Financial Management

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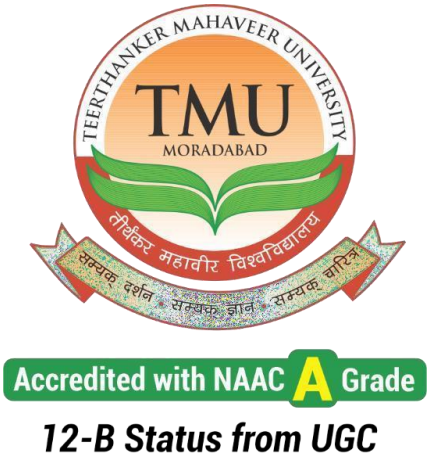

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Syllabus

Objectives: Students will equip themselves with topics in corporate finance, how the finances are managed and their reflections on the fundamental decisions to be taken by the corporate and finance world.

BLOCK I

UNIT 1: Introduction: Scope of Financial Management, Traditional Approach; Modern Approach; Objectives of Financial Management; Investment Decisions; Financing decisions; Profit Maximization vs. Wealth Maximization,

UNIT 2: Sources of Long-term Financing.

BLOCK II

UNIT 3: Capital Budgeting: Meaning, importance and various techniques; Pay back methods; Post Pay- back period; rate of return method; Net Present value method; Internal rate of return method; Profitability index method.

UNIT 4: Cost of Capital: Introduction; measurement of cost of capital; cost of equity shares; cost of preference shares; cost of debt; calculation of overall cost of capital based on historical andmarket rates (Fundamentals only).

BLOCK III

UNIT 5: Capital Structure: Introduction; capital structure decisions; NI approach; NOI approach; MMapproach; Traditional approach

UNIT 6: Working Capital: Meaning, Factors affecting working capital management and sources ofworking capital.

Suggested Readings:

1. Khan, M. Y. and Jain P. K. Financial Management, Text, Problems & Cases, Tata McGraw Hill Company, New Delhi.
2. Maheshwari, S.N, Financial Management – Principles & Practice, Sultan Chand & Sons.
3. Prasanna, Chandra, Financial Management: Theory and Practice, Tata McGraw Hill.
3. Sheeba Kapil, Financial Management, Pearson Education.
4. Bhalla. V. K. Financial Management and Policy: Text and Cases, Anmol Publications Pvt. Ltd.

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UNIT: 1

INTRODUCTION TO FINANCIAL MANAGEMENT

Structure

1.0 Learning Objectives

After reading this lesson, you should be able to:

- Explain the scope of finance and its interaction with other functional areas.
- Highlight the different approaches to finance function.
- Describe on the shareholders' wealth maximisation principle as an operationally desirable finance decision criterion.

1.1 INTRODUCTION

The topic of financial management is of enormous importance each to the academicians and the practitioners. It is of enormous interest to the academicians due to the fact that the topic is still developing, and there are still many areas where disagreements exist and no undisputed resolutions have yet been arrived. The practitioners are involved in this subject matter for the reason that amongst the most critical decisions of the firm are those which relate to finance, and an understanding of financial management provides them with a theoretical and logical insight to construct these conclusions.

1.2 SCOPE OF FINANCE

The three crucial activities of a business enterprise are: production, finance and marketing. A firm arranges capital it needs and employs it (known as finance activity) in activities which

bring returns on invested capital (known as production and marketing activities).

An enterprise requires assets to carry to hold on its commercial activities. These assets can be tangible as well as intangible. Plant and machinery, office, factory, furniture and fixture, and land and building are examples of tangible assets, whereas technological collaborations, technical know-how, and patents are intangible assets. The firm sells financial securities consisting of shares/ bonds or debentures to investors in capital market to raise funds. Financial assets also comprise borrowing from commercial banks as well as from financial institutions. Funds applied to assets through the firm are referred as investment or capital expenditure. The firm anticipates getting returns on investment and distributing this return as dividends to investors.

The raising of capital funds and using them for generating returns and paying returns to the suppliers of funds are called the finance functions of the firm. Two types of funds, equity funds and borrowed funds, can be raised by a company. In addition, a firm may have funds by retaining a portion of profits. The retained earnings are undistributed returns on equity capital; they are, therefore, rightfully a part of equity capital. The retention of earnings can be considered as a form of raising new capital. If a company distributes all earnings to shareholders, then, it can require new capital from the same sources by issuing new shares.

The funds raised by a company will be invested in the available investment opportunities. Each investment opportunity available to a company is called investment project or simply a project. A project involves use of funds presently in the expectation of future benefits. The company may also have on-going projects. They (on-going projects) may also involve outlays of cash to maintain or to increase their profitabilities. It would be realised that generation of revenue – a production activity – is possible only when funds are invested in projects.

1.3 EVOLUTION OF FINANCIAL MANAGEMENT

Financial management come into sight as a separate field of study in the present century. The evolution of financial management can be separated into three periods: the traditional phase, the transitional phase, and the modern phase.

The traditional phase last for about four decades. The following were salient characteristics of the traditional phase:

- The focus of financial management was largely on definite sporadic events such as formation of the company, issue of share capital, major expansion, merger, reorganization, and liquidation in the life period of the company.
- The approach was mainly vivid and institutional. The financial instruments, financial institutions and various procedures used in capital market created the heart of financial management.

The transitional phase of financial management started around the early 40‘s in the present century and sustained through the early fifties. During this phase, the character of financial management remained the same as of during the traditional phase of financial management.

The modern phase of financial management began in the mid-fifties and has observed gathered speed pace of development with the mixture of ideas from economic theory and application of quantitative. The major decisions to be made in modern phase include: (a) Investment decisions (b) Finance decisions (c) Dividend decisions.

1.4 INTERFACE OF FINANCIAL MANAGEMENT WITH OTHER FUNCTIONAL AREAS

Financial management is one of the most important branch of management. Financial management attracts closely correlated disciplines and fields of study such as economics, accounting, marketing, quantitative models and production. Despite key differences among these fields, they are inter-related. Almost all forms of business enterprises, at once or circuitously, involve the procurement and utilization of funds. For example, recruiting the employees in marketing is clearly a responsibility of the Marketing Department, however, payment of salaries and other financial benefits requires finance. In the same way, purchase of a new machine or replacement of an old machine with the new one also involves the flow of funds. Sales promotion activities, which are within the scope of marketing also involves the flow of funds. Where, then, is the separation between production and marketing functions and the finance function of making money available to meet the costs of production and marketing operations? Where do the production and marketing functions end and the finance functions begin? There are no clear-cut answers to these questions. The finance function of raising and using money although has a significant effect on other functions, yet it needs not necessarily limit or constraint the general running of the business. A business organization having tight financial position will give more weightage to financial thoughts and devise its related marketing, human resource as well as production strategies keeping in view its financial resources. But if the business organization is having normal supply of funds, it will be flexible in formulating its different policies, may it relate to production, human resource and marketing. In reality, financial policies could be formulated to fit production, human resource and marketing decisions of a business organization.

1.4.1 Relationship to Economics

There are crucial linkages between finance and economics. The macroeconomic environment is the setting within which a firm operates while the microeconomics gives the theoretical perceptive to the tools of financial management.

Growth rate of the economy, GDP, domestic savings rate, the involvement of the Government in economic affairs, the tax structure, the extent of external economic relations, availability of funds to the industry, rate of inflation, real rate of interest, and the terms on

which the firm can raise funds are the major macroeconomic factors. No finance controller/manager can have enough money to ignore the developments in these macro-economic factors and all these factors have a direct bearing on the business.

While the knowledge of the macro-economic factors sensitizes every finance manager to the opportunities and threats inside the surroundings, a firm in microeconomic environment sharpens its analysis of different decisions. Finance, in essence, is applied micro-economics.

1.4.2 Relationship to Accounting

The accounting and finance functions are intimately connected. There is a myth that accounting and finance are identical or at least considerably overlap with each other. But, in reality, what are the similarities and differences between the two will be clearer from the following:

1. **Score Keeping vs. Value Maximizing:** Accounting is apprehensive about score keeping and the finance is meant for value maximization. The basic objective of accounting is to assess the performance of a business organization, measuring its financial health, and calculating tax liability. On the other hand, the basic objective of financial management is to maximize the shareholder‘s wealth by replicating in positive net present value projects and minimize the cost of capital. Hence, it can be said that financial management gets its input from accounting
2. **Accrual Method vs. Cash Flow Method:** Books of accounts are prepared on the accrual system of accounting. Accrual system of accounting recognizes revenues when the sales has occurred/made irrespective of the fact of timing of realization of the cash (immediately or later) and match expenses to sales irrespective of the fact of timing of payment of cash. Whereas, every Finance Manager is concerned about cash flows.
3. **Certainty vs. Uncertainty:** Accounting deals with the past and records the transactions which have happened. Hence it can be said that accounting is more objective and certain. Finance is primarily concerned with future. Finance is concerned with decision-making under imperfect information as well as uncertainty. So it mischaracterized by a higher amount of prejudice.

1.5 APPROACHES TO FINANCIAL MANAGEMENT

The approaches to the finance functions are separated into two types: (i) Traditional Approach, and (ii) The Modern Approach.

Traditional Approach

The traditional approach to the finance functions refers to the subject of financial management in its early stages of evolution as a distinct branch of study. This term 'finance'

was used to describe what is today known as Financial Management. This traditional phase of financial management lasted for about four decades (upto 1950).

Traditionally the concern of financial management was with the financing of business organizations. In simple words, the scope of the finance function under traditional approach was used in the narrow sense and includes procurement of funds by business organizations to meet out their financing requirements. Thus, the field of study dealing with financial management was about raising and administering of funds from external sources.

- The centre of attention of financial management was on certain periodic events like issue of share capital, expansion, merger, modernization, reorganisation, and liquidation of business organizations.
- This approach was largely explanatory and institutional. The financial institutions, instruments of raising of finance, procedures to be followed in capital markets, and the legal features of financial events were the hub of financial management.
- The outsider's view point was foremost. Financial management in the Traditional approach was considered from the viewpoints of the lenders, investment bankers and other interests.

The traditional approach is today criticised on following grounds: The first argument against the traditional approach is regarding procurement of funds by business organizations. Because the finance function was equated with the issues relating to raising and utilization of funds, the theme was woven-around the point of views of the outsiders and the internal decision making was ignored completely.

Another criticism of the traditional approach was that its scope was on financing problems of business organizations not the non corporate organisations.

The next criticism of the traditional approach was that its treatment was around periodic actions like promotion, incorporation, consolidation, merger, reorganisation. Financial management was restricted only to these occasional happenings in the life of a business enterprise, but financial problems of the day-to-day activities of normal business enterprise did not receive a large amount of consideration.

Lastly, it was criticized because of its focus on a long term financing. Its connotation was that the concerns relating to working capital management were not in the scope.

These limitations of the traditional approach of financial management were more basic in nature. The major drawback of traditional approach was that this approach confined only to the concern of procurement of external funds, whereas it ignored the other dimension i.e. allocation of fund. In the absence of the coverage of this part, the traditional approach had a very thin scope to financial management. Modern Approach to financial management gives a solution to this weakness.

Modern Approach: The traditional approach having a theoretical background, lost its utility in the present changing business scenario since the mid 1950's. A number of economic and other environment factors such as the growing pace of industrialisation, technological inventions, rising intervention of government, severe competition, population growth and widened markets during and after mid 1950's dictated for the efficient and effective utilisation of the resources of the firm. Luckily, the progress of a numeral of management skills and decision-making procedures helped to put into practice a system of optimal allocation of the resources of a firm. As a result, the approach and the scope of financial management also transformed. The prominence shifted from sporadic financing to the professional financial problems, from raising of funds to efficient and effective utilization of funds. The new technique is embedded with sound conceptual and analytical theories.

This modern approach is a logical way of glancing into the financial problems of a business organization. Financial management is considered a fundamental and an essential part of overall management. In this broader vision, the vital issue of financial policy is the wise use of funds, and the central process involved is a logical matching of returns of potential uses against the cost of alternative possible sources so as to achieve the broad financial goals which a business organization sets for itself. Thus, in a modern enterprise, the basic function of finance is to decide about the spending decision and to decide the claim for capital for these expenditures. In other words, the financial manager is worried about the efficient allocation of these funds. The allocation of funds is not a new problem, however. It did exist in the past, but it was not considered important in achieving the firm's long run objectives.

In his new role of using funds wisely, the financial manager have to find a rational basis for responding the subsequent questions:

1. How large should a business organization be and how speedy should it grow?
2. In what form should it embrace its assets?
3. What must be the composition of its liabilities?

The questions stated above relate to three broad decision areas of financial management: investment decision, financing decision and dividend decision. The financial manager has to take these decisions mainly rational way. All these decisions are to be made in such a way that the firm‘s funds are used optimally.

All these financial decisions have a enormous impact on all other activities of the business. The concern of the every financial manger besides his traditional function of raising money will be in setting the direction of growth, determining the profitability and risk features of the business organization by selecting the best asset-mix and by attaining the optimum financing-mix. This new approach of financial management can be widened to include profit planning function. The term _profit-planning‘ refers to the operating decisions in the areas of volume

of output, pricing, and the firm's selection of product lines. Profit planning is a prerequisite for optimising financing and investment decisions.

CHECK YOUR PROGRESS A

Fill in the blanks:

1. The return on the shareholders‘ capital is called_____.
2. _____environment describes the setting within which a firm operates.
3. Limitations of the traditional approach to finance were more_____.
4. Financial management is considered a vital and an integral part of_____management.

1.6 FINANCIAL DECISIONS IN A FIRM

Finance functions/decisions include the following:

- Investment/ long term asset mix decision.
- Financing/ capital mix decision.
- Dividend/ profit allocation decision.
- Liquidity/ short term asset mix decision.

A firm carries out finance functions concurrently and constantly in the normal routine of a business. These do not inevitably occur in a succession. Finance functions require planning, control and execution of a business activities. We know that shareholders are made better off by a financial-decision that increases their shares value. So whilst performing these finance function, the financial manager should endeavour to maximise the shares value. Following is brief description of the financial decisions:

Investment Decision: The first important decision for every business organization is that it has to define the business that it wishes to be in. The investment decision has a considerable bearing on how capital is allocated by the organization. Once the manager of a business organization choose the business they want to start with/ expand, they have to develop a sketch to invest in buildings, equipment, research and development, machineries, showrooms, information infrastructure, brands, distribution network and other assets. This is the known as the capital budgeting.

Financing Decision: Financing decision is another function to be carried out by the financial manager. When a firm has resolute the investment projects, it has to seek the ways and means of financing these investments. The important questions in capital structure decisions to be answered are: What is the optimal debt-equity ratio? Which specific instruments of finance should the firm employ and which capital markets should the firm access? When should the firm raise its finances and at what should be the price of its securities to the

public?

The objective of financing decision should be to minimise the cost of financing.

Dividend Decision: Dividend decision is another key financial-decision. The financial managers have to decide whether the firm should distribute all of its profits among shareholders or completely retain the profits or distribute a portion of profits and keep the balance. The optimum dividend policy is that which maximises the market value of the shares of the firm. The financial manager has to determine the optimum dividend-payout ratio if the shareholders of a company are not indifferent to the dividend policy of the firm. In addition, the financial manager should also think the issues of cash dividends in practice, dividend stability and issue of bonus shares. Generally profitable companies distribute cash dividends regularly to their shareholders. At regular intervals, bonus shares are also issued by some companies to their existing shareholders in addition to the cash dividend.

Working Capital Management: Working capital management is also called as short-term financial management. Working capital management is the day-to-day financial activities that deal with current assets and current liabilities. Current assets are to be managed efficiently in such a way that it safeguards the firm against the dangers of insolvency and illiquidity. Investment in current assets by a firm affects its liquidity, profitability and risk.

The issues involved in working capital management are regarding the optimal level of inventory for the operations of the firm, terms and conditions of granting credit to its customers, maintaining minimum cash balance, policy regarding investment its t cash surpluses and about the sources of short-term finance.

To quote Ezra Solomon:

"The function of financial management is to review and control decisions to commit or recommit funds to new or ongoing uses. Thus, in addition to raising funds, financial management is directly concerned with production, marketing and other functions, within an enterprise whenever decisions are made about the acquisition or distribution of assets".

1.7 GOALS OF FINANCIAL MANAGEMENT

The firm must have a goal in order to make the its financial decisions rationally. It is usually approved in theory that the financial goals of the firm should be the maximisation of economic welfare of owners There are two widely-discussed alternative approaches which can be used as decision criterion for the maximisation of owners' economic welfare : (i) Profit maximisation approach (ii) Wealth maximisation approach. In the present section, we will discuss about these approaches.

1. **Profit Maximisation**

Profit maximization approach states that actions which increase profits should be undertaken and those actions which decrease profits should to be avoided. This approach entails that all the decisions (investment, financing and dividend) of a firm should be oriented to the profit maximisation.

Profit maximisation means maximising the rupee (or any other currency such as dollar, pound or euro) income of firms. Goods and services which are in great demand command higher prices resulting higher profits to the firms. Higher profit opportunities catch the attention of others to produce such goods and services. Ultimately, with intensifying competition an equilibrium price is reached at which demand and supply match. In case, these goods and services are not required by society, their prices will fall and ultimately profits will also decrease. Then such type of goods and services are dropped out by producers. Price system directs efforts of the management towards more profitable goods and or services. However, regarding price system a question generally raised is that would the price system in a free-market economy serve in interests of the society? The answer to this question has been given by Adam Smith. According to him:

"(the businessman), by directing... industry in such a manner as its produce may be of greater value.. intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was not part of his intention..... pursuing his own interest he frequently promotes that of society more effectually than he really intends to promote it".

The economic behaviour of a firm is evaluated in terms of profit maximisation. While maximising profit, a firm either produces maximum output for a given amount of input or it uses minimum input for producing a given output.

Objections to Profit Maximisation: The profit maximisation criterion has been criticised on many grounds. Firstly, it is argued that profit maximisation supposed perfect competition and in imperfect markets, it cannot be a objective of the firm. Profit maximisation was developed as objective of financial management in the early 19^{th} century when private property, self-financing and single entrepreneurship were the features of the business organizations. The modern business is having a feature of limited liability and there is a divorce between owners and management. Today, the business organizations are financed by shareholders and lenders, but they are directed and controlled by professional management.

There is also a suspension that profit maximisation behaviour in a market economy may tend to produce goods and services that are unnecessary from the point of view of the society. Also, it may lead to inequality of income and wealth. It is for this reason that governments tend to intervene in business. The price system and therefore the profit maximisation concept may not work because of imperfections in practice.

Because of the abovementioned criticisms, profit maximisation fails to serve as an

operational criterion for maximising the economic welfare of the owners. The main drawbacks of profit maximization criterion are ambiguity, timing of benefits, and quality of benefits.

Ambiguity: The first operational drawback with profit maximisation approach is the term profit. This term of profit is a vague and confusing concept and has no clear-cut connotation. It is having diverse interpretations by different people. To someone, profit may be short-term or long-term. To the other person, it may be total profit or rate of profit; it may be profit before-tax or profit after-tax; and so on. If profit maximisation is taken to be the objective, then which of these variants of profit should a business organization try to maximise? Clearly, a free expression of profit cannot form the basis of effective decisive factor for financial management.

Timing of Benefits: The other criticism to profit maximisation criteria is that it ignores the differences in the time pattern of the benefits received from investment proposals. Let us have a look at Table 1.1

Table 1.1 Time Pattern of Benefits (Profits)

	Alternative X (Rs. in lakhs)	Alternative Y (Rs.in lakhs)
Period I	100	(–)
Period II	200	200
Period III	100	200
Total	400	400

Table 1.1 shows that the total profits are same as regards alternatives X and Y. Both these alternatives are be ranked equally on the basis of profit maximization criteria. But the returns from both these alternatives differ. Alternative X provides higher returns in earlier years as compared to later year whereas the returns from alternative Y are larger in later years as compared to early year. So, these two alternatives are not identical. This is primarily because a basic dictum of a rupee to be received today has more value of the rupee to be received tomorrow. This is called as the time value of money. The profit maximisation approach treats all returns as equal irrespective of the timing and does not make a distinction between returns received in different time periods. While the same is not true in actual practice as benefits received in early years are to be valued more highly than equivalent benefits

received in later years.

Uncertainty of returns: Third important technical limitation of profit maximisation is that it does not consider the quality aspect of benefits associated with returns. The term _quality‘ refers to the degree of certainty with which benefits can be expected. It is said that the more certain the expected return, there is a higher quality of the benefits. On the contrary, fluctuating and uncertain returns implies risk.

Maximising Profit after Taxes: One can easily prove that maximising profit after taxes is not going to maximise the owner‘s economic welfare. By selling additional shares and investing them in low yield assets, a firm can increase profits after tax. In such a situation, profit after taxes would increase but earnings per share will come down. For example, a company has 500 shares outstanding and profit after taxes is Rs. 10000. Then its earnings per share is of Rs. 20. If the company sells 500 additional shares at Rs. 100 per share and invests the proceeds at 5 per cent after taxes, then its total profits after taxes will increase to Rs. 12500. By doing so, the earnings per share will come to Rs. 12.5. This shows that maximising profits after taxes does not essentially serve the best interests of owners of the company.

Maximising Earnings per Share: The financial objective of maximising earnings per share (EPS) will also not make certain the maximisation of economic welfare of owners. It also suffers from the drawbacks as before now mentioned, i.e. it ignores timing and risk of the expected benefits. Apart from, maximisation of EPS has certain deficiency. For example, if the market value is not a function of EPS, then maximisation of EPS will not necessarily result in the highest possible price for the company's shares. Maximisation of EPS further entails that the firm should make no dividend payments till the funds can be invested internally at any positive rate of return.

To conclude, maximising profits after taxes or earnings per share as the financial objective falls short to maximise the owner‘s economic welfare.

2. Shareholders' Wealth Maximisation

Shareholder‘s wealth maximisation is too termed as _value maximisation‘ or _net present worth maximisation‘. In the academic literature, value maximisation is generally accepted as an appropriate operational decision-criterion for financial management decision. Its operational features satisfy all the three requirements (exactness, quality of benefits and the time value of money) of a suitable operational objective. This goal has been defended by distinguished finance scholars, economists, and practitioners. The following are some evidences of their views:

–In a market-based economy which recognises the rights of private property, the only social responsibility of business is to create value and do so legally and with integrity. It is a

profound error to view increases in a company's value as a concern just for its shareholders. Enlightened managers and public officials recognise that increases in stock prices reflect improvement in competitiveness – an issue which affects everyone who has a stake in the company or economy‖.

Should a firm maximise the welfare of employees or customers, or creditors? These are bogus questions. The real question is: What should a firm do to maximise its contribution to the society? The contribution to the society is maximised by maximising the value of the firm.

Those who regard shareholder wealth maximisation as immoral or irrelevant are ignoring that shareholders are not merely the beneficiary of a company's financial successes, but they are as well the referee who decide management's financial power.

What is the meaning of Shareholders' Wealth Maximisation (SWM)? Shareholders' Wealth Maximisation indicates maximising the pet present value (wealth) of shareholders. Net Present Value (NPV) is the difference between the present value of inflows and the present value of outflows. NPV can be defined clearly in the subsequent way:

$$W = \frac{A_1}{(1+k)} + \frac{A_2}{(1+k)^2} + \ldots\ldots\ldots + \frac{A_n}{(1+k)^n} - C_0 = \sum_{t=1}^{n} \frac{A_t}{(1+k)^t} - C_0$$

Where

A_1, A_2: the benefits expected to occur

C_0: the cost of the action

k: the appropriate discount rate to measure quality of A's; k reflects both timing and risk of benefits

W: Net Present Value

A firm should adopt a course of action only when W is positive, i.e. when there is net increase in the wealth of the firm. This is a very simple model of expressing wealth maximisation principle.

A complicated model can assume capital investments to occur over a period of time and k to change with time. Financial actions which have a positive NPV creates wealth for shareholders and financial actions which have a negative NPV destroy shareholders' wealth and should be rejected. Between mutually exclusive projects, the action having the highest NPV should be selected. Wealth can be maximised if this principle is followed in making financial-decisions.

The objective of wealth maximisation of shareholders considers the questions of the timing

of the expected benefits and risk associated with expected benefits. These issues can be taken care of by selecting an appropriate rate for discounting the expected flow of benefits. Benefits are always measured in terms of cash flows. The flow of cash is important in investment and financing decisions not the accounting profits.

Maximising the economic welfare of shareholders is corresponding to maximising the utility of their consumption with the passage time. As shareholders wealth is maximised, they can adjust their cash flows which optimise their consumption. From the shareholders' angle, the wealth created by a business organization through its actions is reflected in the increase in the market value of the shares. Consequently, the wealth maximisation principle states that the fundamental objective of a company is to maximise the market value of its equity shares. The value of the company's shares is represented by their market price which, in turn, is a reflection of the firm's financial decisions. Or in other words, it can be said that the market price of the shares of a company serves as the company's performance indicator.

Need for a Valuation Approach

Wealth maximisation approach requires a valuation model. The financial manager ought to identify or at least presume the factors which influence the market price of shares otherwise he would find himself not capable to maximise the market value of the shares of the company. What is the appropriate share valuation model? In practice, a number of factors affect the price of a share and these factors keep on changing very regularly. Furthermore, these factors differ across shares of different business organizations. For the purpose of the financial management problem, we can phrase the crucial questions normatively. How much should a particular share be worth? Upon what factor or factors should its value depend? Although there is no simple answer to these questions, it is usually established that the value of an asset depends on its risk and return.

Criticism of Wealth Maximisation Objectives

In spite of the arguments in favour of the objective of maximising value of shareholders, its superiority has been challenged. The critics fall into four main categories: the capital market sceptics, the strategic visionaries, the balancers, and the social responsibility advocates. The arguments of these critics and the rebuttal by the defendants of shareholder value maximisation principal are summarised as follows:

1. The capital market critics argue that the stock market displays myopic tendencies, often wrongly priced securities, and fails to reflect long-term values. Managers, on the other hand, are well-informed and make decisions based on more reliable and robust measures of value creation.
2. The strategists are of the opinion that the firm should pursue a product market goal like maximising the market share, or enhancing customer satisfaction, or minimising costs in

relation to competitors, or achieving a zero defect level. If the firm succeeds in implementing its product market strategy, investors would be amply rewarded.

3. It is also argued that a firm should seek to balance the interest of various stakeholders, viz. customers, employees, shareholders, creditors, suppliers, community, and others.

Justification for Wealth Maximisation Objective

1. Financial economists argue that there is extensive empirical evidence of the fact that in developed capital markets, at least, share prices are the least biased estimates of intrinsic values and managers are not generally better than investors at assessing values.

2. Some financial experts advocate that shareholders wealth is created only through successful product market strategies. For example, satisfied and loyal customers are essential for value creation. However beyond a certain point customer satisfaction comes at the cost of shareholders value. When that happens, the conflict should be resolved in favour of shareholders to enhance the long-term viability and competitiveness of the firm.

3. Practically, there is no such mantra that can ensure balancing of the interest of various stakeholders. There is no formula for balancing the interests. When managers confront complex problems involving numerous trade-offs, they will have no clear guidelines on how to resolve the differences.

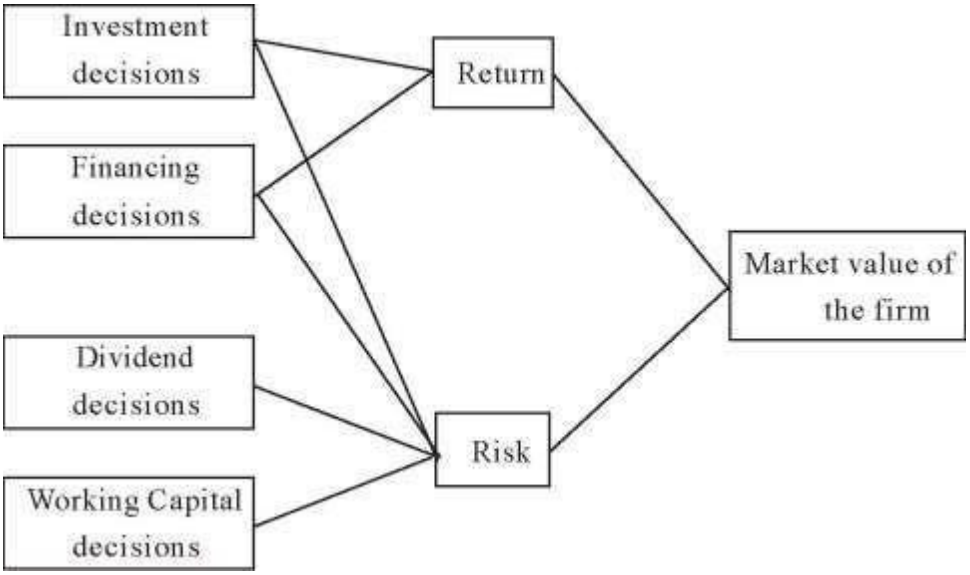
1.7 RISK-RETURN TRADE-OFF

Financial decisions frequently entail alternative courses of action. Should a company set up a plant with a capacity of five billion tonnes or ten billion tonnes? Or should the firm pursue a liberal credit policy or a conservative credit policy? Or should the debt-equity ratio of the firm be 4:1 or 1.5:1

All these alternative courses of action have different risk-return inferences. A high debt-equity ratio compared to a low debt-equity ratio may reduce the cost of capital but it is possible that it can expose the firm to greater risk. A large plant may have high expected returns and a high risk exposure as compared to a small plant which may have a low expected returns and a lower risk exposure.

Broadly, while making financial decision, the following questions needs to be answered: What is the risk exposure? What is the expected return? Given the risk-return features, how would it influence value of the firm? Exhibit 1.1 shows the relationship between the financial decisions, return, risk, and market value.

Exhibit 1.1 : Risk-Return Trade-Off



CHECK YOUR PROGRESS B

State whether the following statements are True or False:

1. The unit of analysis in capital budgeting is a financing project.
2. Maximising the shareholders' economic wealth is equivalent to maximising the shareholders‘ utility of their consumption over a period of time.
3. Maximising profits after taxes or earnings per share as the financial objective succeeded to maximise the economic welfare of owners.
4. The primary function of financial management is not to reconsider and control decisions to commit funds to new projects.

Activity

List the important differences between profit maximization and wealth maximization.

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1.9 SUMMARY

Financial management, also referred to as corporate finance or managerial finance, surfaced as a separate field of study at the turn of the 20th century. Financial management is closely related to macro-economic, financial accounting, marketing, production and other related fields of management. The financial management function in the modern sense includes decision-making in three interrelated areas, namely, investment including working capital management, financing and dividend policy. Every financial manager has to take these decisions keeping in view the objectives of the organization. Wealth maximisation as measured by the market price of shares emerges as a superior normative objective of financial management as compared to profit maximisation mainly because the latter is inapplicable in real situations due to two technical limitations; it ignores timing of benefits and does not consider the quality (uncertainty) of benefits.

1.10 GLOSSARY

Financial Management: Managerial area which is concerned with the planning and controlling of the firm‘s financial resources.

Financing Decision: Decisions which are concerned with raising or procurement of funds to meet the project costs.

Wealth Maximisation: It means that the operation of business should be conducted in such a manner so as to provide the maximum net present worth or value to the owners of a corporate body.

1.11 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress A

1. Dividend
2. Macroeconomics
3. Fundamental
4. Overall

Check Your Progress B

1. False
2. True
3. False
4. False

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1.13 TERMINAL AND MODEL QUESTIONS

1. Define the scope of financial management. What role should the financial manager play in a modern enterprise?
2. ".... the function of financial management is to review and control decisions to commit or recommit funds to new or ongoing uses. Thus, in addition to raising funds, financial management is directly concerned with production, marketing, and other functions within an enterprise whenever decisions are made about the acquisition or destruction of assets" (Ezra Solomon). Elucidate.
3. What are the basic financial decisions? How do they involve risk-return trade-off?
4. "The profit maximisation is not an operationally feasible criterion". Do you agree? Illustrate your views.
5. What is the justification for the goal of maximising the wealth of shareholders?
6. What do the critics of the goal of maximising shareholder wealth say? What is the rebuttal provided by the advocates of maximising shareholder wealth?
7. Discuss the risk-return trade-off in financial decisions.
8. What is the relationship of financial management with other disciplines? Explain.

UNIT: 2

SOURCES OF LONG-TERM FINANCE

Structure

2.0 Learning Objecives:

After going through this lesson, you should be able to:

- Explain the features of equity shares, debentures, term loan, and preference shares.
- List the benefits of equity shares, debentures, term loan, and preference shares.
- Explain the features of innovative instruments like warrants, and deep-discount bonds.
- Define lease financing and discuss its features as well as advantages.
- Describe the feature, advantages and disadvantages of hire purchase system.

2.1 INTRODUCTION

The Financial Manager has to collect funds from a variety of sources to satisfy varied financial needs of the firm. Some portion of the capital is provided by the owners, suppliers and creditors though other funds arise from earnings retained by a firm. A firm needs long-

term funds to purchase fixed assets and a portion of investment in current assets as permanent investment to ensure smooth flow of business operations. A firm needs medium term funds for a period of three to seven years for overhauling of its equipments and machines and also for financing advertising campaign. The short-term funds are also needed to meet the day-to-day business needs. Among these different types of capital requirements, funds required for purchase of fixed assets are of significant importance since the funds are to be arranged for a long period of time. The business firm procures funds from external as well as internal sources. The finance manager procures funds from external sources to float new ventures and to expand existing ones. To support its long-term investments, a firm must locate the ways and means to finance them. A Company can approach the general investing public, government and financial institutions for the purpose for long term financing of business. The interest of owners and investors and inherent cost of capital should be kept in mind while taking decisions regarding long-term finance.

2.2 EQUITY SHARES

Equity shares symbolize the ownership position in every company and its owners bear the risk and rewards associated with them. Since equity shares do not have a maturity date, so they are the source of permanent capital. Shareholders are entitled for dividends on the basis of capital contributed. The amount/rate of dividend on equity shares is not fixed rather it is decided by the board of directors of the company. Shareholders are entitled to dividends after the income claims of others have been satisfied as they are the owners of the company.

Equity shares have a face/par value in terms of the price for each equity share, the most well-liked denomination of Rs.10. The price on which the equity shares are issued is called as the issue price. Generally, the issue price for new companies is equal to the face value of the share. It may be more for established companies, the excess being called as share premium. Book value of ordinary shares refers to the paid-up capital plus reserves and surplus (net worth) divided by the number of outstanding shares. Market value of the share is the price at which they are traded in the stock market. However, the market value of unlisted shares is not available.

2.2.1 Features of equity shares: The equity shares have some special features which are as follows:

Residual Claim to Income: The equity shareholders have always a residual claim to the income of a company. The income left after satisfying the claims of all other types of investors is of the equity shareholders. This income is the difference between profit after tax and preferred dividend.

This income of equity shareholders may be paid out as dividends or retained by a company. Equity earnings which are ploughed back in a company be likely to increase the market value of equity shares. For instance, a company earns Rs. 6 crores during a particular year and pays

dividend of Rs. 4 crores out of this earnings, the value of equity shares may rise by about Rs. 2 crores which is the amount retained by the company. Equity shareholders therefore receive benefits in two ways: capital appreciation of Rs. 2 crores and dividend income of Rs. 4 crores.

The decision regarding declaration of dividend is the prerogative of the board of directors of the company and equity shareholders cannot challenge this decision in a court of law. In this regard, the position of equity shareholders is different from the suppliers of debt capital. Debenture holders can take legal action against the company for its failure to meet contractual principal payment and interest repayment irrespective of the financial condition of the company. On the other hand, equity shareholders cannot challenge the dividend decision of the board of directors in a court of law even though there is good financial performance of the company.

Claim on Assets: The claim of equity shareholders' in the assets of the company is also residual. In the event of liquidation, the claim of equity shareholders' would rank after the claims of the preference shareholders. The claim of equity shareholders' will be unpaid if the liquidation value of assets is not sufficient.

Right to control: The equity shareholders have the right to control the operations of the business enterprise as they are the owners of the company. But this control is indirect. The main decisions are approved by the board of directors of the company and the management appointed by the board of directors carries out the day-to-day activities. The equity shareholders have the power to elect the board of directors of the company in addition to voting on every resolution placed in various meetings of the company. Theoretically, equity shareholders have indirect right to control but in actual, this right of control is ineffective as well as weak.

Voting rights: Equity shareholders of the company have to cast their vote every resolution placed in various meetings of the company. For instance, a company wants to alter its objectives clause, it requires approval of equity shareholders. Each equity share carries only one vote. So, every equity shareholder has a number of votes equal to the number of shares held by him/her. These equity shareholders may vote in person or through proxy. A proxy gives a designated person right to vote in the meetings of the company on behalf of a equity shareholder at the company's annual general meeting.

Pre-emptive rights: The pre-emptive right permits a equity shareholder to maintain his/her proportionate share of ownership in the company. The law allows every equity shareholders the right to purchase new shares of the company in the same proportion as their current ownership. Thus, if a shareholder owns 6 per cent of the company's equity shares, he has pre-emptive right to buy 6 per cent of new shares issued by the company. A shareholder may also decline this right to be exercised. Rights are the shareholder's option to purchase a stated number of new shares issues by the company at a specified price during a given period.

Limited liability: Equity shareholders of a company are the real owners of the company, but as far as their liability is concerned, it is limited to the amount of their investment in shares. If any shareholder has already paid the full issue price of shares purchased, s/he has nothing more to contribute at the time of liquidation of the company. This position of equity shareholders is different from the other forms of business organizations i.e. sole proprietary or partnership firms wherein these have unlimited liability. The limited liability feature of equity share of a company attracts investors to invest their funds in the company which ultimately help a company to raise funds.

Global Depository Receipts (GDRs): A GDR is an instrument issued abroad and is listed or traded on a foreign stock exchange. It represents one/more share(s) of the issuing company. It does not carry any voting rights. A holder of GDRs can at any time covert it into the number of shares that it represents. After conversion, the underlying shares are listed/ traded on the domestic stock exchanges. The dividend on GDRs is paid in local currency (Rupees).

2.2.2 Advantages and Disadvantages of Equity Financing

As the single most important source of long term funds, equity capital has merits as well demerits from the viewpoint of the company as well as the shareholders.

Advantages: The advantages of equity capital to a company are: first, it is a permanent source of funds without any repayment liability; second, it does not involve obligatory dividend payment and; thirdly, it forms the basis of further long-term financing in the form of borrowing related to the creditworthiness of the firm.

Disadvantages

- Equity shares have a higher cost because dividends paid to equity shareholder are not tax deductible.
- From investors' view point, equity shares are riskier because there is no certainty regarding payment of dividend as well as of capital gains. Consequently, equity shareholder requires a relatively higher rate of return. Because of this, equity share capital is having the high cost as a source of financing.
- The issue of new equity shares by a company dilutes the existing shareholders' EPS if the profits of the company do not increase immediately in the same proportion to the increase in the number of equity shares.
- The issuance of new equity shares by a company may dilute the ownership and control of the existing shareholders of the company. We know that the equity shareholders have a pre-emptive right to retain their proportionate ownership, but it may be possible that they may not have funds to purchase additional shares.

2.3 PREFERENCE SHARE CAPITAL

Preference share capital is a hybrid form of financing. It has a number of features of equity share as well as of debentures. Preference share capital is similar to equity share capital in the following grounds: (a) dividend on preference share is payable only out of distributable profits and (b) dividend on preference share is not a tax-deductible payment.

Preference share capital resembles to debenture in the following ways: (a) the dividend rate of preference share capital is usually fixed in advance, and (b) normally, preference shareholders do not enjoy voting rights.

The advantages of issue of Preference share capital are:

a. It is not statutory to pay dividend to preference shareholders.

b. In the case of issue of perpetual preference shares, there is no redemption liability on the company.

c. Generally, preference share capital is a part of net worth of the business enterprises. Because of this, creditworthiness of the company increases.

d. Under normal circumstances, there is no voting right available to preference shareholders.

The drawbacks of issuing the preference share capital are:

a. Preference share capital is an expensive source of financing as compared to debentures.

b. Obligation of payment of dividend to preference shareholders is not mandatory but if no payment of dividend is made it affects the image of the company.

c. Preference shareholders have a prior claim on the assets and earnings of the company in comparison to equity shareholders.

2.4 DEBENTURE CAPITAL

Akin to a promissory note, debentures/bonds represent creditorship security and debenture holders are the one who are long term creditors of the firm. As debentures are the secured instrument, it contains a promise to pay interest as well as repay principal at stipulated times. In comparison to equity share capital, the debenture is a fixed income (interest) security.

2.4.1 Features of Debentures

As a long-term source of borrowing, debentures have some contracting features compared to equities which are as under:

Trust Indenture: When a debenture is sold to public, an indenture trust deed appoints a trustee. It is a legal agreement between the issuing company and the trustee who can be a financial institution or insurance company or bank or a firm of attorneys. The trust deed provides the specific terms of agreement such as explanation of debentures, rights of the

issuing company, rights of debenture holders and responsibilities of the trustee. The trustee is accountable to ensure that the borrower or the company fulfils all its contractual obligations.

Interest: The debenture carries a fixed (coupon) rate of interest, the payment of which is legally enforceable. The interest on debenture is tax-deductible and is to be paid annually/semi-annually/quarterly. Some public sector undertakings issue tax-free bonds the income from which is exempted from tax in the hands of the investors. A company issuing debenture is free to decide a coupon rate which may be floating or fixed, being determined in relation to some benchmark rate. It is also related to the credit rating of the debenture as an instrument.

Maturity: It indicates the length of time for redemption of par value. A company can choose the maturity period, though the redemption period for non-convertible debenture is typically 7-10 years. The redemption of debentures can be accompanied in either of two ways: (i) debentures redemption reserve (sinking fund) and (ii) call and put (buy-back) provision.

Debenture Redemption Reserve: A Debenture Redemption Reserve (DRR) has to be formed for the redemption of all debentures with a maturity period exceeding 18 months corresponding to at the least 50 per cent of the amount of debenture issue/redemption before commencement of redemption.

Call and Put Provision: The call/buy back provision provides an option to the issuing company to make redemption of the debentures at a particular price before maturity. The call price can be more than the part/face value by generally 5 per cent, the difference being call premium. The put option is a right to the debenture holder to seek redemption at specified time at predetermined prices.

Security: Debenture is normally secured by a charge on the present as well as future immovable assets of the issuing company by way of an equitable mortgage.

Convertibility: Apart from pure non convertible debentures (NCDs), debentures can be converted into equity shares at the option of the debenture holders. The period during which conversion can be affected and the conversion ratio are specific at the time of the issue of the debenture itself. The convertible debentures may be fully convertible (FCDs) or partly convertible (PCDs). The fully convertible debentures carries interest rate lower than the normal rate on non convertible debentures, they may even have a zero rate of interest. The partly convertible debentures have two part: (i) convertible (ii) non-convertible. Typically, the convertible portion is converted into equity share at a specified premium after a specified date from the date of allotment, while the non-convertible portion is payable/ redeemable in specified equal instalment on the expiry of specified years from the date of allotment.

Credit Rating: All debentures are compulsorily rated by credit rating agencies so as to ensure timely payment of interest as well as redemption of principal by a borrower.

Claim on Income and Assets: The payment of interest and repayment of principal is a contractual obligation enforceable by law. Default would lead to bankruptcy of the company. The claim of debenture holders on income and assets ranks *paris passu* with other secured debt and higher than that of shareholders-preference as well as equity.

2.4.2 Types of Debentures

Debentures can be straight or convertible. A convertible debenture (CD) is that which can be converted, partly or fully into shares after a specific period of time. So on the basis of conversion, debentures can be categorized into three:

- Non Convertible Debenture
- Fully Convertible Debenture
- Partly Convertible Debenture

Non Convertible Debentures (NCDs): Non Convertible Debentures are those debentures with do not have a characteristic of conversion. The payment of these type of debentures is on maturity.

Fully Convertible Debentures (FCDs): Fully Convertible Debentures are those debentures which are converted into shares as per the terms of the issue with regard to time and price of conversion. The interest rates on these types of debentures is normally less as compared to the interest rates on Non Convertible Debentures.

Partly Convertible Debentures (PCDs): Debentures issued by companies can have two part: the first part can be convertible and the other part can be a non-convertible. The issue of such types of debentures are known as Partly Convertible Debentures.

2.4.3 Advantages and disadvantages of Debentures

The following are the advantages of issuance of debentures:

a. **Low cost:** The issuance of debentures costs less to the issuing company in comparison to equity shares as the investors believe debentures as a relatively less risky investment alternative resulting requiring a lower rate of return and the payment of interest on debentures are tax deductible.

b. **Non ownership dilution:** Debenture holders do not enjoy voting rights, so issue of debentures by the company do not cause any type dilution of ownership.

c. **Fixed interest:** Debenture does not take part in extraordinary earnings of the firm, so the payments on debenture are restricted to interest.

d. **Compact real obligation:** debentures are beneficial to the company during the periods of inflation as payment of principal and interest is already fixed which decline in real terms.

Debentures have the following limitations:

a. **Obligatory payments:** Debenture end results are the statutory obligation of paying principal as well as interest. If principal and interest is not paid by the company, it can be one of the grounds for liquidation of the company.

b. **Financial risk:** Issuance of debentures increases the financial risk of the companies especially for those who fluctuating sales and earnings.

c. **Cash outflow:** Debentures are to be paid on its maturity irrespective of the earnings of the company. Thus, even if a company is not in profits, the debenture holders are to be paid on maturity date and it involves cash outflows.

CHECK YOUR PROGRESS A

State whether the following statements are True or False:

1. Equity shares are not the source of permanent capital.
2. A proxy gives a designated person no right to vote on behalf of a shareholder at the meetings of a company.
3. A GDR is an instrument which is issued abroad and is listed or traded on a foreign stock exchange.
4. Preference shares do not carry voting right under normal circumstances.
5. The debentures carry a fixed (coupon) rate of interest.

2.5 TERM LOANS

Companies get long-term debt mainly through raising either term loan or by issue of debentures. Term loans which are also known as term finance are a source of debt finance which is normally repayable in less than a period of 10 years. There is a difference between the term loan and short term bank loans. These short term bank loans are employed to finance working capital requirements of the business. The characteristics of term loans are as under:

a. **Currency Loans:** Financial institutions give foreign currency loans and term loans. Rupee loan is given directly to companies for establishment of a unit as well as for its modernization, expansion and diversification by the financial institutions.

b. **Security:** Term loans are basically secured borrowing. Those assets which are financed with the inflows of term loan are provided as the prime security. Collateral security is being provided by the other assets of the company.

c. **Repayment of Principal and Payment of Interest**

The repayment of principal and payment of interest are the statutory obligations of a company irrespective of the financial conditions of that company.

d. **Restrictive Covenants**

Financial institutions normally impose restrictive conditions on the borrowers to safeguard their interests. There are no set rules for the restrictive convents to be imposed by a financial institution, but these normally depend upon the financial conditions of a borrower. For example, a financial institution may have the right to appoint nominee directors.

2.5.1 Advantages and Disadvantages of Term Loans

The advantages of term loans are as under:

a. Interest of term loan is a tax-deductible expense.

b. The interest of the lending institution is limited to the amount of principal and interest. Hence, they are not participating in the day-to-day activities of the company.

c. There is no dilution of control on account of term loan because lending institutions are not entitled to vote.

The following are the disadvantages of term loans:

a. Term loan increases financial leverage resulting increase in the cost of equity to the company.

b. Term loan carries obligations of payment of interest and repayment of principal. If these obligations are not fulfilled, it can lead to bankruptcy of the firm.

c. The real cost of borrowing will be more than expected, if the rate of inflation is low.

2.6 WARRANTS

A warrant entitles its holders to subscribe to the equity share capital of a firm at a particular price during a specified period. The holder acquires only the right (option) but he has no obligation to acquire the equity shares. Warrants are generally issued in conjunction with other instruments, for example, attached to (i) secured premium notes of TISCO in 1992, (ii) debentures of Deepak Fertilisers and Petrochemical Corporation Ltd. in 1987, Ranbaxy and Reliance in 1995. They can be issued independently also.

Difference with Convertible Debentures: Warrants are akin to convertible debentures to the extent that both give the holder the option/right to buy ordinary shares but there are differences between the two. While the debenture and conversion option are inseparable, a warrant can be detached. Similarly, conversion option is tied to the debenture but warrants can be offered independently also. Warrants are typically exercisable for cash.

2.6.1 Features of Warrants

The important features of warrants are as follows:

Exercise Price: It is the price at which the holder of a warrant is entitled to acquire the ordinary shares of the firm. Generally, it is set higher than the market price of the shares at the time of the issue.

Exercise Ratio: It reflects the number of shares that can be acquired per warrant. Typically, the ratio is 1:1which implies that one equity share can be purchased for each warrant.

Expiry Date: It means the date after which the option to buy shares expires, that is, the life of the warrant. Usually, the life of warrants is 5-10 years although theoretically perpetual warrants can also be issued.

Types: Warrants can be (i) detachable, and (ii) non-detachable. A detachable warrant can be sold separately in the sense that the holder can continue to retain the instrument to which the warrant was tied and at the same time sell it to take advantage of price increases. Separate sale independent of the instrument is not possible in case of non-detail detachable warrants. The detachable warrants are listed independently for stock exchange trading but non-detachable warrants are not.

Theoretical Value: A warrant is an option (call option) to purchase a number of equity shares (exercise ratio) at the exercise price. Therefore, the theoretical value of a warrant would depend upon market price of the shares of the company, the exercise price and the exercise ratio. Thus,

Theoretical value = (Market price of a share – Exercise Price) × Exercise ratio

Assuming an exercise price of Rs. 75, the expected market price of share of the company at the time of exercise for the option (expiry date) of Rs. 100 and exercise ratio of 2, theoretical value of a warrant = (Rs 100 - Rs. 75)×2=Rs. 50.

If the market value of shares is lower than the exercise price, the value of a warrant would be 0.

Premium is the difference between the market value of a share and the theoretical value of the warrant. The premium divided by the theoretical value expresses premium in percentage terms.

2.7 ZERO INTEREST BONDS/DEBENTURES (ZIB/D)

Also known as Zero Coupon Bonds, ZIBs do not carry any explicit rate of interest. They are sold at a discount from their maturity value. Return to the investors is the difference between the face value of a bond and its acquisition cost. The implicit rate of return/interest on such bonds can be computed as follows:

$$\text{Acquisition price} = \text{Maturity (face) value}/(1-i)^n$$

where i = rate of interest

n = maturity period (years)

Deep Discount Bond (DDB): A DDB is a form of ZIB. DDBs are issued at a deep/steep discount over its face value. This means that the interest (coupon) rate on DDB is far less

than the yield to maturity. The Deep Discount Bond increases to its face value over the maturity period.

In India, DDBs are being issued by the public financial institutions. For example, IDBI sold a DDB of face value of Rs. 1,00,000 at a deep discount price of Rs. 2,700 with a maturity period of twenty five years in 1992. If the investor could hold the DDB for 25 years, the annualised rate of return would work out to 15.54 per cent. The investor had the option to withdraw (put option) at the end of every five years with a specified maturity/deemed face value ranging between Rs. 5,700 (after 5 years) and Rs. 50000 (after 20 years), the implicit annual rate of interest being 16.12 and 15.71 per cent respectively. The investors could also sell the DDBs in the market. The IDBI had also the option to redeem them (call option) at the end of every 5 years presumably to take advantage of prevailing interest rates. A second series of DDBs was issued by the IDBI in 1996 with a face value of Rs. 2 lakh and a maturity period of 25 years, the deep discount issue price being Rs. 5,300.

The merit of DDBs/ZIDs is that they enable the issuing companies to conserve cash during their maturity. They protect the investors against the reinvestment risk to the extent the implicit interest on such bonds. However, they are exposed to high repayment risk as they entail a balloon payment on maturity.

2.8 leasing

Leasing is a contractual arrangement whereby the one party (lessor) grants the right to another party (called lessee) to use an asset in return for periodical payments. The owner (lessor) keeps the title of ownership of an asset and the user (lessee) uses it on payment of lease rentals over a specified period of time. While leasing of buildings, land, and animals has been here from immemorial times, the leasing of equipments is a relatively new concept particularly on the Indian scene. There are several types of leases prevalent in financial markets. A few are discussed below:

Operating Lease: An operating lease is also known as a short term lease. In case of operating lease, the lease period is less than the useful life of the asset. In such a type of lease, the lease rentals payable by the lessee during the period of lease are not sufficient to cover fully the cost of the asset. This type of lease is usually cancellable at short notice. Moreover, it is the lessor who is responsible for insurance, maintenance and taxes of the asset. Examples of operating lease is a lease contract for laptops.

Financial Lease: A financial lease or capital lease is a form of borrowing. It is a long-term, non-cancellable lease contract. Financial lease is normally used for leasing of buildings and equipments. Under long-term lease arrangements, the lessee is responsible for insurance and maintenance of an asset. Financial lease is fully amortised during the primary lease period. After the financial lease contract expires, its agreement may provide the clause to purchasing of asset by the lessee or for renewal of contract.

Sale and Lease Back: At times, a user may sell an asset owned by him to the lessor and takes it back on lease from him. Such sale and lease back arrangements offers tax benefits. Generally, this type of arrangement is preferred by a firm that is suffering from the shortage of funds for its operations or is facing liquidity crisis. The lease provisions are generally similar to those of the financial leases.

Leveraged Lease: In case of leveraged lease, the lessor borrow a part of the purchase price of an asset from a lender, which is normally a financial institution. The lessor services the debt out of lease rents received. Typically, such types of leases are popular in structuring lease of very expensive assets, such as the lease of a plane or ship.

Primary and Secondary Lease: At times, the leasing contract is categorized into two parts namely primary and secondary lease. Primary lease means the recovery of the cost of an asset by way of lease rentals during a period of about five or six years. This may be followed by a perpetual secondary lease on nominal lease rentals, In other words, more lease rents are charged in the primary and secondary lease period of the contract. These forms of lease contracts are also referred to as up-fronted leases and back-ended leases respectively.

2.8.1 ADVANTAGES OF LEASING

There are several real advantages to leasing which make it an important arrangement. Some of the advantages of leasing are as follows:

a. Easy source of finance

A lease evades some of the restrictive covenants normally included in long term loan agreements while borrowing from financial institutions. However, a lease agreement, in contrast with term finance, may impose some restriction on the use of asset. For example, it may specify the maximum number of hours per week the asset may be used. Such a restriction is meant to safeguard the asset, not to enhance the ability of the lessee to pay rentals.

b. Shifting the Risk of Obsolescence

In case of operating lease, the risk of obsolescence in borne by the lessor. However, the lessor enhances the lease rental suitably for bearing the risk of obsolescence. Infact, the lessee bears the cost of obsolescence risk. But the economic cost of obsolescence may be reduced with better access to potential users of asset by the lesser as in this way lessor may be able to find an economic use of somewhat obsolete assets and thereby reduce the economic cost of obsolescence.

c. Increases Liquidity

Lease financing enhances the liquidity of the firms attempting sale and lease back arrangement. Sale and lease back arrangement is more beneficial to those firms which are having shortage of working capital and foresee liquidity crisis.

d. Maintenance and specialised services

With a full service lease, the lessee receives maintenance and other specialised services. For example, laptop manufacturer who lease out laptops are better equipped than the user to provide effective specialised service. However, it may be noted that lease rentals would be higher due to such services.

e. Convenience and Flexibility

When asset is required for a short-period only, it does not seem to make much sense on the part of the firm first to spend time in selecting an asset, negotiating its purchase, arranging insurance, etc. and then to repeat all these steps to resell the asset. Operating lease obviates the need of this exercise.

2.8.2 PROBLEMs OF LEASING

The problems of leasing are as follows:

a. Unhealthy Competition

The market for leasing has not grown with the same pace as the number of lessors. As a result, there is over supply of lessors leading to competition. With the leasing business becoming more competitive, the margin of profit for lessors has dropped from four to five per cent to the present 2.5 to 3 per cent. Bank subsidiaries and financial institutions have the competitive edge over the private sector concerns because of cheap source of finance.

b. Lack of Qualified Personnel

Leasing requires qualified and experienced people at the helm of its affairs. Leasing is a specialised business and persons constituting its top management should have expertise in accounting, finance, legal and decision areas. In India, the concept of leasing business is of recent one and hence it is difficult to get right man to deal with leasing business. On account of this, operations of leasing business are bound to suffer.

c. Stamp Duty

The States treat a leasing transaction as a sale for the purpose of making them eligible to sales tax. On the contrary, for stamp duty, the transaction is treated as a pure lease transaction. Accordingly a heavy stamp duty is levid on lease documents. This adds to the burden of leasing industry.

d. Tax Considerations

Most people believe that lessees prefer leasing because of the tax benefits it offers. In reality, it only transfers the benefit i.e. the lessee's tax shelter is lessor's burden. The

lease becomes economically viable only when the transfer's effective tax rate is low. In addition, taxes like sales tax, wealth tax, additional tax, surcharge etc. add to the cost of leasing. Thus leasing becomes more expensive from of financing than conventional mode of finance such as hire purchase.

e. Delayed Payment and Bad Debts

The problem of delayed payment of rents and bad debts add to the costs of lease. The lessor does not take into consideration this aspect while fixing the rentals at the time of lease agreement. These problems would disturb prospects of leasing business.

2.9 Hire Purchase

Hire purchase is another way of making sales. In case of a hire purchase agreement, the goods are let out on hire by a finance company (creditor) to the customer (hirer). The hirer is supposed to make payment of an agreed amount in periodical instalments. The ownership of the goods remains with finance company (creditor) and passes it to customer (hirer) on the payment of last instalment.

2.9.1 Features of Hire Purchase Agreement

a. Under hire purchase system, the buyer agrees to pay the total purchase price of goods in installments and he takes the possession of goods immediately.

b. The ownership of the goods will be passed on the buyer on the payment of last installment.

c. Each installment in case of hire purchase agreement is considered as hire charges.

d. The hirer has the right under the hire purchase agreement to terminate the agreement any time before the property passes.

e. If the buyer makes a default in the payment of installment under the agreement, the seller is having the right to take the repossession of the goods from the buyer and will forfeit the amount already received from the buyer as hire charge.

2.9.2 Advantages of Hire Purchase Agreements

Hire purchase agreements has a number of advantages which are as follows**:**

- Customer get the benefit of depreciation on assets hired by him in the hire purchase agreement.
- Financing of goods through hire purchase is easy.
- Customer becomes the owner of the goods on the payment of last instalment.
- Hirer gets income tax benefits on the interest paid.

2.9.3 Disadvantages of Hire Purchase Agreements

The disadvantages of hire purchase agreements are:

- Cost of financing through hire purchase agreements are high.
- Hirer becomes the owner of goods only after making the payment of the last instalment.

CHECK YOUR PROGRESS B

Fill in the blanks:

1. _____employed to finance for the purchase of fixed assets as well as working capital margin.
2. _____reflects number of shares that can be acquired per warrant.
3. _____increases to its face value over the maturity period.
4. _____is a long-term, non-cancellable lease contract.

Activity

List the important differences between Equity shares and Preference shares.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____.

2.11 SUMMARY

Equity share capital provides ownership right to equity shareholders. Equity shareholders are the real owners of a company. That‘s why; equity shareholders have residual claims on income and assets of the company. Debenture or bond is a long-term promissory note. Debenture holders have a prior claim on the company's income and assets over equity shareholders. Debentures can be secured or unsecured and convertible or non convertible Preference share is one type of hybrid security which includes some features of an equity share and some of a debenture. Regarding its claims on income and assets, preference shares stands before an equity shares but after debentures. Term loans are those loans whose maturity is more than a year. Majority of the term loans are secured. A warrant is an option

to buy a specified number of equity shares during a specified period at an indicated price. A detachable warrant is bought and sold autonomous to the debenture to which it is associated.

Leasing is a contract wherein a party having an asset (lessor) transfers the right to use the asset to the user (lessee). Lease financing provides a number of advantages to the lessor as well as to the lessee. In case of a hire purchase, the goods are let out on hire by a finance company to the customer (hirer). The customer is required to pay an agreed amount in periodical instalments. The ownership of the property remains with finance company till the payment of last instalment.

2.11 GLOSSARY

Warrant: A warrant entities its holder to subscribe to the equity share capital of a company during a specified period at a particular price.

Equity Shares: They represent the ownership position in a company and share the risk and rewards associated with the ownership of companies.

Preference Share Capital: It is a hybrid form of financing having some characteristics of equity shares and some characteristics of debenture.

Hire Purchase: An agreement under which goods are let on hire and the hirer has an option to purchase them in accordance with the terms of agreement.

Leasing: It is a contract between the owner (lessor) and the user (lessee) for a fixed period of time for use of an asset.

2.12 ANSWERS TO CHECK YOUR PROGRESS

CHECK YOUR PROGRESS A

1. False
2. False
3. True
4. True
5. True

CHECK YOUR PROGRESS B

1. Term Loan
2. Exercise Ratio
3. Deep Discount Bond
4. Financial Lease

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2.14 TERMINAL AND MODEL QUESTIONS

1. What is an equity share? How does it differ from a preference share and a debenture? Explain its most important features.
2. What are the advantages and disadvantages of equity shares to the company?
4. What is a debenture? Explain the features of a debenture.
5. What are the pros and cons of debentures from the company's and investors' point of views?
6. Why is a preference share called a hybrid security? Do you agree that it combines the worst features of ordinary shares and bonds?
7. Define term loans? What are their features?
8. What is a warrant? What are its characteristics features? Why are warrants issued?
9. Discuss the advantages and disadvantages of leasing.
10. Define hire purchase. Discuss its features.

UNIT: 3 CAPITAL BUDGETING

Structure

3.0 LEARNING ObjectiveS

After reading this lesson, you should be able to

- to discuss meaning and significance of capital budgeting decisions;
- explain the process of evaluation of capital budgeting decisions; and
- Apply various methods of evaluating and ranking capital expenditure projects.

3.1 Introduction

Capital budgeting is one of the most important areas of financial decision making. The capital budgeting decision means a decision as to whether or not money should be invested in long term projects, such as the setting up of factory or installing machinery or creating additional capacities to manufacture a part which, at present, may be purchased from outside. It includes a financial analysis of the various proposals regarding capital expenditure to evaluate their impact on the financial condition of the company and to choose the best one out of the various alternatives. The finance manager has various tools and techniques by means of which he assists the management in taking proper capital budgeting decisions. In any

business, the commitment of funds in land, buildings, equipment, stock and other types of assets must be carefully made. Once the decision to acquire a fixed asset is taken, it becomes very difficult to reverse that decision. The expenditure on plant and machinery and other long term assets affects operations over a series of years. It becomes large and permanent commitment that influences long term prospects and the future earning capacity of the firm.

Decisions in this area are difficult to make, primarily because the future which will be affected by acquisition of these assets is distant and difficult to forecast. In most projects, the investment of funds has to be made immediately, but the returns are expected over a number of years in future. The returns as well as the length of the period, over which they will accrue, are uncertain.

3.2 SIGNIFICANCE OF CAPITAL BUDGETING

Capital expenditure decision is a single most important financial decision in as much as it affects the financial health of the enterprise for a long period of time. The very fact that this kind of decision deals with capital expenditure projects involving considerably large volume of capital, return on which will be flowing in the enterprise over a number of years bears testimony to its significance.

It should be noted at this juncture that capital expenditure decision involving the acquisition of major assets is not a routine process and whatever decision is taken can be reversed only at considerable cost to the company. This necessitates a careful job of planning and evaluation. This fact becomes more important particularly when the management is faced with problem of allocation of scarce resources among competing alternatives. A finance manager is required to choose the best alternative in order to maximise the wealth of the owners.

Another factor contributing to the significance of the capital expenditure decision is the risk exposure of burgeoning funds committed in capital expenditure projects, effect of which will be felt by the company over extended period of time. Once a multimillion investment is made in acquiring a sophisticated machine, the company cannot easily withdraw from continuing the construction. The long-term commitment of funds reduces the flexibility of the manager. The decision-maker is bound by the decision whether it is good or bad. Once he has committed the funds, he is at the mercy of future development.

Capital expenditure decision is also important because of its effects on operating expenditures and the patterns of cash flows for a longer period. For example, capital expenditure decision determines where and how the company‘s products will be manufactured which in turn shapes the basic character of the organisation, operations, cash flows, and the financial structure of the company.

Where a company is contemplating to diversify its operations or expand its activity the management is required to make a series of investment decisions. A company to grow and prosper has to make investment decision, otherwise the company‘s growth will be accompanied by financial strains.

Finally, sentient investment decision based on sophisticated techniques and managerial skill and experience will usually improve the timing and quality of asset acquisition. If done poorly, it will cost the company large sums of money because of over capacity or under capacity sometimes at the same time. The company may have idle assets to produce a product that is not in demand while it has a shortage of the machinery and facilities to produce a much demanded high-profit product.

3.3 EVALUATION OF CAPITAL BUDGETING PROPOSALS

At each point in time, a business manager will have a number of proposals regarding various projects in which he can invest money. He has to compare and evaluate all these projects and decide which one to take up and which one to reject. Of course, apart from the financial considerations, there are many other factors which are important in making capital budgeting decisions. Sometimes, a project may be undertaken only with a view to establishing a foothold in the market or because it results in better welfare of the society as a whole or because it increases the safety and welfare of workers. It must, however, be emphasised that the evaluation of capital budgeting proposals has two dimensions, i.e., profitability and risk. We know that the profitability and risk are directly related. Higher the risk, the greater will be the expected profitability. It means that when a firm accepts projects on the basis of higher profitability, it also assumes higher risk. Therefore the finance manager should also take into account the risk element involved in various proposals. In what follows, we discuss various methods of evaluating projects on the basis of profitability, assuming that all the proposals under consideration are of the same risk class.

3.4 INVESTMENT DECISION CRITERIA

The most important basis of making an investment or capital budgeting decision is to determine whether the particular capital project will earn the desired rate of return. In case a management has a number of alternative capital projects for consideration, it will be necessary to determine which of them is the most profitable, and also whether the most profitable one earns to determine which of them is the most profitable, and also whether the most profitable one earns at least the desired rate of return. A number of methods for evaluating capital investment projects are available. Before discussing the various investment methods and their relative merits and demerits, it is necessary to make it clear that most of these methods evaluate investment projects on one criterion only and that is profitability. The management may have a number of other criteria besides profitability such as its public image, market share, future growth, excellence in quality, price leadership, etc. In making the final investment decision a management may find that some or all of these latter criteria are not wholly compatible with the profitability criterion and it may try to strike a balance between them. In doing this, it exercises judgement. In fact, there is no investment decision, or for that matter any decision in which management does not have to exercise its judgement. Project evaluation on profitability criterion helps this judgement. The various methods which are commonly used for evaluating the relative worth of investment proposals are as follows:

I. Non-discounted Cash Flow Techniques

   a. Payback Period Method

   b. Average Rate of Return Method

II. Discounted Cash Flow Techniques

   a. Net Present Value Method

   b. Profitability Index Method or Benefit-Cost Ratio Method

   c. Internal rate of Return Method

3.4.1 Payback Period Criterion

Payback period is the time period during which net cash outlays on capital project are equal to the net cash inflows. Simply put, it is the time period during which capital investment pays off its full value. It is relatively a simple method of evaluation, and it is widely used. Its computation is simple and can be done by the following formula in cases where inflows are in the nature of a series of uniform amounts.

$$\text{Payback period} = \frac{\text{total cash outlay}}{\text{annual cash inflows}}$$

For example, an investment project involves a net cash outlay of Rs. 20,000 and annual cash inflows are in the amount of Rs. 10,000 for five years. Payback period in this case is:

$$\frac{\text{Rs. } 20{,}000}{\text{Rs. } 10{,}000} = 2 \text{ years}$$

In case of projects A and B, shown in Table 1, payback period is one year.

If net cash inflows are of an uneven nature, as in the following example, payback will be computed as shown in Table 1.

Table 1: Computation of Payback Period

Year	Net cash outlays (Rs.)	Annual net cash inflows (Rs.)	Cumulative net cash inflows (Rs.)
1	10,000	5,000	5,000
2	-	4,000	9,000
3	-	3,000	12,000

Payback period in this case is more than two years but less than three years. In the whole of the third year, net cash inflow is Rs. 3,000. Assuming that cash inflows are in an even amount from month to month it will take (Rs. 1,000)/ (Rs. 3,000) = 1/3 year to get cash inflow of Rs. 1,000.

Payback period = 2 + 1/3 years. Companies using payback criterion for accepting or rejecting the proposed investment projects predetermine a maximum or required payback period which acts as a decision rule for investment decisions. Projects which have a payback period equal to or less than this predetermined payback period are accepted, and projects with playbacks greater than this period are rejected.

Merits and Limitations

This method of evaluating proposals for capital budgeting is quite simple and easy to understand. Further, when funds are limited, they may be invested in projects having shorter payback periods. This method is particularly suitable in case of industries where the risk of obsolescence is very high. In such industries, only those projects which have a short payback period can be financed, since the changes in technology would make the projects totally obsolete before their costs are recovered.

However, the technique of payback period is not a very scientific method because of the following reasons:

(i) It does not take into account the returns from a project after its pay-back period. Thus, project A may have a payback period of 5 years, whereas project B may have a payback period of 3 years. According to this method, project B will be selected. However, it is quite possible that after 5 years, A gives return of 20% for another 4 years or so, whereas B stops giving returns after 3 years. Therefore, the pay-back period may not be a good measure to evaluate where the comparison is made between two projects, one involving a long gestation period and the other yielding quick results but only for a short period.

(ii) This method becomes a very inadequate measure of evaluating two projects where the cash inflows are uneven. Consider the following example of cash flows from two projects:

No. of years	A	B
1	Nil	40,000
2.	Nil	50,000
3.	5,000	1,20,000
4.	20,000	10,000
5.	50,000	10,000
6.	1,50,000	Nil
7.	50,000	Nil
8.	40,000	Nil

Total	3,15,000	2,30,000

If both projects cost Rs. 1,50,000 each, B has a pay-back period of 2½ years, whereas A has a pay-back period *of* 5 years, but A has a much higher return than B and, therefore, it should be preferred.

(iii) Under this method, money at-all points in time now as well as in the future is treated as of equal value, whereas it cannot be so.

3.4.2 Average Rate of Return

Rate of return means the average annual yield on the project. Under this method, profit after tax and depreciation as percentage of total investment is considered. Thus, average rate of return for the investment project in the preceding example, will be as follows:

$$\text{Average Rate of Return} = \frac{\text{Average income}}{\text{Average investment}}$$

Illustration: Management of Raj Electricals is contemplating to buy a machine for manufacturing purpose. There are presently two machines available in the market which could serve the purpose. Details about these two machines are set out below:

	Machine A (Rs.)	Machine B (Rs.)
Cost	30,000	30,000
Annual income estimated after depreciation and tax Ist year	5,500	6,700
IInd year	8,000	7,200
IIIrd year	8,400	8,500
IVth year	8,800	7,000
Vth year	9,000	8,800
Estimated life in years	5	5
Average income Tax Rate	55%	55%
Depreciation on straight-line basis		

Which machine should the management buy? Assume that the management uses accounting rate of return for the project.

Solution

Table 2

$$\text{Average Income} = \frac{\text{Total Income during the life of the project}}{\text{Life of the Project}}$$

$$\text{Average Income of Machine A} = \frac{\text{Rs. } 39{,}700}{5 \text{ years}} = \text{Rs. } 7{,}940$$

$$\text{Average Income of Machine B} = \frac{\text{Rs. } 38{,}200}{5 \text{ years}} = \text{Rs. } 7{,}640$$

$$\text{Average investment} = \text{Original Investment} \div 2$$

$$\text{Average Investment of Machine A} = \frac{\text{Rs. } 30{,}000}{2} = \text{Rs. } 15{,}000$$

$$\text{Average Investment of Machine B} = \frac{\text{Rs. } 30{,}000}{2} = \text{Rs. } 15{,}000$$

$$\text{ARR of Machine A} = \frac{\text{Rs. } 7{,}940}{\text{Rs. } 15{,}000} \times 100 = 52.93\%$$

$$\text{ARR of Machine B} = \frac{\text{Rs. } 7{,}640}{\text{Rs. } 15{,}000} \times 100 = 50.93\%$$

Since rate of return on machine A is higher as compared to machine B, the management should acquire machine A.

Merits and Limitations

This method is quite simple and popular because it is easy to understand and includes income from the project throughout its life.

However, it is based upon a crude average at profits of the future years. It ignores the effect of fluctuations in profits from year to year. It, thus, ignores the time value of money which *is* very important in capital budgeting decisions. Suppose somebody gives you an option to have Rs. 100/- immediately or after 4 years. You would naturally prefer to have the money immediately because you can deposit this money in your bank account and after 4 years you can get roughly about Rs. 147/- if the bank allows interest at the rate of 10% per annum. It is obvious, therefore, that a rupee has time value and a rupee gained now is of more value than a rupee earned after a year.

This shortcoming can, however, be removed by using the data of cash inflows instead of accounting data.

We have seen that one of the serious limitations of all the methods of investment decisions discussed above is that none of them takes into account the present value of the future streams of cash inflows and capital outlays. The next three methods, viz., the net present value method, the internal rate of return or the yield of investment method, and the profitability index method take account of the timings of cash flows. As a group these methods are called discounted cash flow methods. These methods overcome the shortcomings of all other methods of project evaluation by taking into account (i) cash flows over the entire operational life of the capital project, as well as (ii) present values of future streams of cash flows.

CHECK YOUR PROGRESS A

State whether the following statements are True or false:

1. Capital expenditure decision involving the acquisition of major assets is not a routine process.
2. The profitability and risk are not directly related.
3. Payback period is the time period during which net cash outlays on capital project are equal to the net cash inflows.

4. Average Rate of Return Method is based upon a crude average at cash inflows of the future years

3.4.3 Net Present Value (NPV) Method

The net present value (*NPV*) method, also called the discounted benefit-cost ratio method, of capital budgeting is based on a comparison of the present values of the investment outlays and that of cash inflows.

1. The first step in computing the present values of investment outlays and cash inflows is to determine the rate of discount. This discount rate is the cost of capital of the firm or the rate of return desired by the firm on its investments.

2. Once this discount rate is determined, the financial manager has to compute the present values of cash outlays of the capital project by discounting future cash outlays at the predetermined discount rate. If the capital assets acquired for the capital project have any salvage value, its present value has to be set off against the present value of the cash outlays. To illustrate, a capital project involves a cash outlay of Rs. 50,000 in the present and future outlays of Rs. 10,000 in the first year, Rs. 8,000 in the second year and Rs. 5,000 in the third year. The salvage value of the plant after 5 years is Rs. 10,000. Rate of discount is 10 per cent. The computation of present value of investment in this capital project is given in Table 3.

Table 3: Computation of Present Value of Investment Outlays

Table 3 : Computation of Present Value of Investment Outlays

Time period		*Investment outlay (Rs.)*	*Present value factor*	*Present value of investment (Rs.)*	*Salvage value at the end of 5 yrs. (Rs.)*	*Present value factor*	*Present value of salvage (Rs.)*	*Present value of net investment (Rs.)*
Present	1	50,000	-	50,000				
end of	2	10,000	0.909	9,090				
year	3	8,000	0.826	6,608				
	4	5,000	0.751	3,755				
	5				10,000	0.621	6,210	
Total		Rs. 73,000		Rs. 69,453			Rs. 6,210	Rs. 63,243

As mentioned in an earlier section, these present values can be computed by the formula:

$$PV = \frac{1}{(1 + K)^n}$$

where *PV* is present value and *K* is the discount rate. Let us remember that these present value computations are based on the assumptions that each outlay has been made in one instalment, and also that it has been made at the year end.

As shown in Table 3 the present value of investment outlays discounted at 10 per cent compound rate is Rs. 63,243. This is the minimum amount which the firm must get back in the form of cash inflows from the capital project in order to leave its present value unaffected.

3. The third step in analysis for investment decisions is to determine the present value of the cash inflows expected to be generated by the investment outlays. In estimating the cash inflows, depreciation is disregarded as it represents only a book entry and does not involve any cash outflow. All other direct and indirect expenses including operational and maintenance costs are deducted from the total cash receipts in order to arrive at the cash inflows. Thus cash inflows are total revenue receipts minus all cash expenses.

Cash inflows are to be discounted at a predetermined discount rate which is equal to the cost of capital or the required rate of return. The discount rate for determining the present values of cash inflows is the same as that for discounting investment outlays, and is computed by the same formula:

$$PV = \frac{CF_1}{(1+k)} + \frac{CF_2}{(1+k)^2} + \ldots + \frac{CF_n}{(1+k)^n}$$

Let us assume that the investment project illustrated earlier will generate Rs. 30,000, 40,000, 50,000, 30,000 and 20,000 at the end of the first, second, third, fourth and fifth year. What is the present value of these streams of cash inflows at 10 per cent discount rate?

Time period	**Cash inflows (Rs.)**	**Present value factor**	**Present value of cash inflows (Rs.)**
1	30,000	0.909	27,270
2	40,000	0.862	34,480
3	50,000	0.751	37,550
4	30,000	0.683	20.490
5	20,000	0.621	12,420

Total present value of cash inflows = Rs. 1,32,210

4. The fourth and the final step in capital project evaluation is to compare the present value of cash outlays with the present values of cash inflows. The difference is the net present value (NPV). If the net present value is negative, the project results into a financial loss to the company; if it is positive, it results into a financial gain, and if it is zero, it is no profit no loss

situation. In case of the above investment project, present value of investment outlays is Rs. 63,243 and present value of cash inflows is Rs. 1,32,210. It has positive net cash flows, or what may be called net present value to the extent of Rs. 68,967. Hence the capital project is acceptable from the financial criterion.

Merits and demerits of Net Present Value Method

The merits of NPV method are: firstly, it takes into consideration the time factor of earnings as well as cost of capital. It is simple to understand and useful for simply accept or reject type of projects. Further, it can be applied to both types of cash flows patterns- even and uneven cash inflows. This method is generally preferred by economists if they wish to maximize profits.

On the other side, this method involves a good amount of calculation. The other limitation of this method is that the use of this method requires the knowledge of cost of capital. If it is not known, then this method cannot be used. It also leads to confusing and contradictory answers for ranking of complicated projects.

7.4.4 Profitability Index/ Benefit Cost Ratio

A firm can also use the net present value method to select the best out of a number of investment projects. This can be done by computing profitability index of each project on the basis of the present value of its investment outlays and cash inflows.

$$\text{Profitability index} = \frac{\text{Present value of cash inflows}}{\text{Present value of investment outlays}}$$

The hypothetical present values of investment outlays and cash inflows of three capital projects are given in Table 4, and they have been ranked on the criterion of profitability. The most profitable and therefore the most acceptable project from profitability criterion is project *C.* Profitability index is thus an effective tool of ranking the alternate investment projects and provides a sound basis for the selection of the most profitable one.

Table 4: Selection of investment Project by Profitability Index

Investment project	*Present value of investment outlays (Rs.)*	*Present value of cash inflows (Rs.)*	*Profitability index (3 ÷ 2)*	*Ranking*
1	*2*	*3*	*4*	*5*
A	50,000	70,000	1.400	2
B	90,000	100,000	1.111	3
C	40,000	60,000	1.500	1

The shortcoming of *NPV* method is that it does not tell us the rate of return on a single or alternate investment projects. It merely tells whether net present value generated by a capital

project is equal to, more or less than the required rate of return. It does not tell us how much. Profitability index provides a basis of comparability and serves as a tool for selecting the most profitable project; it does not tell us how much better one project is as compared to others.

3.4.5 Internal Rate of Return Method

The internal rate of return (*IRR*) method of project evaluation is also called, _yield of investment', _marginal efficiency of capital' and _discounted cash flow rate of return'. It removes the shortcomings of the present value method as it tells us the rate of return expected to be yielded by various investment projects.

The yield of investment or the internal rate of return is the discount rate at which present values of investment outlays and of future streams of cash inflows are equal. This discount rate is the true rate of return or yield on investment. In the present value method, the discounting rate is determined in advance and it is either the cost of capital or the desired rate of return. In case of the yield method, the discount rate at which present values of investment outlays and inflows are equal is found by trial and error. It can be computed by using the following formula:

$$\sum_{t=0}^{n} \frac{A_t}{(1+r)^t} = 0$$

where r = rate of discount = internal rate of return

A = net cash flow for period *t*

n = total period during which cash flow is expected.

If investment outlay occurs only once and that too at time 0, then the above equation can be expressed as follows:

$$A_0 = \frac{A_1}{(1+r)^1} + \frac{A_2}{(1+r)^2} + \frac{A_3}{(1+r)^3} + \ldots + \frac{A_n}{(1+r)^n}$$

$$A_0 = \sum_{t=1}^{n} \frac{A_t}{(1+r)^t}$$

Here *r* is that rate of discount at which present value of A_1 through A_n (future stream of cash inflows) is equal to A_0 (investment outlay at time 0).

As mentioned earlier, the discount rate can be ascertained only through a process of trial and error. First, we arbitrarily select a discount rate (*r*) and compute present values of future streams of investment outlays, i.e., costs (*C*), and also present values of future streams of cash inflows, i.e., benefits (B). If *B* = *C*, *r* is the correct rate of discount as also the yield rate or the

internal rate of return (*IRR*). If $B > C$, it means that a higher rate should be tried to equate *B* and *C*; in case $C > B$ it means that a lower discount rate should be tried. This process of trial and error goes on until we hit at a discount rate at which $B = C$.

Problem

Let us suppose that investment on a capital project is Rs. 45,000. Cash inflows for five years are Rs. 15,000, Rs. 20,000, Rs. 20,000, Rs 10,000. What is the yield of investment?

Let us now compute *PV* of cash inflows at 20 per cent discount rate. This is done in Table 5.

Table 5: Computation of Yield of Investment

Time period	**Cash inflows (Rs.)**	**PV factor at 20 per cent**	**PV of cash inflows at 20 per cent (Rs.)**	**PV factor at 22 per cent**	**PV of cash inflows at 22 per cent (Rs.)**
1	15,000	0.833	12,495	0.820	12,300
2	20,000	0.694	13,880	0.672	13,440
3	20,000	0.579	11,580	0.551	11,020
4	10,000	0.482	4,820	0.451	4,510
5	10,000	0.402	4,020	0.370	3,700
			46,795		**44,970**

Present value of investment (it is the same as investment outlay because the investment is to be made at the beginning of the time period) is Rs. 45,000. *PV* of cash inflows at 20 per cent discount rate is Rs. 46,795. Since in this case $B > C$, the actual yield of investment should be more than 20 per cent. Therefore, we calculated *PV* of cash inflows at 22 per cent discount rate and found that it is Rs. 44,970. Now $C > B$. Therefore, the yield of investment is less than 22 per cent.

We come to the conclusion that the actual yield of investment lies between 22 per cent and 20 per cent. Let us find the actual yield of investment by using the formula:

$$\text{Actual IRR} = D + \frac{\text{PV of inflows at lower D - PV of Investment Outlays}}{\text{PV of investment at lower D - PV of inflows at higher D}} \times \Delta D$$

where, IRR = Internal Rate of Return or yield on investment

D = lower discount rate

ΔD = Difference between the two discount rates

$$20 + \frac{\text{Rs. } 46{,}795 - 45{,}000}{\text{Rs. } 46{,}795 - 44{,}970} \times 2 = 21.97 \text{ per cent}$$

Actual yield of investment or *IRR* = 21.97 per cent.

In case yield of investment or *IRR* is equal to or more than the desired rate of return, the project is accepted; otherwise it is rejected. *IRR* is also used to rank the projects in order of their profitability.

The yield of investment method is more complicated than the present value method as it is to be computed by the trial and error method. It becomes even more complex if investment outlays are made over a period of time rather than in one block at the beginning of the time period, and the capital assets have a salvage value. However, in such cases the yield of investment method can be used with the help of computer.

Net Present Value Method Vs. Internal Rate of Return— Which is Better?

These two methods sometimes give contradictory results when used for the selection of the most profitable investment project from among mutually exclusive projects, i.e. if one is selected, the others have to be rejected. This can be seen from the following example:

Problem

Two alternative capital projects *X* and *Y* involve an investment outlay of Rs. 36,000 each. The streams of cash inflows are as follows:

Year	**Cash inflows (Rs.)**	
	Project X	**Project Y**
1	25,000	5,000
2	20,000	10,000
3	5,000	10,000
4	5,000	10,000
5	5,000	45,000

The required rate of earnings is 10 per cent. Which of the two projects should be accepted?

Solution

Year	**PV factor at 10**	**Cash inflows**	**PV of cash**	**Cash inflows of**	**PV of cash**

	per cent	of Project X (Rs.)	inflows of Project X (Rs.)	Project Y (Rs.)	inflows of Project Y (Rs.)
1	0.909	25,000	22,725	5,000	4,545
2	0.826	20,000	16,520	10,000	8,260
3	0.751	5,000	3,755	10,000	7,510
4	0.683	5,000	3,415	10,000	6,830
5	0.621	5,000	3,105	45,000	27,945
	PV of total cash inflows 49,520				55,090

NPV of Project *X* = Rs. 49,520 - Rs. 36,000 = Rs. 13,520

NPV of Project *Y* = Rs. 55,090 - Rs. 36,000 = Rs. 19,090

Since Project *Y* has larger *NPV* than Project *X*, it is to be accepted and Project *X* rejected.

Project	Net Present Value	Decision
Y	Rs. 19,090	Accept
X	Rs. 13,520	Reject

Selection of Project by Yield of Investment Method

Table 7: Selection of Capital Projects by the Yield of Investment Method Project X

Year	Cash inflows (Rs.)	PV factor at 20 per cent	PV of cash inflows at 20 per cent (Rs.)	PV factor at 32 per cent	PV of cash inflows at 32 per cent (Rs.)
1	25,000	0.833	20,825	0.758	18,950
2	20,000	0.694	13,880	0.574	11,480
3	5,000	0.579	2,895	0.435	2,175
4	5,000	0.482	2,410	0.329	1,645
5	5,000	0.402	2,010	0.249	1,245
			Rs. 42,020		Rs. 35,495

Project Y

Year	*Cash inflows (Rs.)*	*PV factor at 34 per cent*	*PV of cash inflows at 34 per cent (Rs.)*	*PV factor at 20 per cent*	*PV of cash inflows at 20 per cent (Rs.)*
1.	5,000	0.746	3,730	0.833	4,165
2.	10,000	0.557	5,570	0.694	6,940
3	10,000	0.416	4,160	0.579	5,790
4	10,000	0.310	3,100	0.482	4,820
5	45,000	0.231	10,395	0.402	18,090
			Rs. 26,955		**Rs. 39,805**

In case of Project *X*, *PV* of cash inflows at 20 per cent rate of discount is higher than the *PV* of investment outlay. Therefore, the actual yield of investment must be higher than 20 per cent. We next tried 32 per cent rate of discount. At this rate *PV* of cash inflows is lower than the *PV* of investment outlay. Therefore, actual yield of investment must lie between 20 per cent and 32 per cent.

In case of Project *Y*, *PV* of cash inflows at 34 per cent rate of discount is lower than the *PV* of investment outlay. Therefore, the actual yield of investment must be lower than 34 per cent. We next tried 20 per cent discount rate and found that at this rate *PV* of cash inflows is higher than the *PV* of investment outlay. Therefore, actual investment yield of Project *Y* must lie between 34 per cent and 20 per cent.

Let us now compute the actual investment yields of Projects *X* and *Y* by using the formula given earlier.

Actual yield of investment of Project *X*

$$= 20 + \frac{\text{Rs. } 42{,}020 - \text{Rs. } 36{,}000}{\text{Rs. } 42{,}020 - \text{Rs. } 35{,}495} \times 12 = 31.07 \text{ per cent}$$

Actual yield of Investment of Project *Y*

$$= 20 + \frac{39{,}805 - 36{,}000}{39{,}805 - 26{,}955} \times 14 = 24.14 \text{ per cent}$$

Since yield of investment of Project *X* is higher than that of Project *Y*, it should be accepted against Project *Y*.

Project *X* Yield = 31.07 per cent Accept

Project *Y* Yield = 24.14 per cent Reject

In this illustration, according to the *NPV* method, Project *Y* is to be accepted in preference to Project *X* as it has larger net present value; and according to yield of investment method, Project *X* has higher yield than Project *Y*. Hence Project *X* is to be selected and *Y* is to be rejected. These contradictory results are obtained because of the different assumptions underlying the two methods. The yield of investment method assumes that all future streams of cash inflows are reinvested at the yield rate over the life of the project. The net present value method assumes that the cash inflows generated during the operational life of the project are reinvested at the discount rate.

Since the management‘s objective is to maximize the shareholder‘s wealth, and, therefore, the value of the firm, the net present value method provides the correct criterion of investment decisions. A company should select the project which has the maximum *NPV* out of the mutually exclusive projects under its consideration. The project with the maximum *NPV* makes maximum contribution to the present value of the firm.

Activity

Differentiate between NPV method and IRR method.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____.

CHECK YOUR PROGRESS B

1. The first step in computing the present values of investment outlays and cash inflows is to determine the_____.
2. The discount rate for determining the present values of cash inflows is the same as that for discounting_____.
3. _____is the discount rate at which present values of investment outlays and of future streams of cash inflows are equal.
4. *IRR* is also used to rank the projects in order of their_____.

3.5 SUMMARY

Capital budgeting involves the selection of projects which will make the optimum contribution to corporate objectives, and one of the most important corporate objectives is to maximize the profitability of the enterprise. Capital budgeting is broader in scope than investment decisions. It includes not only investment decisions but also the exploration of profitable investment opportunities, and investigation of potential opportunities. Capital budgeting decisions are top management decisions. Capital investment projects may be initiated at any level of management, but they are processed through various levels including the head of the operating division concerned, financial controller, investment or finance committee, general manager and the board. The most widely accepted criterion of investment decision is the estimated net worth or present value of the project. Major investment decision methods are: (i) payback period (ii) average rate of return method (iii) net present value (iv) profitability index, and (v) internal rate of return.

3.6 Keywords

Capital Budgeting: It is a process of planning capital expenditure which is to be made to maximise the long-term profitability of the organisation.

Payback Period: It is the time period during which net cash outlays on a capital project are equal to the net cash inflows.

Net Present Value: It is the different between the present value of cash inflows and cash outflows.

Internal Rate of Return: It is that rate of return which equates the present value of cash inflows and cash outflows.

3.7 ANWSERS TO CHECK YOUR PROGRESS

Check Your Progress A

1. True
2. False
3. True
4. False

Check Your Progress B

1. Rate of discount.
2. Investment outlays.
3. Internal rate of return
4. Profitability

3.8 BIBLIOGRAPHY

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3. Financial Management by Khan & Jain.

4. Financial Management and Policy by R.M. Srivastava.

3.9 TERMINAL AND MODEL QUESTIONS

1. What is capital budgeting? What is the most acceptable criterion for making capital budgeting decisions?

2. Discuss the payback criterion of investment decisions. What are its strengths and weaknesses?

3. Discuss and distinguish between net present value and internal rate of return methods of making investment decisions. Illustrate your answer with the help of an example. Which of the two is better? Why?

4. Your bank pays you Rs. 12,000 at the end of seven years of your deposit of Rs. 1200 a year for seven years in a recurring deposit account. What is the net present value of your investment if your required rate of return is 10 per cent? What is the internal rate of return?

5. XYZ Ltd. has a target accounting rate of return of 20% and is now considering the following project.

Capital cost of asset Rs. 80,000

Estimated Life 4 years

Estimated profit before depreciation	***Rs.***
Year 1	20,000
Year 2	25,000
Year 3	35,000
Year 4	25,000

The capital asset would be depreciated by 25% of its cost each year, and would have no residual value. Should the project be undertaken?

6. A company proposes to undertake one of the two mutually exclusive projects namely, AXE and BXE. The initial capital outlay and annual cash inflows are as under:

	AXE	*BXE*
Initial capital outlay (Rs.)	22,50,000	30,00,000
Salvage value at the end of the life	0	0
Economic life (years)	4	7

Year	*Rs. lakhs*	*After tax annual cash inflows Rs. lakhs*
1	6.00	5.00
2	12.50	7.50
3	10.00	7.50
4	7.50	12.50
5	-	12.50
6	-	10.00
7	-	8.00

The company‘s cost of capital is 16%.

Required:

(i) Calculate for each project

(a) Net present value of cash flows

(b) Internal rate of return

7. Precision Instruments is considering two mutually exclusive Projects X and Y: following details are made available to you:

(Rs. lakhs)

		Project X	**Project Y**
	Project Cost	700	700
		-	-
Cash inflows :	Year 1	100	500
	Year 2	200	400
	Year 3	300	200
	Year 4	450	100
	Year 5	600	100
Total		**1,650**	**1,300**

Assume no residual values at the end of the fifth year. The firm‘s cost of capital is 10%. Required, in respect of each of the two Project:

(i) Net Present Value, using 10% discounting;

(ii) Internal rate of return;

(iii) Profitability Index.

Lessor: 4

COST OF CAPITAL

Structure

4.0. LEARNING OBJECTIVES

After studying this chapter you should be able to understand:

- Concept of Cost of Capital
- Importance and Types of Cost of Capital
- Computation of Cost of Capital

4.1 INTRODUCTION:

A company needs finance for various activities. But every source has its own cost. Cost of capital has relevance in almost every type of financial decision making. The concept of cost of capital is very important in the financial management. At the same time, it is also one of the complex topic to be studied and practically implemented. There is a need to calculate the present value/ future value of cash flows at a discount rate. This rate of discount is popularly known as cost of capital. Generally the sources of finance for non corporate entity could be

either internal (savings, investments in current and non-current assets etc.) or external borrowings (loan from financial institutions, local borrowings etc.). A company can raise finance through Debt e.g. Debentures, Bonds and other debt instruments. It may also be raised through Equity Share Capital, Preference Share Capital, and even retained earnings (accumulated profits) can be utilised for business operations.

4.2 MEANING:

The cost of capital is the cost of raising capital for long period from different sources of finance. It represents the minimum rate of return required or expected by its investors. The capital structure of a company generally comprises equity shares, preference shares, debentures, loans from Banks and financial institutions and, sometimes the companies may also use its retained earnings. It is the cut-off or the target or the hurdle rate. In case a firm is not able to achieve the cut-off or the target or the hurdle rate the market value of its shares remains constant at a particular level. Moreover, to achieve the objective of the financial management, viz., wealth maximisation, a firm has to necessarily earn a rate of return more than its cost of capital. The cost of capital in turn depends on the risk involved in the firm. Generally, higher the risk involved in a firm, the higher will be the cost of capital. It is well known that the final selection of any capital project from among the various alternatives mainly depends on the cost of the capital of a firm or the cut-off rate representing the minimum rate of return required on investment projects. When a company procured finances from any of the source, it has to pay some additional amount of money besides the principal amount. This additional money paid is basically the cost of using the capital and it is called the cost of capital. This cost of capital expressed in rate is used to discount/ compound the cashflow or stream of cashflows. Cost of capital is also known as _cut-off‘ rate, _hurdle rate‘, _minimum rate of return‘ etc.

4.3 DEFINITION:

The following are a few main definitions of cost of capital given by eminent scholars in the field of financial management.

1. According to James C. Van Horne: ‒The cost of capital is ‒a cut-off rate for the allocation of capital to investments of projects. It is the rate of return on a project that will leave unchanged the market price of the stock‖.
2. According to Soloman Ezra : ‒Cost of Capital is the minimum required rate of earnings or the cut-off rate of capital expenditure‖. It is the discount rate /minimum rate of return/opportunity cost of an investment.
3. According to Milton H. Spencer : ‒Cost of Capital‖ is the minimum rate of return which a firm requires as a condition for undertaking an investment."

4.4 IMPORTANCE/SIGNIFICANCE OF COST OF CAPITAL:

Cost of capital is the return expected by the providers of capital (i.e. shareholders, lenders and the debt-holders) to the business as a compensation for their contribution to the total capital. The concept of cost of capital is very important and it helps the management to take an appropriate decision. The correct cost of capital helps in the decision making. The cost of capital is very important in financial management and plays a crucial role in the following areas:

- Evaluation of Capital budgeting proposals: The cost of capital is used for discounting cash flows under Net Present Value method for investment proposals. So, it is very

helpful in making capital budgeting decisions. The estimated benefits (future cash flows) from available investment opportunities (business or project) are converted into the present value of benefits by discounting them with the relevant cost of capital. If the present value of expected returns from the investment throughout its life period is greater than or equal to the cost of investment, the project may be accepted; otherwise the project may be rejected. The present value of expected returns is calculated by discounting the expected cash inflows at the cut-off rate which is the cost of capital. Here it is pertinent to mention that every investment option may have different cost of capital hence it is very important to use the cost of capital which is relevant to the options available. Here Internal Rate of Return (IRR) is treated as cost of capital for evaluation of two options (projects). The cost of capital serves as a very useful tool in the process of making capital budgeting decisions. For capital budgeting decision, composite cost of capital is relatively more relevant even though the firm may finance one proposal with only one source of funds and another proposal with another source. This is for the fact that it is the overall mix of financing over time which is materially significant in valuing firm as an ongoing overall entity.

- Helpful in Performance Appraisal: Cost of capital is used to appraise the performance of a particulars project or business. The performance of a project or business in compared against the cost of capital which is known here as cut-off rate or hurdle rate. Cost of capital may also be used to evaluate the financial performance of top management. The actual profitability is compared to the expected and actual cost of capital of funds and if profit is greater than the cost of capital the performance may be said to be satisfactory.
- Useful in designing of optimum credit policy: It is very much useful in designing an appropriate credit policy. While appraising the credit period to be allowed to the customers, the cost of allowing credit period is compared against the benefit/ profit earned by providing credit to customer of segment of customers. Here cost of capital is used to arrive at the present value of cost and benefits received.
- Helpful in having optimum Capital structure: The cost of capital is very crucial in designing optimal capital structure. An optimal capital structure is that structure at which the value of the firm is maximum and cost of capital is the lowest. By using the concept of cost of capital, we are able to design an optimum capital structure. The cost of capital acts as a determinant of capital mix in the designing of a balanced and appropriate capital structure. As a rule there should be a proper mix of debt and equity capital in financing a firm‘s assets. While designing an optimal capital structure of a firm, the management has to consider the objective of maximising the value of the firm and minimising the cost of capital. Computation of a weighted average cost of various sources of finance is very essential in planning and designing the capital structure of a firm.
- Useful in other financial decisions: Cost of capital is also useful in making such other financial decisions as capitalization of profits, making the rights issue, etc. 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. 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. The cost of capital also plays a useful role in dividend decision and investment in current assets.

CHECK YOUR PROGRESS A

Fill in the blanks.

1. Cost of capital represents the… .....required or expected by its investors.
2. Cost of capital is also known as the……..
3. Cost of capital may be used to appraise the …….of a particulars project or business.
4. …… 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.

4.5 CLASSIFICATION OF COST OF CAPITAL:

Cost of capital can be classified in different ways. Some of them have been described as under:

a) Historical cost and Future Cost:

Historical cost represents the cost which has already been incurred for financing a project. It is computed on the basis of past data collected. Future cost represents the expected cost of funds to be raised for financing a project. Historical cost is significant since it helps in projecting the future cost and in providing an appraisal of the past financial performance by comparing with the standard or predetermined costs. In financial decisions, future costs are more relevant than the historical costs.

b) Explicit Cost and Implicit Cost:

The cost of capital can either be explicit or implicit. The cash outflow of an entity towards the utilization of capital which is clear and obvious is termed as explicit cost of capital. These outflows may be interest payment to debenture holders, repayment of principal amount to financial institution or payment of dividend to shareholders etc. Explicit cost of any source of finance is the discount rate which equates the present value of cash inflows with the present value of cash outflows. It is the internal rate of return. On the other hand Implicit cost is the cost which is actually not a cash outflow but it is an opportunity loss of foregoing a better investment opportunity by choosing an alternative option. It is also known as the opportunity cost, which is the opportunity foregone in order to take up a particular project. For example, the implicit cost of retained earrings is the rate of return available to shareholders by investing the funds elsewhere. In other words, the explicit cost is the internal rate of return which a company pays for procuring the required finances. Implicit cost represents the rate of return which can be earned by investing the capital in alternative investments.

c) Specific Cost and Composite Cost:

A company may contemplate to raise desired amount of funds by means of different sources including debentures, preferred stock, and common stocks. These sources constitute components of funds. Each of these components of funds involves cost to the company. Cost of each component of funds is designated as component or specific cost of capital. When these component costs are combined to determine the overall cost of capital, it is regarded as composite cost of capital, combined cost of capital or weighted cost of capital. In other words, specific cost refers to the cost of a specific source of capital, while composite cost of

capital refers to the combined cost of various sources of capital. It is the weighted average cost of capital. It is also termed as overall cost of capital. When more than one type of capital is employed in the business, it is the composite cost which should be considered for decision-making and not the specific cost of that capital alone be considered.

d) Average Cost and Marginal Cost:

Average cost of capital refers to the weighted average cost calculated on the basis of cost of each source of capital funds. In financial decisions the marginal cost concept is most significant. Marginal cost of capital refers to the average cost of capital which has to be incurred to obtain additional funds required by a firm. Marginal cost of capital is considered as more important in capital budgeting and financing decisions. So, Marginal cost of capital refers to incremental cost associated with new funds raised by the firm.

4.6 FACTORS DETERMINING COST OF CAPITAL:

Generally a company raises long-term funds at different points of time, the only factor affecting their cost is the riskless cost of the particular type of financing. Therefore, the cost of capital of any two companies may not be the same. In a similar way, these two companies would not carry the same risk. There are several factors that impact the cost of capital of any company. A few such factors have been discussed as under:

- Economic Environment of the country: A country faces different type of economic environment at different point of time. It affects to a large extent the demand for and supply of capital within the economy, and the inflation level in the country. These are reflected in the risk-less rate of return and is common to most of the companies.
- Stock market conditions: There are a number of factors affecting the financial markets. Sometimes the security may not be readily marketable when the investor wants to sell; or even if a continuous demand for the security does exist, the price may vary significantly. Such phenomenon also affects cost of capital to a large extent.
- Degree of Risks: Risk and return are very closely related to each other. Risk also results from the decisions made within the company. This risk is generally divided into two classes viz. business risk and financial risk. These risks also affect the company‘s capacity and power to raise money from the market at a specific cost.
- Amount of financing needed: It must be noted that the cost of capital increases when the financing requirements are more. It may happen due to a number of factors. As management approaches the market for large amounts of capital relative to the firm's size, the investors' required rate of return may rise. Due to increase in the level of risks, the provider of finance become hesitant to grant relatively large amounts of funds without evidence of management's capability to absorb this capital into the business. Generally, as the level of risk rises, a larger risk premium must be earned to satisfy company's investors. This, when added to the risk-free rate, equals the firm's cost of capital.

4.7 ESTIMATION OF COST OF CAPITAL:

It should be noted that the concept of cost of capital is of vital importance in the financial decision-making. But still financial experts express conflicting opinions as to the way in which the cost of capital can be measured. Components of cost of capital includes individual source of finance in business. From the viewpoint of capital budgeting decisions, the long

term sources of funds are relevant as they constitute the major sources of financing the fixed assets. In calculating the cost of capital, therefore components include-

A. Long term debt (including Debentures).
B. Preference capital.
C. Equity Capital.
D. Retained Earnings.
E. Weighted Average Cost of Capital.
F. Marginal Cost of Capital

These categories have been discussed in detail as under:

A. Cost of Debt:

It is relatively easy to calculate the cost of debt. The cost of debt is the rate of interest payable on debt. Debt capital is obtained through the issue of debentures. The issue of debentures involves a number of floatation charges, such as printing of prospectus, advertisement, underwriting, brokerage, etc, Again, debentures can be issued at par or at times below par (at discount) or at times above par (at premium). These floatation charges and modes of issue have an important bearing on the cost of debt capital.

The formula adopted or calculating the cost of debt capital is given below:

(i) K d = I/P

where K d = cost of debt (before tax)
I = Interest
P = Principal

In case the debt is raised by issue of debentures at premium or discount, one should consider P as the amount of net proceeds from the issue and not the face vale of debentures. The formula may be modified as

(ii) K d = I/NP (where NP = New Proceeds)

When debt is used as a source of finance, the firm saves considerable amount in payment of tax since interest is allowed as a deductible expense in computation of tax. Hence, the effective cost of debt is reduced. In other words, the effective cost of debt, i.e., the after-tax cost of debt would be substantially less than the before-tax cost. The after-tax cost of debt may be calculated with the help of the following formula :

(iii) After-tax cost of debt = Kd (1-t)

where t is the tax rate.

Illustration No1.

(a) A Ltd. issues Rs. 2,00,000, 9% debentures at par. The tax rate applicable to the company is 50%. You are required to compute the cost of debt to the company.

(b) B Ltd. issues Rs. 3,00,000, 6% debentures at a premium of 10%. The tax rate applicable to the company is 50%. You are required to compute the cost of debt to the company capital.

(c) C Ltd. issues Rs. 2,00,000, 7% debentures at a discount of 5%. The tax rate applicable is 50%. You are required to compute the cost of debt to the company.

(d) D Ltd. issues Rs. 5,00,000, 8% debentures at a premium of 10%. The costs of floatation are Rs.30,000. The tax rate applicable is 50%. You are required to compute the cost of debt to the company.

Solution:
(a) Kd =I/ NP *(1-t)
= 18,000/2,00,000*(1-0.5) = 4.5 %

(b) Kd =I/ NP *(1-t)
= 18,000/3,30,000*(1-0.5) = 2.73 %

(c) Kd =I/ NP *(1-t)
= 14,000/1,90,000*(1-0.5) = 3.68 %

(d) Kd =I/ NP *(1-t)
= 40,000/5,20,000*(1-0.5) = 3.84 %

Usually, the debt issued is to be redeemed after the expiry of a certain period during the life time of a firm. Such a debt issue is known as Redeemable Debt. The cost of redeemable debt capital may be computed as :

(iv) Before-tax cost of debt :

$$K_{bd} = \frac{I + 1/n\,(P-NP)}{½\,(P+ NP)}$$

Where, I = Interest
N = Number of years in which debt is to be redeemed
P = Proceeds at par
NP = Net Proceeds
After-tax cost of debt,
$K_{da} = K_{db}\,(1-t)$

Illustration No. 2.

Unique Co. Ltd. issues Rs. 4,00,000, 10% redeemable debentures at a discount of 5%. The cost of floatation amount to Rs. 20,000. The debentures are redeemable after 5 years. Calculate before-tax and after-tax cost of debt assuming a tax rate of 50%.

Solution:

Before-tax cost of debt,

$$K_{db} = \frac{1 + 1/n\,(P - NP)}{½\,(P + NP)}$$

$$= \frac{40,000 + 1/5\ (4,00,000 - 3,60,000)}{½\ (4,00,000 + 3,60,000)}$$

=40,000 + 8,000/3,80,000
=48,000/ 3,80,000 × 100
= 12.63%

After-tax cost of debt,

K da = K db (1 - t)
= 12.63 (1 - 0.5) = 12.63 × 0.5 = 6.32%

Illustration No 3.

UBS Ltd. issues 20,000, 8% debentures of Rs. 100 each at a discount of 10% and redeemable after 10 years. The expenses of issues amounted to Rs. 40,000. Find out the cost of debt capital.

Solution:

$$K\ db = \frac{1 + 1/n\ (P - NP)}{½\ (P + NP)}$$

$$= \frac{1,60,000 + 1/10\ (20,00,000 – 17,60,000)}{½\ (20,00,000 +17,60,000)}$$

= 1,60,000 + 24,000/ 18,80,000 = 1,84,000/18,80,000 × 100 = 9.79%

After-tax cost of debt,
K da = K db (1 - t)
= 9.79 (1 - 0.5) = 9.79 × 0.5 = 4.89%

B. Cost of Preference Share Capital:

No rate of dividend is fixed for equity shares. But generally, a fixed rate of dividend is paid by a company to its preference shareholders. The cost of preference share capital is the dividend expected by its investors. Moreover, preference shareholders have a priority to dividend over the equity shareholders as far as payment of dividend is concerned. In case dividends are not paid to preference shareholders, it will affect the fund raising capacity of the firm. Hence, dividends are usually paid regularly on preference shares except when there are no profits to pay dividends.

The cost preference capital can be calculated as:
K p = D/P
where
K p = Cost of Preference Capital
D = Annual Preference Dividend
P = Preference Share Capital (Proceeds)

Illustration No.4

Majra Ltd. issues Rs. 2,00,000, 9% preference shares at par. You are required to compute the cost of preference shares to the company.

Solution:
Kp =D/ P
= 18,000/2,00,000 = 9%

Further, when preference shares are issued at premium or discount or when cost of floatation is incurred to issue preference shares, the nominal or par value of preference share capital has to be adjusted to find out the net proceeds from the issue of preference shares. In such a case, the cost of preference capital can be computed with the following formula :

K p = D/NP

Illustration No.5

B Ltd. issues Rs. 3,00,000, 6% preference shares at a premium of 10%. The tax rate applicable to the company is 50%. You are required to compute the cost of preference shares to the company.

Solution:

Here the tax rate is irrelevant.
Kp =D/ NP
= 18,000/3,30,000 = 5.45%

When Redeemable Preference Shares are issued by a company, they can be redeemed or cancelled on maturity date. The cost of redeemable preference share capital can be calculated as:

$$Kpr = \frac{D + 1/n (MV - NP)}{½ (MV + NP)}$$

Illustration No. 6.

Kapurthala Oil Ltd. issued 2000 9% perference shares of Rs. 100 each at a premium of 10% redeemable after 5 years at par. Compute the cost of preference capital
Solution:

$$Kpr = \frac{D + 1/n (MV - NP)}{½ (MV + NP)}$$

$$= \frac{18,000 + 1/5 (2,00,000 – 2,20,000)}{½ (2,00,000 + 2,20,000)}$$

= 18,000 - 4,000/2,10,000 = 14,000/ 2,10,000*100 =6.7%

Illustration No. 7.

Kohli Ltd., issued 60,000 10% Preference Shares of Rs. 100 each redeemable after 10 years at a premium of 5%. The cost of issue is Rs. 3 per share. Calculate the cost of preference capital.

Solution:

$$Kpr = \frac{D + 1/n (MV - NP)}{½ (MV + NP)}$$

$$\frac{6,00,000 + 1/10 (63,00,000 – 58,20,000)}{½ (63,00,000 +58,20,000)}$$

=6,00,000+48,000/60,60,000 =6,48,000/60,60,000 =10.69%

C. Cost of Equity Share Capital:

It is the most important source of capital as far as a company form of organisation is concerned. It is also to be mentioned that the payment of dividend on the equity shares is not binding and the rate of dividend is not predetermined, company may not declare and pay the dividend to equity shareholders even in case there are sufficient profits available. But a company cannot do so always, because the shareholders invest their surplus in equity shares with an expectation of receiving some returns in the form of dividends and the company must earn this minimum rate so that the market price of the shares remains unchanged. Therefore, the required rate of return which equates the present value of the expected dividends with the markets value of share is the cost of equity capital. It is very difficult to measure the cost of equity in practice, because it is very difficult to estimate the future dividends expected by the equity shareholders. Moreover, the earnings and dividends on equity share capital are generally expected to grow. The following methods are generally employed to know the cost of equity capital:

(a) Dividend Yield Method: Under this method, the cost of equity capital is the ‘discount rate that equates the present value of expected future dividends per share with the net proceeds (or current market price) of a share.‘ In other words, it denotes the relationship between dividend and net proceeds/market price. Hence,

$$Ke = D/NP \text{ or } D/MP$$

where, Ke = Cost of Equity Capital
D = Expected Dividend per share
NP = Net Proceeds per share
and MP = Market Price per share

The basic assumptions underlying this method are that the investor gives importance to dividends and the risk in the firm remains constant. In fact, It is suitable only when the company has stable earnings and stable dividend policy over a period of time. The dividend price ratio method suffers from a few limitations. First of all, it does not consider the growth in dividend, and it does not consider future earnings or retained earnings.

Illustration No.8

Bindra Ltd. issues 25,000 equity shares of Rs. 100 each at a premium of 10%. The company has been paying 10% dividend to equity shareholders for the past five years and expects to

maintain the same in the future also. Compute the cost of equity capital. Will it make any difference if the market price of equity share is Rs. 180 ?
Solution :

Ke = D/NP
= 10/110 × 100 = 9.09%

if the market price of a equity share is Rs. 180.
Ke =D/MP
= 10/180× 100 = 5.55%

(b) Dividend Yield plus growth method: This method takes into account the growth in dividend. But is can be appropriately used when the dividends of the firm are expected to grow at a constant rate and the dividend payout ratio remains constant. Under this method,the calculations are made as under:

Ke = D/ NP + G

where, Ke = Cost of Equity Share Capital
D = Expected Dividend per share
NP = Net Proceeds per share
G = Rate of Growth in dividends.

This method can also be used by considering Market Price per share. In such case cost of existing equity share capital is calculated by using MP (market price per share) in place of NP.

Ke = D/ MP + G

Illustration No.9

Dhiraj Industries Ltd. issues 20000 new equity shares of Rs. 100 each at par. The floatation costs are expected to be 5% of the share price. The company pays a dividend of Rs. 20 per share initially and the growth in dividends is expected to be 5%. Compute the cost of new issue equity share. Further ,if the current market price of an equity share is Rs. 190, what will be the cost of equity share capital.

Solution:
(a) Ke = D/ NP + G =20/95 + 5% = 26.05%
(b) Ke = D/ MP + G= 20/190 + 5% = 15.53%

(c) Earning yield method: Under this method, the cost of equity capital is the discount rate that equates the present value of expected future earnings per share with the net proceeds (or current marketing price) of a share.

In this method, the calculation is made as under:
K e = EPS/NP
Where EPS=Earning per Share
NP=Net Proceeds
Where, the cost of existing capital is to be calculated by considering market price,then

K e = EPS/MPS
Where EPS= Earning per Share .
MPS=Market Price per Share

This method of computing cost of equity capital may be employed in the following cases:

-When the earnings per share are expected to remain unchanged.
-When the dividend pay-out ratio is 100 per cent or when the retention ratio is zero, i.e., all the available profits are fully distributed as dividends.
-When a firm is expected to earn an amount of new equity share capital, which is equal to the current rate of earnings.
-The market price of share is influenced by the earnings per share alone.

(d) Realised Yield Method: The main drawback of the dividend yield method or earnings yield method lies in the estimation of the investors' expected future dividends on earnings. It is very difficult, if not impossible, to estimate future dividends and earnings precisely, since both of them depend on many uncertain factors. To overcome this shortcoming, realised yield method which takes into consideration the actual average rate of return realised in the past, is employed to computed the cost of equity share capital. While calculating the average cost of return realised, dividends received in the past along with the gain realised at the time of sale of shares, should be considered. The cost of capital is equal to the realised rate of return by the shreholders.

This method is based upon the following limitations:
(a) The firm will continue to remain and face the same risk, over the period:
(b) The investors's expectations are based upon the past realised yield;
(c) The investors get the same rate of return as the realised yield even when invested elsewhere; and
(d) The market price of shares remains unchanged.

D. Cost of Retained Earnings:

Retained earnings are basically the undistributed profits of a company. It is not true that retained earnings do not involve any cost. Sometimes it is believed that since no dividend is required to paid on retained earnings, therefore, retained earnings does not carry any cost. In fact, retained earnings have the opportunity cost of dividends in alternative investment, which becomes cost of retained earnings. Hence, shareholders expect a return on retained earnings at least equity. However, the shareholders expect a return on retained profits. The cost of retained earnings is equal to the rate of return which the existing shareholders will obtain by investing the after-tax dividends in alternative investments. Therefore, while calculating cost of retained earnings, income-tax adjustment and brokerage cost adjustment are required to be made. Therefore, after these adjustments, cost of retained earnings is calculated as under:
Kr = Ke (1-t)(1-b)
Where, Kr = Cost of Retained Earnings
Ke = Cost of Equity
t = rate of tax
b = brokerage cost.

Illustration No.10

A firm_s cost of equity (Ke) is 15%, the average income tax rate of shareholders is 50% and brokerage cost of 2% is excepted to be incurred while investing their dividends in alternative securities. Compute the cost of retained earnings.

Solution:

Cost of retained earnings = (Kr) = Ke (1-t)(1-b)
=15(1-.50)(1-.02) =15x.5x.98 =7.35%

E. Weighted Average Cost of Capital:

It must be noted that there is an important linkage between the methods of financing and their costs, therefore the cost of capital should also be used in a composite term. Thus, the composite cost or overall cost of capital is the weighted average cost of various sources of funds, weights being the proportion of each source of funds in the capital structure. It should also be remembered that it is the weighted average concept and not the simple average, which is more relevant in calculating the overall cost of capital. As the firms do not use various sources of funds in equal proportion, the simple average cost of capital will not be appropriate to use, in the capital structure decision-making.

The following steps are involved in calculating the weighted average cost of capital :
i) To calculate the cost of the specific sources of funds individually (i.e., cost of debt, cost of equity, cost of preference capital, etc.).
ii) To multiply the cost of each source by its proportion in the capital structure and
iii) Add the weighted costs of all courses of funds to get the weighted cost of capital. The cost of capital should always be calculated on the after-tax basis, in financial decision-making. Hence, the component costs one used for calculating the weighted average cost of capital.

Types of Weights used in computation of weighted cost of capital:

- The weighted cost of capital can be calculated by using either the book value or market value weights. If there is any difference between book value and market value weights, the weighted average cost of capital would also differ according to the weights used. When the market value of the share is higher than book value, the weighted average cost of capital calculated by using the book value weight will be much lower and vice versa. Market value weights are sometimes preferred to the book value weights as the market value represents the true value of the investors. However, market value are subject to frequent fluctuations. On the other hand, book values are readily available and the firm determines the capital structure targets in terms of book value only. But it is also true that the market values reflect the expectation of investors. At the same time, market value fluctuates very widely and frequently and there is difficulty in using the market value weights in the computation of weighted cost of capital.

CHECK YOUR PROGRESS B

Whether the following statements are True or False:

1. Future cost represents the expected cost of funds to be raised for financing a project.
2. Implicit cost is the cost which is actually not a cash outflow but it is an opportunity loss of foregoing a better investment opportunity by choosing an alternative option.

3. Marginal cost of capital refers to the weighted average cost calculated on the basis of cost of each source of capital funds.
4. As the level of risk rises, a larger risk premium must be earned to satisfy company's investors.

4.8 SUMMARY:

Cost of Capital is the rate that must be earned in order to satisfy the required rate of return of the firm's investors. It can also be defined as the rate of return on investments at which the price of a firm's equity share will remain unchanged. Each type of capital used by the firm (debt, preference shares and equity) should be incorporated into the cost of capital, with the relative importance of a particular source being based on the percentage of the financing provided by each source of capital. Using of the cost a single source of capital as the hurdle rate is tempting to management, particularly when an investment is financed entirely by debt. There are various types of cost of capital. An average cost is the combined cost or weighted average cost of various sources of capital. Marginal cost refers to the average cost of capital of new or additional funds required by a firm. It is the marginal cost which should be taken into consideration in investment decisions. Thereafter the computation of cost of capital of various sources of finance has been described in detail.

4.9 KEYWORDS:

- **Cost of Capital:** The cost of capital is –a cut-off rate for the allocation of capital to investments of projects. It is the rate of return on a project that will leave unchanged the market price of the stock
- **Implicit Cost:** Implicit cost is the cost which is actually not a cash outflow but it is an opportunity loss of foregoing a better investment opportunity by choosing an alternative option. It is also known as the opportunity cost, which is the opportunity foregone in order to take up a particular project.
- **Composite Cost:** while composite cost of capital refers to the combined cost of various sources of capital. It is the weighted average cost of capital. It is also termed as overall cost of capital.
- **Retained Earnings:** It is that part of the earnings of the company which is not distributed amongst the shareholders as dividend. It is retained by the company for future growth and expansion.

4.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress A

1. minimum rate of return 2. cut-off or the target or the hurdle rate 3. performance 4.cost of capital.

Check Your Progress B

1. True 2. True 3. False 4. True

4.11 REFERENCES:

1. I.M. Pandey, Financial Management.
2. Prasanna Chandra, Financial Management Theory and Practice

4.12 TERMINAL AND MODEL QUESTIONS:

1. Define the term ‘Cost of Capital‘. What is its importance?

2. What is mean by opportunity cost ?

3. How is cost of preferred stock computed ?

4. How is the weighted average cost of capital computed ?

5. How is Cost of debt computed ?

6. "The equity cost is free." Do you agree ? Elaborate in detail.

7. "Debt is the cheapest source of funds". Comment.

8. A Ltd. issues Rs. 5,00,000, 9% debentures at par. The tax rate applicable to the company is 50%. You are required to compute the cost of debt to the company.

9. B Ltd. issues Rs. 8,00,000, 7% debentures at a premium of 10%. The tax rate applicable to the company is 50%. You are required to compute the cost of debt to the company capital.

10. C Ltd. issues Rs. 9,00,000, 7% debentures at a discount of 5%. The tax rate applicable is 50%. You are required to compute the cost of debt to the company.

11. D Ltd. issues Rs. 8,00,000, 8% debentures at a premium of 10%. The costs of floatation are Rs.70,000. The tax rate applicable is 50%. You are required to compute the cost of debt to the company.

12. Prithvi Ltd. issued 30,000 10% Preference Shares of Rs. 100 each. Cost of issue is Rs. 2 per share. Calculate cost of preference capital if these shares are issued (a) at par (b) at a premium of 10% and (c) at a discount of 5%.

13. Wanderers Ltd. issues 75,000 equity shares of Rs. 100 each at a premium of 10%. The company has been paying 15% dividend to equity shareholders for the past five years and expects to maintain the same in the future also. Compute the cost of equity capital. Will it make any difference if the market price of equity share is Rs. 200 ?

14. A firm_s cost of equity (Ke) is 15%, the average income tax rate of shareholders is 50% and brokerage cost of 2% is excepted to be incurred while investing their dividends in alternative securities. Compute the cost of retained earnings.

LESSON: 5
CAPITAL STRUCTURE POLICY

Structure

5.0 Learning Objectives

After reading this lesson, you will be able to:

- Understanding Capital Structure
- Evaluate different approaches to capital structure.
- Describe on interest tax shield advantage of debt.
- Discuss the impact of agency cost on capital structure.
- Explain the guidelines for capital structure planning.

5.1 Introduction

Capital structure is the mixture preference share capital, debentures, and equity share capital. Conceptually, the financial managers have to make plan optimum capital structure for their respective business organization. This is possible when the market value of share is generally favourable. But in reality, to have an optimum capital structure is a difficult. A number of factors affect the decision of capital structure a business organization, but the decision of the individual who is making the capital structure decision plays an important role. If the decision makers differ in their judgments of the inferences of various factor, two related units may have diverse capital structure.

The selection of a company‘s capital structure is the problem of marketing. It is fundamentally anxious with how a company make a decision to segregate its cash flow into two major apparatus, a fixed part which is allocated to congregate the responsibilities towards debt and a remaining part which fit into equity shareholders.

Because the purpose of financial management is to maximise the wealth of shareholders, the major question in the capital structure is: What is the association amid capital structure and the value of a company? On the other hand, what is the affiliation among capital structure and cost of capital? Keep in mind that valuation and cost of capital are in reverse. Specified a definite level of earnings, the value of the firm is maximised when the cost of capital is minimised and vice-versa. There are diverse observations on how capital structure persuades value. Some squabble that there is no relationship at all between capital structure and the value of a company; others consider that financial leverage has a positive consequence on the value of a company up to a point and after that there is a negative effect ; at a halt others opine that, erstwhile things being equivalent, superior the leverage, greater will be the value of a company.

5.2 Net Income Approach

Net Income Approach states that there is an optimal structure anywhere the market price per share of stock is most. The connotation of Net Income Approach is that a company may subordinate its cost of capital frequently and add to its total valuation by the employment of debt capital. Thus, with increased use of leverage overall cost of capital decline and total value of a company (value of stock plus value of debt) rises. Leverage is, therefore, an important variable and debt policy decision has a significant weight on the value of a company.

Basic assumptions of NI approach are:

(a) Only two types of capital are employed - long-term debt and equity capital.

(b) Interest cost on debt capital and rate at which investors capitalise earnings available to common shareholders are fixed, regardless of the debt-equity ratio.

(c) There is no corporate tax rate.

(d) The borrowing rate is less than the equity capitalisation rate.

(e) The company‘s operating earnings are not ordinary to develop, i.e. the firm‘s likely EBIT is same in all future periods.

(f) The business risk of the company is steady and is self-governing of the capital structure of the company as well as of financial risk.

(g) Company is expected to continue indefinitely.

This approach works like this:

As the proportion of low rate of debt in the capital structure boosts, the weighted average cost of capital reduces and moves towards the cost of debt .Thus, the optimal capital structure, according to NI approach, is that at which the total value of a company is the highest and cost of capital is the lowest.

Illustration 5.1: The net income approach may be illustrated with numerical example. There are two companies –A‖ and –B‖ alike in all respects apart from the degree of leverage employed by these companies. Financial data for these firms are shown below:

		Firm A	**Firm B**
O	Net operating income	Rs. 10,000.	Rs. 10,000
F	Interest on debt	Rs. 0	Rs. 3000
E	Equity earnings	Rs. 10,000	Rs. 7,000
k_e	cost of equity capital	10%	10%
k_d	cost of debt capital	6%	6%
S	Market value of equity	Rs. 100,000	Rs. 70,000
B	Market value of debt	Rs. 0	Rs. 50,000
V	Total value of the firm	Rs. 100,000	Rs.120,000

The average cost of capital for firm A is

6% x 0/10000+10% x 100,000/100,000=10%

The average cost of capital for firm B is

6% x 50,000/120,000 + 10% x 70,000/100,000 =8.33%

Evaluation of NI Approach

This approach gives idea on the impact the debt has on overall cost of capital. Furthermore, the approach emphasises that recourse to debt financing increases net income before tax and hence the value of equity shares in the market.

However, NI approach fails to recognise that incorporation of additional doses of debt increases the risk in the firm. In real world, when a firm is heavily indebted, the equity stockholders would perceive increase in risk. They would dispose of their stock. As a result, the market value of equity stock will decrease. Thus, the very purpose of maximising the value of the company will be defeated. NI approach cannot, therefore, be considered adequate for capital structure management.

5.3 Net Operating Income Approach

NOI Approach states that the total value of a company remains unaffected by capital structure. Whatever benefits results from debt financing, it will be offset by the rise in cost of equity capital with the result that overall cost of capital remnants unaffected for every the degrees of the financial leverage and therefore, there is no optimal capital structure and investors are indifferent to change in capital structure.

Operating features of this approach are:

i) Total market value of a company (V) is obtained by capitalising net operating income (EBIT) at the overall cost of capital (Ko) which is constant. Thus, V = EBIT/Ko

ii) Total value of the stock is found by deducting the value of debt from total market value of a company.

iii) Cost of equity (EBIT-F)/s tends to rise in correspondence with an raise in the degree of leverage.

iv) Overall cost of capital is a typical of the costs of debt and equity

The important basis of the approach is to ‒the market capitalizes a company as a whole at a discount rate, which is independent of the company‘s degree of leverage. As a consequence, the division between debt and equity is irrelevant. An increase in the use of debt funds, which are apparently cheaper, is offset by an increase in the equity capitalisation rate. This happens because equity investors seek higher return as they are exposed to greater risk arising from increase in the degree of leverage. They raise the capitalisation rate k_e (lower the price-earnings ratio, P/E), as the degree of leverage increases‖.

Net Operating Income position has been backed expressively by David Durand. He squabbles that ‒the market value of a firm depends on its net operating income and business risk. The change in the degree of leverage employed by a firm cannot change these underlying factors. It merely changes the distribution of income and risk between debt and equity without affecting the total income and risk, which influence the market value of the firm. Hence the degree of leverage per se cannot influence the market value (or equivalently the average cost of capital) of the firm‖. Arguing in a similar vein, Modigliani and Miller, in a influential involvement made in 1958, powerfully ‒advanced the proposition that the cost of capital of a firm is independent of its capital structure‖.

Illustration 5.2: Two companies, AB and BC, are alike in every one respects apart from the degree of leverage employed. Relevant financial figure for these companies is given below:

		Firm AB	**Firm BC**
O	Net operating income	10000	10000
K o	Overall capitalisation rate	0.15	0.15
V	Total market value	66667	66667
F	Interest (debt)	1000	3000
Kd	Debt Capitalisation Rate	0.10	0.10

B	Market Value of Debt	10000	30000
S	Market value of equity	56667	36667
B/S	Degree of leverage	0.176	0.818

The equity capitalisation rates of companies AB and BC are as follows:

Firm AB: Equity earnings/Market value of equity = 9000/56667 = 0.159=15.9%

Firm BC: Equity earnings/Market value of equity = 7000/36667=0.191=19.1%

This approach focuses on the part of net operating income in the calculation of total value of a company. NOI approach rightly recommends that net investment suggestions should be accepted on the base of the relationship of NOI to total value and not on the basis of the relationship between the source of financing and the return from an investment project. However, NOI approach does not accept the existence of the concept of optimal capital structure. This is against the perceived risks of different financing mixes. If the risks and benefits of leverage do not exist, then the purpose of regulating debt-equity mix is meaningless

5.4 Traditional Approach

Traditional theorist consider as to a definite point a company can, by increasing proportion of debt in its capital structure, decrease cost of capital and hoist market value of shares. Beyond that point, further induction of debt will cause the cost of capital to rise and market values of shares to fall. Thus, through a well-judged combination of debt and equity the firm will minimise overall cost of capital structure. After a certain point overall cost of capital starts to increase faster than increase in earnings per share as a result of application of additional debt. Traditional view with respect to optimal capital structure can better be appreciated by categorising the market reaction to leverage in three stages.

Stage I: The first stage begins with the introduction of debt in the firm‘s capitalisation. As a consequence of the use of low cost debt the firm‘s net income tends to rise. Cost of equity capital (Ke) rises with additional dose of debt but the rate of increase will be less than the rise in the earnings rate. Cost of debt (Kd) remains constant or rises only modestly. Combined effect of all these will be reflected in increased market value of a company and decrease in overall cost of capital (Ko).

Stage II: In the second phase, additional submission of debt will enhance cost of debt and equity share capital so sharply as to offset the gains in net income. Hence, the total market value of the firm remains unchanged.

Stage III: After a critical turning point, any further does of debt to capitalisation will prove fatal. The cost of both debt and equity will tend to rise as a result of the increasing riskiness of each causing a raise in overall cost of capital which can be faster than rise in earnings from

the introduction of additional debt. Consequent upon this, market value of the firm will show depressing tendency

–The main propositions of the traditional approach are:

1. The cost of debt capital k_d remains more or less constant up to a certain degree of leverage but rises thereafter at an increasing rate.
2. The cost of equity capital, k_e remain more or less constant or rises only gradually up to a certain degree of leverage and rises sharply thereafter.
3. The average cost of capital, k_o as a consequence of the above behaviour of k_e and k_d (i) decrease up to a certain point; (ii) remains more or less unchanged for moderate increases in leverage thereafter; and (iii) rises beyond a certain point‖.

The traditional approach is not as roughly definite like the net income approach. Quite a few profiles of k_d, k_e and k_o are unswerving among this approach. The principal implication of the traditional position is that the cost of capital is reliant on capital structure and an optimal capital structure will be there which will reduce the cost of capital. On this point, the real marginal cost of debt and equity is the identical. Prior to the optimal point the real marginal cost of debt is not as much of than the real marginal cost of equity and ahead of the optimal point the real marginal cost of debt it additional in comparison to the real marginal cost of equity.

Illustration 5.3: A numerical illustration of the traditional approach is given in Table 5.1. This table shows the average cost of capital for a firm which has a net operating income of Rs. 100000 that is split variously between interest and equity earnings depending on the degree of leverage employed by the firm.

Table 5.1: Numerical illustration of the Traditional Approach

F Rs.	E Rs.	kd (%)	ke (%)	B Rs.	S Rs.	V Rs.	ko (%)
0	100000	6.0	10.0	0	1000000	1000000	10.00
10000	90000	6.0	10.0	10.0	166667	900000	1066667	9.37
20000	80000	6.5	10.5	10.0	307692	761905	1069597	9.36
30000	70000	6.5	11.0	11.0	461538	636363	1097901	9.10
40000	60000	7.0	11.0	11.0	571429	545455	1116884	8.95
50000	50000	7.5	11.5	11.5	666667	434783	1101450	9.08
60000	40000	9.0	12.0	12.0	666667	333333	1000000	10.00
70000	30000	11.0	14.0	14.0	636364	214286	850650	11.75
80000	20000	15.0	16.0	16.0	533333	125000	658333	15.20
90000	10000	18.0	20.0	20.0	500000	100000	600000	16.67

According to the traditional model, ‑the cost of capital would tend to rise and market value of the firm to decline as the firm become more risky consequent upon financing operations with debt capital. Although there is no convincing empirical evidence to support the traditional mode, institution and practice, as evidenced by the behaviour of suppliers of capital as well as by finance managers, seem to suggest that there is indeed a limit to which firm can assume debt without increasing its cost of capital. To exceed certain limits of debt an acceptable range tends to increase both the cost of debt and cost of common stock because the financial risks tend to rise‖.

However, the model has not been explained as satisfactorily as it should have been. Thus, for instance, a little was offered by way of explanation as to why low cost debt should be substituted for higher cost of equity up to the point. Furthermore, rigorous attempts were not made to define where the optimal point or range may be located. As a result, vague rules of thumb were developed which both firms and financial institutions tended to follow blindly.

CHECK YOUR PROGRESS A

Fill in the blanks:

1. According to_____approach, there is an optimal structure where the market price per share of stock is maximum.
2. According to_____ approach total value of a firm remains unaffected by its capital structure.
3. The net operating income point has been supported expressively by _____
4. .Traditional view with respect to optimal capital structure can better be appreciated by categorising the market reaction to_____in three stages.

5.5 Modigliani and Miller Approach

In their celebrated 1958 paper, Modigliani and Miller (MM, hereafter) encompass reiterated and augmented Net Operating Income point in stipulations of three fundamental proposals. Before discussing their propositions, let us look at the assumptions underlying their analysis.

- Capital markets are perfect. Information is generously accessible and there is no transaction cost.
- Investors are rational. Investors are well-Informed and decide a mixture of risk and return which is mainly beneficial to them.
- Investors have same opportunity. Investors hold alike subjective probability distributions about prospect operating earnings.
- Firms can be clustered into corresponding risk classes on the origin of their business risk.
- There is no corporate income tax.

Basic Propositions

Based on the above assumptions, MM derived the following three propositions:

"Proposition 1: The total market value of a firm is equal to its expected operating income divided by the discount rate appropriate to its risk class. It is independent of the degree of leverage. In symbols

$V_j = S_j + B_j = O_j/k_o$

Where V_j = total market value of firm j

S_j = market value of the equity of firm j

B_j = market value of the debt of firm j

O_j = expected operating income of firm j

K_o = discount rate applicable to the risk class to which the firm j belongs.

Proposition II: The expected yield on equity, k_e is equal to k_o plus a premium. This premium is equal to the debt-equity ratio times the difference between k_o and the yield on debt, k_d. In symbols

$K_e = k_o + (k_o - k_d)\ B/S$

Proposition III: The cut-off rate for investment decision making for a firm in a given risk class is not affected by the manner in which the investment is financed. This proposition states the implication of the earlier propositions for investment decision-making. It emphasizes the point that investment and financing decisions are independent because the average cost of capital is not affected by the financing decision‖.

Proof of MM Argument - The Arbitrage Mechanism

MM has recommended an arbitrage mechanism to prove their argument. To thrash out their proof, consider two companies P and Q in the identical risk class with the equivalent expected operating income but different capital structures.

	P	Q
Expected operating income	O	O
Market value of equity	S_p	S_q
Market valueof debt	-	B_q
Market value of the firm	V_p	V_q

Interest rate of debt	-	r
Interest burden	-	rB_q

Suppose the market value of the unlevered company, firm P, is less than market value of the levered company, firm Q, ($V_p < V_q$). Now consider the case of an investor who holds S_q rupees worth of equity shares of firm Q, representing a fraction of the total outstanding market value of equity shares of firm Q ($S_q = aS_q$). The return he gets is:

$Y_q = a\ (O - rB_q)$

If this investor sells aS_q worth of shares of firm Q and borrows aB_q on his personal account at an interest rate of r percent, he can purchase a $(S_q + B_q)/S_p$ of the equity shares of firm P. (Remember for firm P, $V_p = S_p$ since it is an all-equity firm). The return obtained by the investor after these transactions would be:

$Y_p = a\ (S_q + B_q) / S_p$, $O\text{-}raB_q = aV_q/V_p$, $O - RaB_q$

Comparing EPS, we find that as long as $V_q > V_p$ we have $Y_p > Y_q$. This means that equity shareholders of firm Q will sell their shareholders, resort to personal leverage, and acquire shares of firm P since it is profitable to do so. In this process Sq (and hence V_q) will get depressed and S_p (and hence V_p) will rise till the equality between V_p and V_q is established. Thus we find that a levered firm cannot enjoy a premium over an unlevered firm because investors by their personal leverage will abolish the difference.

We next consider the possibility $V_p > V_q$. Let us here put $V_p/V_q = B > 1$. Suppose an investor holds equity shares of firm P worth s_p representing a fraction a of the total market value of outstanding shares, S_p.

His return is

$Y_p = s_p/S_p\ O = aO$

If he sells his shareholdings worth aV_p ($V_p = S_p$) he can buy a fraction aB of the equity shares and bonds of firm Q because the market value of company P is B times the market value of company Q. Such an action will make his return equal to

$Y_q = aB(O - rB_q) = aBO$

Without changing the level of risk borne by him.

Comparing EPS, we find that as long as $V_p > V_q$ (B > 1), we have $Y_q > Y_p$. This means that equity shareholders of firm P will sell shares of firm P and buy a portfolio consisting of

shares and bonds of firm Q since it is profitable to do so. In this process V_p will get depressed and V_q will rise till the equality between V_p and V_q is established.

Illustration 5.4: A numerical illustration may be given to show how the arbitrage mechanism works. Take two companies, XY and YZ, alike in all respects apart from in their capital structure. Company XY is financed by equity only; a mixture of equity and debt finances firm Y. Relevant financial particulars of the two firms are as shown in Table 5.2.

According to Table 5.2 the value of the levered company YZ is higher than that of the unlevered company. Such a circumstances argues MM, cannot continue because equity shareholders will do well to sell their equity shares in firm YZ and invest in the equity shares of Company XY with individual leverage. For instance, a equity shareholder who is having 1 per cent equity in Company YZ will be doing well to:

1. Sell his equity in Comapny YZ for Rs. 6667;
2. Borrow Rs. 4000 at 5 per cent interest on personal account; and
3. Buy 1.0667 per cent of the equity of Company XY with the amount of Rs. 10667 that he is having.

Such an accomplishment would consequence in the subsequent income:

	Rs.
Income on investment inCompany XY	1066.7
Less interest (4000 x 0.50)	200.0
Net Income	866.7

Table 5.2: Financial Particulars of Firms XY and YZ

	X	Y
Total Capital Employed	Rs. 1000000	1000000
Equity Capital	Rs. 1000000	600000
Debt	Rs. 0	400000
Net Operating income	Rs. 100000	100000
Debt Interest	Rs. 0	20000
Market Value of Debt	Rs. 0	400000
(Debt capitalisation rate is 5%)		

Equity Earnings	Rs. 100000	80000
Equity Capitalisation Rate	10%	12%
Market Value of Equity	Rs.1000000	666667
Total Market Value of the Firm	Rs.1000000	1066667
Average Cost of Capital	10%	9.37%
Debt Equity Ratio (in terms of market Value)	0	0.6

The net income of Rs. 866.7 is superior as compared to a net income of Rs. 800 inescapable by selling 1 per cent equity of Company YZ and the leverage ratio is the similar in both situations. (In the case of investment in firm X with personal borrowing we have personal leverage; in the case of investment in firm Y we have corporate leverage).

In preceding discussion we give details that due to the arbitrage process the value of a levered company was not higher than of an unlevered company, other effects being identical. A similar explanation, with arbitrage in the opposite direction, may be offered to prove that the value of an unlevered company cannot be more than that of a levered company, other things being equivalent.

Assuming that the valuation of the two companies XY and YZ is:

	X	Y
Interest of Debt	Rs. 0	20000
Market Value of Debt (Debt capitalisation rate 5%)	Rs. 0	400000
Equity Earnings	Rs. 100000	80000
Equity capitalisation rate	8 percent	12 percent
Market Value of Equity	Rs.1250000	666667
Total Market Value	Rs.1200000	1066667

If a situation like this obtains, equity investors in Comapny XY would sell the equity in Company XY and utilize the proceed partially for investment in the equity of Company YZ and partially for investment in the debt of Company YZ. For instance, a equity shareholder who is having 1 per cent equity in Company XY will:

1. Sell 1 percent of his share of equity in Comapny XY for Rs. 12,500, and

2. Purchase $1\frac{11}{64}$ percent of equity share and debt in Company YZ concerning an expenditure of Rs 12500 (The total market value of Y is Rs $1{,}066{,}667\frac{11}{64}$ percent of this is Rs 12,500).

This type of act on the part of equity shareholder will increase his income by Rs. 172. When equity shareholder do this, the market value of the equity of Company XY will decrease and market value of the equity shares of Company YZ will increase. This procedure will continue until the total market value of both companies turn out to be equivalent.

5.6 Taxation and Capital Structure

The leverage irrelevance of MM is suitable if the perfect market suppositions essential their analysis are fulfilled. But in case of blemish characterising the real world capital markets the capital structure of a company will affect its valuation. Presence of tax is a main limitation in real world.

Corporate Taxes: When taxes are valid to corporate income, debt financing is beneficial. Why? Whilst dividends and retained earnings are non deductible for tax purpose, interest on debt is a tax-deductible expense. Because of this, the total income available for both shareholder and debenture holders is better when debt capital is applied. To illustrate think two companies which have an likely net operating income of Rs. 1 million and are alike in all respect apart from in the degree of leverage engaged by them. Company AB is having no debt capital while Company BC is having Rs. 4 million 12% debt capital. The corporate tax rate applicable to both companies is 50%. The income to shareholders and debenture holders of these two companies is revealed in Table 10.3. From this table it is apparent that the combined income of debenture holders and shareholders of levered firm (Company BC) is high than that of the unlevered Company (Company AB).

Table 5.3: Corporate Taxes and Income of Debenture holders and Shareholders

	AB	**BC**
Net Operating Income	1000000	1000000
Interest on debt	0	480000
Profit before taxes	1000000	520000
Taxes	500000	260000
Profit After Tax (Available to shareholders)	500000	260000
Combined income of debenture holders and shareholders	500000	740000

The explanation for this is fairly simple: the interest payment of Rs. 480000 made by the levered from fetch a tax shield of Rs. 240000 (Rs. 480000 x tax rate). Hence the combined income of debt holders and stockholders of firm B is higher by this amount.

If the debt used by a levered company is perpetual in nature, the present value of the tax shield connected with interest will be calculated by employing the formula for perpetuity.

Present value of tax shield = $t_c rB/r = t_c B$

Where tc = corporate tax rate

B = market value of debt

r = interest rate on debt.

For firm BC the present value of tax shield works out to: 0.5 (Rs. 4000000 = Rs. 2000000. This symbolizes the increase in its market value occurring due to financial leverage.

In general the value of a company may be represented as:

$V = O(1 - t_c)/k + t_c B$

Where V = Value of the Company

O = net operating income

t_c = corporate tax rate

k = capitalisation rate applicable to the unlevered firm.

B = market value of debt.

The first term in the above equation, $O(1 - t_c)/k$, represents the value of the unlevered company and the second term, $t_c B$, denotes the value of tax shield occuring out of financial leverage. Hence it implies that:

Value of levered company = Value of unlevered company + Gain from leverage

$V_t = V_u + t_c B$

The preceding equation makes it clear larger the leverage, larger will be the value of company if other things remain same. This shows that the optimal approach of a company will be to make best use of the degree of leverage in its capital structure.

Corporate Taxes and Personal Taxes: What happens while personal taxes are taken into consideration together with corporate taxes? If investor is paying the same rate of personal taxes on return of debt as well as return on equity, the benefit of corporate tax in favour of debt is intact. This point cab be proved by applying a 30 per cent personal tax rate to debt as well stock returns in the previous example. The income to debt holders and stockholders after taxes, both corporate and personal, is calculated in Table 5.4. From this table it is clear that although the combined post-tax income to stockholders and debt holders decreases in both

the firms, the proportional advantage of debt remains unaffected because the combined income of stockholders and debt holders still is higher by 48 per cent in the levered firm.

Table 5.4 Personal Tax and Income of Debt holders and Shareholders

	Firm A	**Firm B**
Income available to stockholders	500000	260000
Less personal taxes at 30%	150000	78000
Income available to stockholders after Personal taxes	350000	182000
Income to debt holders	0	480000
Less personal taxes at 30%	——	144000
Income to debt holders after personal taxes	0	336000
Combined income of stockholders and Debt holders after personal taxes	350000	518000

If the personal tax rate is t_p the advantage of tax on debt will:

$t_c B (1-t_p)$

The above method is valid when the personal tax rate relevant to stock as well as the income of debt is the same as was assumed in the preceding example. In numerous countries, together with India it is not factual. Stock income, which comprises of dividend income and capital gains is taxed at a rate which is effectively lover than that of debt income. When the tax rate on share income (t_{ps}) differs from the tax rate on debt income (t_{pd}), the tax advantage of a rupee of debt may be expressed as:

$(1-(1-_{tc})(1-t_{ps}) / (1-t_{pd}))$

This expression is derived as follows:

X = earning before interest and taxes

B = face value of risk-free debt

r = coupon rate (as well the bondholders‘ required rate)

t_c = corporate tax rate

t_{pd} = personal tax rate on the income of debt

t_{ps} = personal tax rate on the income of equity

The total post -tax cash flow to all investors is:

$=rB(1-t_{pd})+(X-rB)(1-t_c)(1-t_{ps})$

$=X(1-t_c)(1-t_{ps}) +rB(1-t_{pd})(1- (1-t_c)(1-t_{ps})/(1-t_{pd})$

First term Second term

The first term represents the post-tax cash flow to the shareholders of unlevered company. If it is capitalized using the discount rate applicable to the unlevered firm its capitalized value is

V_u(Value of unlevered company)

The second term is product of $rB(1-t_{pd})$the post-tax interest income of bond holders, and a constant term

$1-(1-_{tc})(1-t_{ps})/1-t_{pd})$

Hence its capitalized value, using the discount rate applicable to debt capital is:

$B\ [1-(1-t_c)(1-t_{ps})/(1-t_{pd})]$

The value additively principle implies that:

$V_1 = V_u + B[1-(1-t_c)1-t_{ps})/(1-t_{pd})]$

From the second term in the above equation it is clear that the gain from using one rupee of debt is:

$[1-(1-t_c)(1-t_{ps})/(1-t_{pd})\ ]$

To illustrate, if t_c is 50 per cent, t_{ps} 5 per cent, and t_{pd} 30 per cent , the tax benefit of every rupee of debt: 1 - (0.5) (0.95)/(.070) = 0.32 rupee From above equation, it is clear that:

If $(1 - t_c)\ (1 - t_{ps}) < (1 - t_{pd})$

the tax benefit of debt is positive

- If $(1 - t_c)\ (1- t_{ps}) = (1-t_{pd})$

the tax benefit of debt is nil

- If $(1 - t_c)\ (1 - t_{ps}) > (\ (1 - t_{pd})$

  the tax advantage of debt is negative

Merton Miller Argument

Merton Miller in his 1976 Presidential Address to the American answered the issue of optimal debt policy in a novel, though controversial, manner. He argued that ‒the original MM proposition, which says that financial leverage does not matter in a tax free world, is valid in a world where both corporate and personal taxes exist‖.

To understand Miller‘s argument, let us begin with the model of firm valuation when corporate and personal taxes exist:

$V_l = V_u + B\ [1 - (1-t_c)\ 1-t_{ps}/1-t_{pd})]$

If $(1-t_{pd}) = (1-t_c)\ (1-t_{ps})$,

Eqn becomes: $V_1 = V_u$

This is the Modigliani and Miller Proposition in a tax-free world.

If $t_{pd} = t_{ps}$ Eqn. becomes:

$V_L = V_U + t_cB$

This is the Modigliani and Miller proposition taking into account only the corporate taxes.

Miller posits that the former case is the correct case. Broadly, the key premises and links in his argument are as follows:

- The personal income tax rate on equity income, t_{ps}, is nil; the personal tax rate on debt income, t_{pd}, varies across investors; the corporate tax rate, t_c, is constant across companies.
- Companies will change their capital structure in such a manner that, at the margin, the after tax value of a rupee of debt income is the same as the after tax value of a rupee of equity income.
- If the starting point is an all-equity capital structure, as long as some investors are tax exempt ($t_{pd} = 0$), companies can by borrowing a rupee of debt enhance their value by t_c - this is clear from the above equations.
- Once companies exhaust their tax-exempt clientele, they have to sell debt to investors who pay taxes. To induce investors to switch from equity (whose income is tax-exempt) to debt (whose income is taxed), companies have to raise the interest rate. If the risk adjusted expected rate of return on equity is k_e the risk adjusted expected rate of return on debt should be at least $k_e/(1 - t_{pd})$ in order to compensate investors for personal taxes on debt.
- In the aggregate, firms will go for debt capital till the tax rate for the minor bondholder, t_{pd}, is the similar as the corporate tax rate, t_c. After this, no tax advantage is available to firms for issue of debt. Thus, the equilibrium supply of corporate debt is that aggregate amount at which the tax bracket of the marginal debtholders just equals the corporate tax rate.
- If the corporate tax rate exceeds the marginal personal tax rate on debt income, companies will use only debt capital; if it is the other way companies will not use any debt capital. Hence, the supply curve for debt capital remains horizontal at a given risk adjusted interest rate $[k_e/(1-t_c)]$. Figure 12.4 shows two such supply curves.

- The demand curve for debt capital slopes upwards because investors would buy more debt as companies offer a higher pre-tax expected rate of return. The slope of this curve will depend on funds available to investors in various tax brackets.
- The point at which the supply and demand curves of debt interest represents the optimal economy-wide debt-equity ratio. If the tax burden on debt income rises, the optimal debt-equity ratio will decline; while, if the corporate tax rate rises in relation to personal tax rate, the optimal debt equity ratio will increase. The important point is that no single firm can derive any benefit from varying its financial leverage — only the optimal debt-equity ratio for the economy changes.

5.7 Other Imperfections of Capital Structure

In addition to taxation, which is the most important imperfection, there are several other imperfections, which have a bearing on the optimal capital structure. Among them the following need to be discussed:

- Bankruptcy costs
- Difference between home-made leverage and corporate leverage
- Agency costs

Bankruptcy Costs

A significant deficiency influencing capital structure decision is the existence of bankruptcy costs. In a perfect capital market, there are no costs associated with bankruptcy. If a firm becomes bankrupt its assets cab be put up for sale at economic price and there are no legal as well as administrative expense. In reality, there exist substantial cost connected with bankruptcy. Assets, when disposed under agony circumstances, generally sell at a noteworthy discount below their economic value. Further, the legal as well as administrative cost connected with bankruptcy happenings is quite high. At last, an imminent bankruptcy involves noteworthy cost in the form of brusquely blight working efficiency.

Other things being equal, the likelihood of bankruptcy is higher for a levered company than an unlevered company. It seems that the chance of bankruptcy enlarges at an rising rate as the debt-equity ratio raises beyond a certain threshold level. It depicts the expected cost of bankruptcy grows when the debt-equity ratio enlarges. Since bankruptcy costs symbolize a loss that cannot be expand away, investors anticipate a higher rate of return from a company which is facing the vision of bankruptcy.

Difference between Corporate and Home-made Leverage

MM assumes that personal leverage as well as corporate leverage are perfect alternatives. However, there are some differences.

- An individual may not be able to borrow on his personal account at the same rate of interest as a company can do. In India, the average rate of interest n personal borrowings is higher than the average rate of interest on corporate borrowings.
- An individual usually cannot adopt as high a leverage ratio as a company can do, Why? The creditors simply may refuse to lend to individuals who want to employ a high leverage ratio.
- When an individual borrows on his personal account, his liability towards that borrowing is unlimited. The equity shareholders of a company, however, have limited liability; irrespective of the company‘s level of borrowing.

Due to the above differences, the substitutability of personal and corporate leverages is suspect. Hence the efficiency of the arbitraging mechanism is questionable.

Agency costs

When a firm obtain debt capital, the creditors generally impose restrictions on the firm in the form of protective covenants incorporated in the debt/loan contract. These restrictions may release to several things; approval of the creditors before key managerial appointments are made, maintenance of current ratio above a certain level, limitation on the rate of dividend during the currency of the loan, constraints on additional issue of capital, limitation on further investments, and so on.

The restrictions imposed by the creditors entail considerable legal and enforcement costs and also impair the operating efficiency of the firm. All these costs, broadly referred to as monitoring costs or agency costs, detract from the value of the firm. Michael C Jensen and William H. Heckling, who have put forward a sophisticated and elegant theory of agency costs, argue that these costs are eventually borne by equity shareholders in the form of wealth reduction. (When the creditors incur the monitoring costs in the first instance they are likely to enhance the interest rate and other charges to cover these costs.)

Monitoring costs are a function of the level of debt in the capital structure. When there is little debt lenders may limit their monitoring activity. However, when the level of debt is high lenders may insist on extensive monitoring which entail substantial costs.

CHECK YOUR PROGRESS B

Which of the following Statement is True or False?

1. Monitoring costs are a function of the level of debenture in capital structure
2. An important imperfection affecting the capital structure decision is the existence of total costs
3. The leverage irrelevance of MM is applicable if the perfect market suppositions causal their analysis are met.

4. According to MM hypothesis, the total market value of a company is equal to its normal total income divided by the discount rate appropriate.

Activity

List the important differences between Net income approach and net operating income approach.

_____
_____
_____
_____
_____
_____
_____
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_____
_____.

5.8 Summary

What is the association among financial leverage and cost of capital? This question has been answered by the discussion made so far. Is has been established that the effect of taxation is to reduce the cost of capital as financial leverage increases. Alternatively, it implies that the value of a company is added to with financial leverage. Imperfections like bankruptcy costs and agency costs, however, be likely to increase the cost of capital as financial leverage increases. Put differently these imperfections detract from the value of the firm as financial leverage increases. Some positions have been taken on the connection among financial leverage and cost of capital. These are namely net income approach; net operating income approach; traditional position; and Modigliani and Miller position. Net income approach states that the cost of debt capital and equity capital stay unaffected when the leverage ratio vary. Because of this, the average cost of capital decline as the leverage ratio increase. This occurs because when the leverage ratio enlarges, the cost of debt that is lower than the cost of equity gets more weightage in the average cost of lower than the cost equity gets more weightage in the average cost of capital computation.

Merton Miller in his 1976 Presidential Address to the American Finance Association answered the issue of optimal debt policy in a novel, though controversial, manner. He is of the opinion that the original MM proposal is valid in a world everywhere mutually corporate and personal taxes exists. In addition to taxation, which is the most important imperfection, there are several other imperfections, which have a bearing on the optimal capital structure. In particular, the following are very relevant: bankruptcy costs, difference between homemade leverage and corporate leverage, and agency costs.

5.9 KEYWORDS

Capital Structure: Capital structure means share of debt and equity in the total capital of a company.

Arbitrage: it is a process of buying an asset in one market and selling the same in another market to desire the advantage from the price disparity.

Agency Cost: In order to minimise the risks in debt finance, the suppliers of loan will impose restrictive conditions in loan agreements that restricts management‘s freedom of action and is known as agency costs.

5.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your progress A

1. Net Income
2. Net Operating Income
3. David Durand
4. Leverage

Check Your progress B

1. True
2. False
3. True
4. False

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5.12 terminal and model Questions

1. What is the relationship between leverage and cost of capital as per the net income approach?
2. What is the relationship between leverage and cost of capital as per the net operating income approach?
3. What are the main propositions of the traditional approach?
4. State the principal propositions of the Modigliani and Miller (MM) position.

5. Prove the MM hypothesis with the help of the arbitrage mechanism.

6. Illustrate the arbitrage mechanism suggested by MM with the help of a suitable numerical example.

7. What are the implications of corporate taxes for firm valuation?

8. What is the bearing of taxes, bankruptcy costs, and agency costs on the optimal structure?

9. Mahatma Limited has a net operating income of Rs. 30 million. Mahatma employs Rs. 100 million of debt capital carrying 10 per cent interest charge. The equity capitalisation rate applicable to Mahatma is 15 per cent. What is the market value of Mahatma under the net income method? Assume there is no tax.

10. The following information is available for two firms, Sachet Corporation and Zox Corporation.

	Sachet	**Zox**
Net Operating Income	Rs. 2000000	Rs. 2000000
Interest on Debt	Nil	500000
Cost of Equity	15%	15%
Cost of Debt	10%	10%

(a) Calculate the market value of equity, market value of debt, and market value of the firms.

(b) What is the average cost of capital for each of the firms?

(c) What happens to the average cost of capital of Box Corporation if it employs Rs. 30 million of debt to finance a project that yields an operating income or Rs. 4 millions?

(d) What happens to the average cost of capital of Zox Corporation if it sells Rs. 10 millions of additional equity (at par) to retire Rs. 10 million of outstanding debt?

In answering the above questions assume that the net income approach and MM approach apply and there are no taxes.

LESSON: 6

WORKING CAPITAL MANAGEMENT

Structure

6.0 Objectives

After reading the present lesson, you will be conversant with:

- Concept of working capital and its types;
- Estimate the firm‘s working capital needs using the operating cycle;
- Explain the determinants of working capital;
- Describe the importance of working capital.

6.1 Introduction

Working capital management is a significant part of business decisions. It is of major concern of the financial manager. Every and every business unit must have sufficient funds to meet up its day-to-day expenses and financing its current assets. The funds tied up in current assets are called working capital funds. Funds invested in current assets keep rotating speedly and

are being continuously changed to cash and this cash is again converted into current assets. Proper management of working capital is essential to maintain liquidity as well as profitability. Therefore the concern of management of working capital is towards deciding the level of funds so that profitability and liquidity of the business should be balanced properly.

6.2. Concept of working capital

The concept of working capital has been a matter of grant controversy among the financial circle. To understand its real meaning, we must analyse and understand the various concept of working capital. The following is the different concept of working capital:

1. Gross concept
2. Net concept

1. Gross Working Capital

According to J S Mill ‑The sum of the current assets is the working capital of the business‖. Current assets are those assets of business which can be converted into cash within one operating cycle or within a period of one year. Constituent of the current assets are stock, debtors, bill receivables, prepaid expenses, cash in hand, cash at bank, accrued income.

2. Net Working Capital

According to the net working capital concept, ‑working capital is the excess of current assets over current liabilities i.e.

Networking capital = Current assets – Current liabilities‖.

Current assets are the assets which can be changed into cash within one year whereas current liabilities are the liabilities which have to be paid within one year. Networking capital can be negative or positive. When the current assets are more than the current liabilities, the working capital is considered to be positive and when the current liabilities exceed the current assets the working capital is said to be negative.

The following example contains both the concepts of working capital:

Balance sheet of XYZ Limited as on 31 March, 2015

Liabilities	Rs.	Assets	Rs.
Share capital	5,00,000	Land and building	5,00,000
Reserves	50,000	Plant and machinery	1,45,000
Debentures	2,00,000	Cash in hand	5,000
Short-term loans	25,000	Marketable securities	45,000

Trade creditors Bills payable	20,000 5,000	Trade debtors Bills receivable Inventory	50,000 20,000 35,000
	8,00,000		8,00,000

Gross working capital = Inventory + Bills Receivables + Cash at bank + Trade debtors + Marketable securities

5000 + 45000 + 50000 + 20000 + 35000 = Rs. 1,55,000

Net working capital

= (Marketable securities + Cash at bank + Bills receivable + Trade debtors + Inventory) – (Short term loans + Trade creditors + Bills payable)

= (5000 + 45000 + 50000 + 20000 + 35000) – (25000 + 20000 + 5000)

= 155000 – 50000

= Rs. 1,05,000.

Those authors who hold that working capital represents current assets give various arguments to support their view. *First*, they say that gross concept of working capital takes into account the fact that with every increase in the borrowings, the working capital will increase, whereas according to the net concept there will be no increase. *Secondly*, profit is the result of interaction of both fixed and current assets. Since the fixed assets comprise the permanent capital of business, sense requires that current assets must be taken to mean the working capital. *Thirdly*, the organization is primarily worried about the total of current assets as these comprise the total funds accessible for operating purpose.

Other school considers that working capital represents current assets minus current liabilities. They argue that this concept helps the investors and creditors to weigh the financial soundness and margin of protection and is of great importance to providers of short-term loans and advances. This builds the buoyancy of the creditors about the security of the funds. Secondly, the surplus of current assets over current liabilities can always be used to meet contingencies since business organization is under no obligation to return the amount invested in surplus current assets.

The gross concept is useful for an analytical insight into profitability with reference to the management of current assets. The net working capital concept emphasises feature of liquidity which theoretically provides to current liabilities a bolster of security and safety. Also, the gross working capital concept emphasises the use and the 'net' concept the source; the interface of these concept is essential to recognize the management of working capital from the point of view of uncertainty, return and risk.

Working capital viewed according to net concept is qualitative in character. It is the amount

of current assets that has been supplied by the shareholders and/or long-term creditors. The gross concept of working capital is quantitative in character because it symbolizes the total amount of funds used for present operating purposes.

From the discussion held, it is obvious that this difference between gross working capital and net working capital does not challenge the significance of the concept of either gross working capital or net working capital. Every financial controller have to believe both since these offer diverse understandings. A firm ought to preserve an optimal point of gross working capital. It will assist circumventing (i) chances of winding up because of inadequate working capital, and (ii) affect on profitability. Consequently, a company should have enough amount of total current assets.

On the reverse, net working capital is the quantity of funds that have to be spend by a company recurrently in current assets. The residual part of current assets is funded by the current liabilities. The net working capitals too indicates the net liquidity uphold by a company. So, it can be said that, both concepts of working capital their own relevance and a financial manager should give due attention to both of these.

6.3. Kinds of working capital

Working capital can be classified on two basis:

A. On the basis of concept:

   (a) Gross Working Capital

   (b) Net Working Capital

B. On the basis of time:

   (a) Permanent Working Capital

   (b) Temporary Working Capital

Gross concept of working capital and net concept of working capital are already defined. Now we will discuss the meaning of working capital on the basis of time.

Permanent Working Capital

Permanent/regular working capital is the least amount that is necessary to make certain efficient utilisation and preserving the flow of current assets. It is at all times a least level of current assets that is constantly necessary by the business unit to carry out its regular business activities. For example, each business unit has to uphold a lowest amount of raw material, finished goods as well as cash. This least level of current assets is permanent/regular working capital. The arrangement of permanent working capital should be made from long-term source only for example share capital, debts etc.

Temporary working capital

Temporary/variable working capital is that part of working capital which is essential over and above the permanent working capital or it is that amount of working capital which is necessary to meet the seasonal demands and special contingencies. Most of the businesses have to give supplementary working capital to fulfil the seasonal and special needs. Temporary working capital is different from permanent working capital because temporary working capital is essential for short periods and can not be everlastingly employed profitably in an enterprise. In order to run the business smoothly both types of working capital is required. Variable working capital is required for a short time. Therefore, it should be financed from the short-term source only so as to later on it can be refunded when it is not required.

6.4 OPERATING CYCLE CONCEPT OF WORKING CAPITAL

Operating Cycle Concept of working capital is a new concept of working capital. The time duration necessary to complete the succession of activities from the purchasing of raw materials to realization of cash is called the operating cycle or working capital cycle. According to this concept –working capital is the amount required in different forms at successive stages of operation during the net operating cycle period of an enterprise‖. This may be calculated by totalling the number of days required for each of the stage in this cycle. In a trading firm, there are succession of activities beginning from procurement of goods and finishing at the recognition of sales revenue (at the time of sale itself if there is a cash sale and at the time of realization of debtors/bills receivable if there is a credit sale). Likewise, in manufacturing units, this series begins from purchase of raw materials and ends at the realization of sales revenue from finished goods. In both these situations, there is a time break among the occurrence of the first and the last event. This time break is operating cycle.

So, the operating cycle of a company comprises the time required for the finishing point of the sequential sequence of several or every one of the following:

i) Procuring of raw materials and services.

ii) Converting of raw materials into work in progress.

iii) Converting of work in progress to finished goods.

iv) Sale of finished goods either on cash basis or credit basis

v) Conversion of receivables into cash.

These activities create and necessitate cash flows which are neither in line nor definite. The relevant cash flows are not synchronized because the cash disbursements (i.e., payment for purchases) take place before the cash inflows (from sales realizations). These cash flows are uncertain because these depend upon the future costs and sales. Of course, the cash outflows relating to payment for purchases and payment for wages and other expenses are less uncertain with respect to time as well as quantum. What is required on the part of a firm is to

make adjustments and arrangements so that the uncertainty and unsynchronization of these cash flows can be taken care of. The company is usually required to provide credit facilities to their customers. The finished goods should be kept in store to fulfil of the order in hand and a least amount of cash must be kept. In addition, a lowest amount of raw materials must be kept for even and continuous process of production. In other words, a business enterprise must invest its funds in all these components of current assets to encompass a appropriate and horizontal administration of the business activities. The present prerequisite of finances depends upon the operating cycle period the business enterprise.

The period of the operating cycle for the rationale of estimation of working capital requirements is equal to the total of the durations of stages of (a) raw materials and store minus the period of credit given by the suppliers of the business undertaking.

Figuratively, the time period of the working capital cycle is as under :

$$O = R + W + F + D - C$$

O = Duration of operating cycle

R = Raw materials and stores storage period;

W = Working-in-progress period;

F = Finished stock storage period;

D = Debtors' collection period;

C = Creditors' payment period.

All these constituents of the operating cycle will be calculated as under:

$$R = \frac{\text{Average stock of raw material and store}}{\text{Average Raw Material and store consumption per day}}$$

$$W = \frac{\text{Average work-in-progress inventory}}{\text{Average cost of production per day}}$$

$$F = \frac{\text{Average finished stock inventory}}{\text{Average cost of goods sold per day}}$$

$$D = \frac{\text{Average books debts}}{\text{Average credit sales per day}}$$

$$C = \frac{\text{Average trade creditors}}{\text{Average credit purchases per day}}$$

After having computed one operating cycle period, the total number of operating cycles that

have been completed throughout a particular year will be calculated by dividing 365 days with the number of operating number of day in a operating cycle.

6.5 Factors affecting working capital requirements

Adequate amount of working capital is essential for every business organization. The working capital needs of a business enterprise depends on a outsized factors, for example, the size of business, the character of the operations of the business, the production cycle length, the rate of inventory turnover and the economic situations of the country. Further, it is very difficult to give them ranking since all these factor are of diverse importance and the weight of individual factor changes for a particular company over period of time. The following factors which have an effect on the working capital needs of a business enterprise is as follows:

1. Nature of business

Nature of business affects the working capital requirements of the business. Railways, transport, electricity, water and other public utilities require relatively lower working capital because the demand far their services is regular and fixed. They also get immediate payment. The need not keep much stack. On the other hand, the trading institutions require mare working capital because they have to keep adequate stack, cash and debtors. In financial institutions and banks, the need for working capital is mare than permanent capital.

2. Size of business

The requirement of working capital of a business unit is straightly affected by the size of the business activities. Larger the size of an enterprise, larger is the needs of working capital. But, in a quantity of instances a small business enterprise may require extra working capital because of soaring overheads, and unproductive use of available finances.

3. Production policy

Production policy also affects the requirements of working capital needs of a business enterprise. There are many products whose demand is indispensible. Those goods are bought in a particular month of a year. Regarding these business enterprises, there can be two types of production policies. Either goods can be produced / manufactured during the period of demand or there can be production for whole of the year. If the later option is selected, this denotes that finished goods have to be held in reserve in stock far longer period of time. It would require additional working capital.

4. Business fluctuations

Business has to pass through the stages of boom and depression. These fluctuations affect the requirement of working capital. During the period of boom, the business grows rapidly. Management has to invest more in stock and debtors. This requires additional working

capital. On the other hand, during depression, sale of business decreases. As a result the quantum of stock and debtors also reduces. It decreases the need for working capital.

5. Working Capital Cycle

In a manufacturing concern, the cycle of working capital begins with the purchases of raw material and finish with collection of cash from the sale. Working capital cycle includes purchases of raw materials, conversion of raw materials into finished goods through semi-finished goods with progressive augmentation of labour and costs, translation of finished goods into sales, realisation of cash from debtors and this working capital cycle continues again and again. The speediness of the completion of working capital completes cycle determine the requirements of working capital. Longer the period of the working capital cycle, larger amount of working capital is the required.

6. Credit Policy

The credit policy of a business firm affects significantly the requirements of working capital. An organization which makes purchases on credit basis and sell its products on cash basis needs less working capital. While, an undertaking which is buying goods on cash basis and allow credit to customers needs comparatively larger amount of working capital.

7. Earning capacity and dividend policy

Because of many factors like quality of products and monopoly conditions, some companies have high earning capability. Such companies generating cash profits through their business activities and also add towards working capital. In addition, the dividend policies of a business enterprise persuade the needs of its working capital. A company which preserve a stable rate of cash dividend inspite of its profits requires more working capital than a company which keep majority of its profits.

8. Price level changes

Price level changes too influence the requirements of working capital. Usually, the increasing cost require a company to preserve large working capital as more funds are required to preserve the same current assets. The effect of growing prices is always unlike for different companies. Sometimes, a company is much affected by price level changes while the other company is not much affected by the price level changes.

9. Cutover of inventories

The greater the turnover of inventories i.e. finished product work-in-progress, raw material, lesser will be the prerequisite of working capital. If sale is less, more amount of working capital is required.

10. Availability of Raw material

The continuous accessibility of raw martial to a company too influences the working capital requirements. Some kind of raw material is not available frequently. In those situations, a company needs larger amount of working capital to meet production needs. There are raw materials which are accessible during a season only, for example wool, oil seeds etc. Such raw materials are to reserved in stock for the complete year.

11. Growth and expansion of business

As a company grows, the generously proportioned quantity of working capital will be necessary. Budding companies need larger working capital in comparison to the static one. Economic circumstances as well as corporate practice also affect the working capital requirements.

12. Efficiency of Management

Efficiency of management is another vital factor to decide the working capital requirements. Management can decrease the working capital requirements by the efficient use of its resources. It can increase working capital turnover by enhancing the speed of cash cycle.

6.6 Importance of Adequate working capital

Working capital is the life blood as well as a nerve centre of every business. As movement of blood is necessary in human body to maintain life, working capital is also necessary to preserve the even operations of the enterprise. The major benefits to maintain sufficient amount of working capital is as follows:

1. **Cash Discount:** Business can avail of the cash discount offered to it by the suppliers if it is maintain a proper balance of cash.
2. **Regular supply of raw material:** Adequate working capital certifies regular supply of raw material as well as constant production.
3. Meeting unseen contingencies: It provided funds for unforeseen contingencies so that a business does not face any hardship during the period of crises.
4. **Fuller utilisation of fixed assets:** In the absence of working capital, fixed assets remain unutilised. In case adequate working capital is available, they can be used to their maximum capacity.
5. **Solvency of the business:** Sufficient amount of working capital enables to maintain solvency position of the company.
6. Research and innovation programmes: Research and development activities are essential and require cash outlays. Such activities may be undertaken if adequate working capital especially liquid resources are available as and when needed.
7. **Goodwill:** Adequate working capital facilitates a company to make payments well in time which ultimately creates the goodwill of the company.

8. **Advantage of favourable opportunities:** If a company has adequate amount of working capital, it can purchase raw materials in case it feels that the prices of raw materials will increase in the near future. Likewise,it can purchase marketable securities at a time when their prices are low in the market. Thus, it can take advantage of favourable business opportunities.

9. **High Morale:** Sufficient amount of working capital builds an situation of security and elevated confidence. All these contribute to the overall improvement in productivity of business.

6.7 Excess and inadequate Working Capital

Companies have to have sufficient working capital to run business properly. The amount of working capital should neither be too much, nor too much low. Both the situations are not good for a business organization. The working capital in excess of the requirement will reduce the profitability, and if the amount of working capital is less than what is required, the production process may face difficulties.

Amongst the excess and inadequate working capital, insufficient working capital is further risky from the company point of view. Now we will discuss the demerits of both the circumstances.

Disadvantages or demerits of excessive working capital

1. Excessive working capital depicts idle funds which are not earning any profit for the company and hence the company is not in a position to get adequate rate of return on its investments.
2. Excess working capital causes more inventory. As a result, chances of theft and misuse of stock increases.
3. Due to excess working capital management may follow liberal dividend policy that may affect financial health of the firm in future.
4. Excessive working capital may cause higher incidence of bad debts.
5. Due to low return on investment, share prices of the firm may fall.
6. Excessive working capital may give ascend to exploratory dealings.

Disadvantages or demerits of inadequate working capital

1. A firm with will not be in a position to pay its liabilities on time if there is inadequate amount of working capital.
2. A firm with inadequate working capital cannot purchase its needs in time and bulk and cannot avail of discounts.

3. In absence of adequate working capital fixed assets cannot be utilised fully. As a result, return on investment will decrease.
4. Management cannot take the advantage of favourable business opportunities.
5. With inadequate amount of working capital, a company will not be in a position to pay its day-to-day expenses of its operation which ultimately leads to increases costs as well as it reduces the profits of the company.

6.8 Management of Working Capital

Generally working capital means distinction among current assets and current liabilities. So working capital management denotes to every feature of management of equally the current assets and current liabilities. The major purpose of working capital management is to handle current assets as well as current liabilities in a way so as the amount of working capital is kept at a acceptable level. The current assets must be sufficient to pay the current liabilities well in time. As a proper balance among the different components of current assets is to be preserved since no current asset has mote than required amount invested in these current assets. Working capital management of firm has tremendous impact on its profitability and liquidity of the organisation. There are certain special problems peculiar to the management, of working capital.

Following are the main aspects of working capital management:

1. To decide the policy of profitability, risk and liquidity keeping in mind the objectives of the company.
2. Determining the composition and level of current asset.
3. To determine the appropriate means of short-term financing.

6.9 Methods of forecasting working capital

The objective of forecasting working capital requirements is to compute the cash position of a company and to have a control over the liquidity position of a company. But this circular flow of working capital is not robotically and it is the liability of the management to direct it in appropriate extent through the production machine. There are many popular ways for forecasting working capital requirements, which are follows:

1. Cash forecasting methods: Under this method, forecasting of receipts of cash and payments of cash is made for the forthcoming time period. Difference in cash receipt and payment represents surplus or deficit of cash. Arrangement for deficit cash is made and surplus cash is invested.

2. The balance sheet method: According to this method, current assets as well as current liabilities are to be estimated on the basis of transactions for coming years. The difference of current assets and current liabilities will determine the requirement of working capital.

3. Profit and Loss Adjustment Method: Under Profit and Loss Adjustment Method the forecasted, profits are to be adjusted after adding the cash inflows and deducting the cash outflows of the business concern.

4. Percentage of sales method: Under this method, current assets and current liabilities are estimated as percentage of sales. It is decided on the basis of precedent observations. If, for example, over the period, relationship between net profits and the amount of working capital is found stable, then this association can be taken as a model for the determination of working capital in the future also.

5. Operating cycle method: According to this method, operating cycle period for every stage is estimated and then requirement of working capital is calculated on the basis of cost of different items. Following aspects are to be considered in this method while estimating working capital needs.

1. Cost of raw material, wages and overhead.

2. Period of storing raw material before they are issued to production.

3. Period of production cycle.

4. Period of storing finished good in the godown before sale.

5. Period of credit allowed to customers and credit allowed by suppliers.

6. Lag in payment of wages and overheads.

6.10 LIQUIDITY VS. PROFITABILITY: RISK-RETURN TRADE-OFF

Illustration 2: XYX ltd. Provides the information which is as follows:

	Rs.
Sales (1,00,000 units)	15000
Earnings before interest and taxes	1500
Fixed assets	5000

The company is having two likely current assets means: Rs. 5000 Rs. and 4000. This is supposed that the level of fixed assets is fixed and profits is not differing with the level of current asset. The consequence these different policies is as under:

Effect of Different Working Capital Policy

Sale	15000	1	15000
EBIT	1500		1500

Current assets	5000	4000
Fixed assets	5000	5000
Total assets	10000	9000
Return on total assets (EBIT/Total assets)	15%	16.67%
Current Assets to Fixed assets	1	.80

The analysis shows that alternative A the most traditional policy and gives provides greatest solvency to company except it is having the low return on total asset. Whereas alternative B is hostile plan which is giving high return although it provides poor solvency and therefore, is a risky to the company.

CHECK YOUR PROGRESS

State whether the following statements are True or false:

1. Current assets are those assets which are converted into cash within one accounting period.
2. The gross working capital concept is useful for an analytical insight into profitability with reference to the management of current assets.
3. The total operating expenditure in the year when divided by the number of operating cycles in a year will give the average amount of the equity capital requirements.
4. In a manufacturing concern, the working capital cycle starts with the purchase of fixed assets and ends with the realisation of cash from the sale of finished products.
5. Adequacy of working capital creates an environment of security, confidence and high morale.
6. .A larger investment in current assets under certainty would mean a low rate of return on investment for the firm.

6.11 Summary

The theory of working capital is used in two traditions. Gross working capital is the investment of the company in its current assets. Whereas, net working capital is the difference between current assets and current liabilities. A firm is required to invest in current assets for a smooth uninterrupted production and sale. However much a firm will invest in current assets will depend on its operating cycle. Operating cycle is defined as ‒the time duration which the firm requires to manufacture and sell the product and collect cash‖. So the operating cycle is the acquirement of capital, translation of raw material into work-in-progress, thereafter converting the work-in-progress into finished good, exchange of finished good into sale and assortment of sale. If a company is having the big operating cycle, it

means that there is huge amount tide up in its current assets. The decision of a company regarding the point of investment in current assets engross a trade-off amongst risk and return. In case, a company has invested its funds more in the current assets, it means the liquidity position of the company is good but its profitability position may be weak. So every company has to make a balance between the liquidity and profitability.

The determination of financing mix is the another component of the hypothesis of working capital. One approach to determine the financing mix is the hedging approach. Hedging Theory states that long term funds should be made available to finance the fixed part of the current assets and the temporary/seasonal wants be met from short term funds. Hedging Theory is a highly profit oriented as well as it is highly risky financing combination. According to second approach namely the conservative approach, the estimated total requirements of the current assets is to be funded through long term source of finance and in case of any urgent situation, short term means of finance be funds applied. The conservative theory is an approach of less profit making along with less risk mixture financing mix. Whenever any company is applying excess of short term sources of finance for financing its current assets as well as its fixed assets, it is said that the financing policy of the company is risky as well as aggressive. Notionally, short term debt is believed to be having more cost and more risk to finance permanent current assets.

6.12 KEYWORDS

Working Capital: Difference between current assets and current liabilities.

Operating Cycle: It consists of time period between the procurement of inventory and the collection of cash from receivables.

Current Asset: An asset is known as current asset if it can be converted into cash within one operating cycle.

Current Liability: These are the liabilities of outsider which are ordinary to pid during one operating cycle.

6.13 ANSWERS TO CHECK YOUR PROGRESS

1. True
2. True
3. False
4. False
5. True
6. True

6.14 Bibliography

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6.15 Terminal and Model Questions

1. Define the term working capital. What factors would you take into consideration in estimating the working capital needs of a concern?
2. What do you understand by working capital? Explain the concepts of working capital?
3. Discuss the importance of working capital for a manufacturing concern.
4. How are net working capital, liquidity, technical insolvency and risk related?
5. Discuss the various approaches to determine an appropriate financing mix of working capital.