goods inventories. However, the finance manager is responsible for supplying necessary funds to support the firm's investment in inventories. In order to estimate the finance requirements of inventories and to ensure that funds procured from numerous sources are allocated efficiently to inventories, the finance manager must familiarise himself with various methods by which efficient management of inventories can be achieved. Where finances are a limiting factor, he should be prepared to help directly in shaping inventory policies that are consistent with the realities of the

firm's financial position. In firms short of funds, the finance manager can play a direct part in a reducing capital requirements by exploring opportunities of cutting inventory investments. He is supposed to exercise full vigilance against imbalances of raw materials and in process inventory that limit the utility of stocks that of the item in shortest supply is exercised. He should help the firm in fixing lead time and setting latest stock levels consistent with safety, recognizing that complete safety has a prohibitive cost. In establishing a highly programme for the firm the finance manager can be very helpful to the production and purchase managers by pinpointing their attention to certain aspects of the inventory management which may result in over investment in inventories.

The finance manager can play equally useful role in companies with plenty of resources by participating actively and helping in the formulation of inventory policies designed to speed up turnover and maximise return on investments. In view of these the finance manager must equip himself with various techniques by which efficient management of inventories can be achieved.

INVENTORY MANAGEMENT TECHNIQUES

In most manufacturing concerns, inventories are controlled through the following techniques:

1. Economic Order Quantity.
2. Determination stock levels
3. Inventory turnover ratio
4. Input-Output Ratio Analysis
5. A B C analysis
6. Perpetual inventory and continuous stock-taking

Economic Order Quantity

The Economic Order Quantity (E.O.Q) is the optimum or the most favourable quantity which should be ordered for purchase each time when

the purchases are to be made. The Economic Order Quantity is one where the cost of carrying is equal to, or almost equal to the cost of not carrying.

The E.O.Q. is also known as *Reorder Quantity or Standard Order Quantity* and it depends upon two factors viz., cost of carrying and cost of ordering and receiving per order. The cost of carrying or holding can be estimated by the management on the basis of the sales of past years but costs of not carrying enough are not usually estimated.

The widely used formula of E.O.Q. is

$$= \frac{2\,C.O.}{\sqrt{I}}$$

Where,

I = interest payment including variable cost of storage per unit per year.

C = Consumption of materials concerned in units.

For example, a unit of material 'X' costs Rs. 50 and annual consumption is 2,00,000 units. The cost of placing an order and receiving the material is Rs. 200 and the interest including variable cost of storage per unit per year is 10% per annum.

$$\text{Economic Order Quantity} = \frac{2\,C.O.}{\sqrt{I}}$$

$$= \frac{2 \times 2,00,000 \times 200}{5}$$

$$= 1,60,000 = 4,000 \text{ units.}$$

The E.O.Q. approach can be extended to production runs to determine the optimum size manufacture. Two factors deciding the economic production size are set-up costs and carrying costs.

Set-up cost is roughly equivalent to the ordering cost per order. It includes (a) engineering cost of setting up the production lines or machine (b) paper-work cost of processing the work order and authorising production and (c) ordering cost to provide raw-materials for the batch or order. The set up cost will reduce with bulk production runs, but the carrying costs will increase as large stocks of manufactured inventories

will be held. Thus, the economic production-lot size is one where the total of set-up cost and carrying cost is minimum.

For example, the estimated production for the next year is 2,00,000 units and set-up cost per production run is Rs.200 and the carrying cost per unit per year is Rs.5, the economic production lot size (EPLS) can be determined by applying the E.O.Q. formula

$$E.P.L.S = \sqrt{\frac{2\ C.O.}{I}}$$

$$= \frac{2 \times 2,00,000 \times 200}{5} = 1,60,000$$

= 4,000 units per production run.

Illustration 1: A manufacturer buys certain equipment from supplier at Rs. 30 per unit. Total annual needs are 800 units. The following further data are available:

Annual return on investment 10%

Rent, insurance, taxes per unit per year Re.1

Find out cost of placing an EOQ order quantity.

Answer: Cost of carrying inventory per unit.

$$= 30 \times 10\% + 1 = \text{Rs. } 4$$

$$E.O.Q. = \frac{2 \times 100 \times 800}{30 \times 10\% + 1} = 200 \text{ units.}$$

Determination of Stock Levels

The demand and supply method of stock control technique determines different stock levels viz., Maximum level, Minimum level, Reorder level, Danger level, Average Level, etc.

Maximum Stock Level represents the quantity of inventory above which it should not be allowed to be kept. This quantity is fixed keeping in view the disadvantages of over-stocking.

Minimum Stock Level represents the quantity below which it should not be allowed to fall. This is known as safety or buffer stock. The main

purpose of this level is to ensure that production is not held up due to shortage of any material. This level is fixed after considering:

(a) average rate of consumption of materials, and

(b) lead time.

Reorder level is the point at which (if stock of the material in store reaches a certain level), one should initiate the purchase requisition for fresh supplies of the materials. This level is fixed between maximum and minimum-stock levels in such a way that the difference of quantity of the materials between the reorder level and the minimum level will be sufficient to meet the requirements of production up to the time the fresh supply of the material is received.

Danger level means a point at which issues of the material are stopped and issues are made only under specific instructions. This level is generally fixed below the minimum stock level. When stock of materials reaches the danger level the purchase officer should make special arrangements to get the materials at any cost.

It is a common belief that external lead time should be controlled and reduced but it has been found in actual practice that internal lead time constitutes a considerable part of total lead time and offers ample scope for reduction. The management must make a determined and deliberate effort to reduce lead time by selectively delegating powers, better paper work procedures, and fixing targets individually for all activities.

It is worth mentioning here that record should be kept of variations in lead time for atleast, A,B and other important items and it should be revised from time to time.

Obviously, in order to receive supplies before the stock reaches zero level, it is necessary to order the materials much in advance i.e., when the stock available is sufficient to last during the lead time.

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Formulae for Determination of Stock Levels

(i) Maximum Level = Reorder level + Reorder Quantity – (Minimum consumption × Minimum Reorder Period)

(ii) Reorder Level = Maximum consumption × Maximum Reorder period or Minimum stock + Average consumption during normal delivery time

(iii) Minimum Level = Reorder Level – (Normal consumption × Normal reorder period)

or

= (Maximum rate of consumption – Average rate of consumption) × Lead time

(iv) Average stock level = Minimum Level + 2 of Reorder Quantity

or

2 (Minimum stock + Maximum stock)

(v) Danger level = Maximum delivery time × Maximum rate of consumption

or

= Minimum rate of consumption × Emergency delivery time

Illustration 2: From the following information, calculate the Maximum stock level, Minimum stock level, Reordering level, Average stock level and Danger level.

(a)	Normal consumption	=	300 units per day
(b)	Maximum consumption	=	420 units per day
(c)	Minimum consumption	=	240 units per day
(d)	Reorder quantity	=	3,600 units per day
(e)	Reorder period	=	10 to 15 days
(f)	Normal Reorder period	=	12 days

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(g) Time required for emergency purchase = 4 days

Solution:

Reordering level	=	Maximum consumption × Maximum reorder period
	=	420 × 15 = 6,300 units
Minimum stock level	=	Reordering level – (Normal consumption × Normal reorder period)
	=	6,300 – (300 × 12) = 2,700 units.
Maximum stock level	=	Reordering level + Reorder quantity – (Minimum consumption × Minimum reorder period)
	=	6300 + 3600 – (240 × 10)
	=	9900 – 2400 = 7500 units
Average stock level	=	2 (Minimum stock level + Maximum stock level)
	=	2 (2700 + 7500) = 5100 units
Danger level	=	Minimum consumption per day × time required for emergency purchase.
	=	240 × 4 = 960 units

Control Through ABC Analysis

Different types of analysis each having its own specific advantages and purposes, help in bringing a practical solution in the control of Inventory. The most important of all such analysis is ABC analysis. The others are:

F.S.N. - (Fast, Slow, Non-Moving items) Analysis,

H.M.L. - (High, Medium, Low cost) Analysis

S.D.E. - (Scarce, difficult, Easily available) Analysis

V.E.D. - (Vital, Essential, Desirable) Analysis

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An effective inventory control system should classify inventories according to values so that the most valuable items may be paid greater and due attention regarding their safety and care, as compared to others. Hence, it is desirable to classify the production and supply items, both purchased and manufactured, depending upon their importance and subject each class or group items to control by importance and expectation (C.I.E.) or selective control as A.B.C. analysis or classification which is said to be "Always better control". As items are classified in the importance of their relative value, this approach is also known as Proportional (parts) Value Analysis (PVA).

The general procedure for implementing the ABC technique is as follows:

(i) Classify the items of inventories.

(ii) Determine the expected use in units over a given period of time.

(iii) Determine the total cost of each item by multiplying the expected units by its unit price;

(iv) Rank items in accordance with total cost giving first rank to the item with highest total cost and so on;

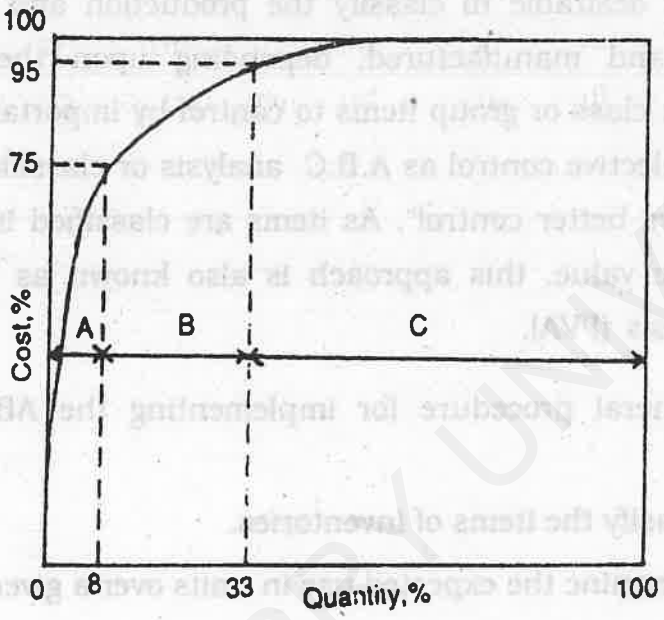
(v) Calculate percentage (ratio) of number of units of each item to total units of all items and the percentage of total cost of each item to total of all items.

(vi) Combine items on the basis of their relative value to form three categories - A,B,C.

The report of Indian Productivity Team on "Stores and Inventory Control in USA, Japan and West Germany" gives the following examples of ABC analysis.

Class	Percentage of item	Percentage of cost
A	5%	75%
B	25%	20%
C	67%	5%

The above mentioned example is clearly examined by the graph presented below:



From the graphical analysis, it may be found that about 8% of items cost more than 75% of the cost of inventory. This is grouped as A item which form thee most important items from the control point of view. B items forming 25% of total items constitute 20% of the total cost on inventory. These are of secondary importance and lie in between 'A' and 'C' items. Even though, they do not require a detailed and close control as 'A' items, they need more attention and control than 'C' items which are the numerous inexpensive items i.e., about 75% of items contributing to only 5% of the total cost of material.

Graphic Approach

The economic order quantity can also be found out graphically. The following graph illustrates the EOQ function. In the figure, costs–carrying, ordering and total–are plotted on vertical axis and horizontal axis is used to represent the order size. We note that the total carrying costs increase as the order size increases, because on an average, a larger inventory level

will be maintained and ordering costs decline with increase in order size because the larger order size means less number of orders.

The behaviour of total costs line is noticeable since it is sum of two types of costs which behave differently with order size. The total cost declines in the first instance, but they start rising when the decrease in average ordering cost is more than offset by the increase in carrying costs. The economic order quantity occurs at the point Q^* where the total cost is minimum. Thus the firm's operating profit is maximised at point Q^*.

QUESTIONS

1. What is inventory? Why do firms maintain inventory?
2. What are the objectives of inventory management?
3. What is the financial manager's role in respect of the management of inventory?
4. Discuss the effect of increased inventory on profitability o an organisation.
5. What are the costs of stock-outs? How should the cost of stock-out and carrying costs be balanced to obtain the safety stock?
6. What is lead time ? What are the various activities occurring during the lead time?
7. Explain the four cost factors involved in general inventory policies.
8. How would you determine Economic Order Quantity?
9. What factors do you consider in fixing the maximum and the minimum stock levels?
10. What do you understand by A B C analysis? What are its advantages? Discuss the inventory policies for A, B and C items.

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