PGBA (S2) 07 - 01

FINANCIAL MANAGEMENT

SEMESTER - 2

BUSINESS ADMINISTRATION

BLOCK - 1

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MASTER IN BUSINESS ADMINISTRATION

FINANCIAL MANAGEMENT

Block 1

DETAILED SYLLABUS

UNIT - 1 : Introduction to Financial Management **Page 7 - 22**

Financial Management : An Overview, Importance of Financial Management, Approaches to Finance Function, Aims of Finance Function, Scope of Financial Management, Goals of Financial Management, Finance Decisions and Interfaces between Finance and Other Business Functions.

UNIT - 2 : Financial Planning **Page 23 - 34**

Meaning of Financial Planning,Objectives of Financial Planning, Benefits of Financial Planning, Steps in Financial Planning, Factors affecting Financial Planning, Estimation of financial requirements of a firm and Capitalization.

UNIT - 3 : Sources of Funds **Page 35 - 52**

Concept of Equity shares : its Advantages and disadvantages of equity capital, Right shares, Bonus shares, Retained earnings or internal accruals, Preference shares, Debentures, Types of Debentures, Term loan, Venture Capital Finance and Features of Capital Finance.

UNIT - 4 : Cost of Capital **Page 53 - 71**

Concept and Definition of Cost of Capital, Significance of Cost of Capital, Classification of Cost of Capital, Determination of Specific Cost and Weighted Average Cost of Capital.

UNIT - 5 : Leverage **Page 72 - 85**

Meaning of leverage, Financial Leverage: its measures, degree and Impact of Financial Leverage on Investor's Rate of Return, Operating Leverage, Degrees of Operating Leverage and Combined effect of Financial and Operating Leverage.

UNIT - 6 : Capital Structure **Page 86 - 109**

Meaning and Definition of Capital Structure, Features of an Ideal Capital Structure, Factors Affecting Capital Structure, Theories of Capital Structure.

UNIT - 7 : Capital Budgeting Decisions **Page 110 - 134**

Meaning of Capital Budgeting, Importance of Capital Budgeting, Types of Investments Decisions, Investment Criteria and Capital Rationing.

COURSE INTRODUCTION

In corporate World, finance plays an important role. This course will help you in understanding the basic concepts of corporate finance, role of finance manager, as well as the goals of financial management. In this course you will came to know about the objectives, steps in preparing a financial plan, forecasting. The companies raise the required funds by various means like issue of shares, debentures etc. and in certain cases they use their reserves. At the same time they prepare various financial statements like, Profit and Loss Accout, Balance Sheet, Cash Flow etc. This course will focus on two important aspects of financial management i.e. preparation and analysis of financial statements. The topics like capital structure, cost of capital financial leverage, capital budgeting, working capital management, receivable management etc. have also been included in this course which will help you in understanding the importance of financial management in business. This course consists of two blocks.

Block 1 deals with the Introduction to Financial Management, financial planning, sources of funds,cost of capital, leverage, capital structure and capital budgeting

Block 2 concentrates on risk analysis in capital budgeting, capital rationing, working capital management, cash mangement , inventory management, receivable management and dividened decisions

Each unit of these blocks includes some along-side boxes to help you know some of the difficult, unseen terms. Some “EXERCISES” have been included to help you apply your own thoughts. You may find some boxes marked with: “LET US KNOW”. These boxes will provide you with some additional interesting and relevant information. Again, you will get “CHECK YOUR PROGRESS” questions. These have been designed to self-check your progress of study. It will be helpful for you if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with “ANSWERS TO CHECK YOUR PROGRESS” given at the end of each unit. you in making your learning more active and efficient. And, at the end of each section, you will get “CHECK YOUR PROGRESS” questions. These have been designed to self-check your progress of study. It will be better if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with “ANSWERS TO CHECK YOUR PROGRESS” given at the end of each unit.

BLOCK INTRODUCTION

This is the *First Block* of the course ***'Financial Management'.*** After completing this block, which consists of sevene units, you will be able to get a fair idea on the different concepts in Financial Management.

This block comprises the following seven units :

The first unit introduces us to the Introduction to Financial Management : An Overview, Importance of Financial Management, Approaches to Finance Function, Aims of Finance Function, Scope of Financial Management, Goals of Financial Management, Finance Decisions and Interfaces between Finance and other Business Functions

The second unit gives us a broad overview of the Financial Planning, its Objectives, Benefits of Financial Planning,Steps in Financial Planning,Factors affecting Financial Planning,Estimation of financial requirements of a firm and Capitalization

The third unit gives us an idea on Concept of Equity shares: its Advantages and disadvantages of equity capital, Right shares, Bonus shares, Retained earnings or internal accruals, Preference shares,Debentures,Types of Debentures, Term loan, Venture Capital Finance and Features of Capital Finance

The fourth unit will help us in understanding the concept of Concept and Definition of Cost of Capital,Significance of Cost of Capital, Classification of Cost of Capital,Determination of Specific Cost and Weighted Average Cost of Capital

The fifth unit gives us a broad overview of Meaning of leverage, Financial Leverage: its measures,degree and Impact of Financial Leverage on Investor's Rate of Return, Operating Leverage, Degrees of Operating Leverage and Combined effect of Financial and Operating Leverage

The sixth unit will help us in understanding the concept of Capital Structure, Features of an Ideal Capital Structure, Factors Affecting Capital Structure,Theories of Capital Structure

The seventh unit gives us a broad overview of the Meaning of Capital Budgeting, Importance of Capital Budgeting, Types of Investments Decisions, Investment Criteria and Capital Rationing.

The structure of Block - 1 is as follows :

UNIT - 1 : **Introduction to Financial Management**

UNIT - 2 : **Financial Planning**

UNIT - 3 : **Sources of Funds**

UNIT - 4 : **Cost of Capital**

UNIT - 5 : **Leverage**

UNIT - 6 : **Capital Structure**

UNIT - 7 : **Capital Budgeting Decisions**

UNIT - 1 : INTRODUCTION TO FINANCIAL MANAGEMENT

UNIT STRUCTURE

1.1 Learning Objectives

1.2 Introduction

1.3 Financial Management : An Overview

- 1.3.1 Importance of Financial Management
- 1.3.2 Approaches to Finance Function
- 1.3.3 Aims of Finance Function
- 1.3.4 Scope of Financial Management

1.4 Goals of Financial Management

1.5 Finance Decisions

1.6 Interfaces between Finance and Other Business Functions

1.7 Let us Sum Up

1.8 Further Reading

1.9 Answers to Check Your Progress

1.10 Model Questions

1.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss the significance and meaning of financial management
- describe the objectives of financial management
- explain the finance decisions
- discuss the relationship of finance with other business functions.

1.2 INTRODUCTION

Every organization, whether big, medium or small, requires finance not only for survival but also for growth and development. Due to this indispensability of finance, it is rightly called as the lifeblood of an

organization. Without finance no organization can possibly accomplish its objectives. This vital component of organization must be managed properly so as to result in maximum gains to the company. This chapter will throw light on the basic concepts of finance and will provide a comprehensive understanding of the finance function in business organizations.

1.3 FINANCIAL MANAGEMENT : AN OVERVIEW

Before discussing in details the functions, aims and scope of financial management, it is important to understand the meaning of 'finance'. In business, 'finance' literally means finance of business activities. However, such a simplistic view of finance does not embrace its entire scope. In the following section we will consider certain definitions of finance. Different authors have interpreted the term 'finance' differently.

According to F. W. Paish, finance may be defined as the provision of money at the time it is wanted.

According to Hampton, the term finance can be defined as the management of the flows of money through an organization.

Howard and Upton define finance as that administrative area or a set of administrative functions in an organization which relates with the arrangement of cash and credit so that the organization may have the means to carry out the objectives as satisfactorily as possible.

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

In the words of Prather and Wert, business finance deals primarily with raising, administering, and disbursing funds by privately owned business units operating in non-financial fields of industry.

So, to sum up in simple words, finance may be defined as the management of money in organizations. Financial management refers to the part of the management activity which is concerned with the planning and controlling of firm's financial resources.

LET US KNOW

Business finance is also known as corporation finance as the present day business activities are predominantly carried on by company (corporation) form of organization. Corporation finance deals with the company form of organization.

1.3.1 Importance of Financial Management

As already mentioned in the preceding section, finance is the life blood of a business organization. No business can be started without an adequate amount of finance. Even an existing organization may require further finance for making improvements or for diversification and expansion. Thus, the importance of finance cannot be over-emphasized and finance function has become very important for academicians as well as practicing managers.



The importance of business finance has increased over time and has become utmost important in the present day because the beginning of corporate enterprises has resulted into :

i. Increase in the size and influence of business organizations,

ii. Wide distribution of corporate ownership,

iii. Separation of ownership and management.

The above mentioned factors have further increased the importance of business finance. Knowledge of financial management is important not just for the practicing managers in the corporate world but it is equally important for investors, bankers, creditors, and other such entities which are directly or indirectly involved in the financial affairs of an organization.

Financial management is indispensable for any organization as it helps in :

i. Financial planning and successful running of a firm;

ii. Acquiring funds as and when required at a minimum possible cost;

iii. Proper usage and allocation of funds;

iv. Taking sound financial decisions;

v. Improving profitability through financial controls;

vi. Increasing the wealth of the organizations and investors;

vii. Promoting and mobilizing corporate savings.

1.3.2 Approaches to Finance Function

There are two approaches to understanding the finance functions namely :

1. The Traditional Approach
2. The Modern Approach

1. **The Traditional Approach :** The traditional approach of finance refers to the evolutionary stages of finance during the time period between 1920s and 1930s. During this time the term 'corporation finance' was used to describe financial management. The scope of finance, according to traditional finance, was confined to only procurement of funds needed by business on most suitable terms. The utilization of funds was considered beyond the scope of the finance function. The scope of finance function thus, revolved around the study of rapidly growing capital market institutions, instruments, and practices involved in raising of external funds.

2. **The Modern Approach :** the modern approach to finance views the function in the broader sense. Modern approach to finance includes both raising of funds as well as their effective utilization under the purview of finance. Thus, finance function does mean merely raising funds for the organization but, their proper utilization in the organization is also considered. Thus, according to this approach, finance function covers financial planning, raising of funds, allocation of funds, financial control, etc.

1.3.3 Aims of Finance Function

The finance function has the following aims :

1. **Acquiring sufficient funds :** The main aim of finance function is to assess the financial needs of an organization and finding out suitable sources for raising them.

2. **Proper utilization of funds :** The finance function also looks after the effective utilization of funds so acquired. The funds should be used in such a way that maximum benefit is derived from them.
3. **Increasing profitability :** The finance function aims at increasing the profitability of the concern. Finance function achieves this aim through proper planning and control of finances of the firm.
4. **Maximizing the firm's value :** Finance function also aims at maximizing the value of the firm by optimising the cost of funds, maintaining profitability and earnings.

1.3.4 Scope of Financial Management

The finance function aims to arrange sufficient funds for meeting both the short-term and the long-term needs of the organization. It also aims to maximize the value of the firm. Therefore, a finance manager must concentrate on the following areas of finance function :

1. **Estimating financial requirements :** The first and foremost task of a financial manager is to estimate the short-term and long-term financial requirements of the organization. These estimates must be based on sound financial principles so that there is neither shortage nor excess of funds.
2. **Deciding capital structure :** Capital structure refers to the composition or make-up of a firm's capitalization. After determining the quantum of funds required by the organization, the next step is to determine the proper composition and proportion of different securities for raising funds. A decision about the capital structure should be linked to the cost of raising funds. Capital structure decision is an important decision which influences both the short-term and long-term financial planning of an enterprise.
3. **Selecting a source of finance :** After deciding the composition of a firm's capitalization or the capital structure, the next task is to select appropriate sources of finance. Various sources from which finance may be raised include: share capital, debentures, commercial banks, etc. The need, purpose, and cost involved in procuring finance may be the factors influencing the selection of a suitable source of financing.

4. **Selecting a pattern of investment :** After the funds have been procured then a decision about the investment pattern is to be taken. Selection of investment pattern is related to the use of funds. The decision making techniques such as capital budgeting, opportunity cost analysis, etc. may be used in making decisions about capital expenditures. A balance should be struck even in these principles.

5. **Proper cash management :** One of the major tasks of the finance manager is cash management. Finance manager must assess the various cash needs at different times and make necessary arrangements for arranging cash. Cash may be required for purchase, payments, wages, etc. Cash management should be such that neither there is a shortage of it nor it is idle at any point of time. A proper idea of the sources of cash inflow and outflows will help the finance manager to properly manage cash.

6. **Implementing financial controls :** An efficient financial management system requires the use of various control devices. Financial control devices generally used are return on investment, budgetary control, ratio analysis, audits, etc. Use of these various control techniques helps the finance manager in evaluating the financial performance of the firm and take corrective measures whenever required.

7. **Proper use of surpluses :** The utilization of profits or surpluses is an important activity in financial management. Prudent use of surpluses is essential for expansion and diversification of the organization and also helps in protecting the interests of shareholders. A balance should be struck in using the surpluses for paying off dividends to the shareholders and ploughing the profits back for diversification and expansion plans of the organization. The finance manager must consider factors such as market value of the firm, expected earnings, trend of earnings of the organization, etc. to make judicious use of surpluses.



CHECK YOUR PROGRESS

Q.1. State any four importance of financial management.

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Q.2. Name the two approaches to finance function.

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Q.3. Write three scope of financial management.

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1.4 GOALS OF FINANCIAL MANAGEMENT

Financial management, as an organizational function, started with the procurement of funds for the organization. However, financial management today is concerned with the utilization of business funds in such a way that the firm's value or earnings are maximized. The ultimate objective of business is to maximize the owner's economic welfare. This objective can be achieved by Profit Maximization and Wealth Maximization. Both are discussed in details below :

1. **Profit Maximization :** Profit earning is the main objective of any business organization. A business being an economic institution must earn profit to cover its costs and provide funds for growth. Profits serve as a measure of efficiency of a business enterprise and no business can survive without earning profit. Profits help a business to face risks in the business environment. Thus, profit maximization is considered as the main objective of business. Following are the arguments in favour of profit maximization as the objective of financial management :

a. Since profit earning is the aim of business, therefore profit maximization should be the objective of financial management function.

b. Profitability is a measure of the efficiency of a business enterprise, and therefore profit maximization should be the obvious goal of financial management.

c. Organizations should aim at profitability as economic and business conditions do not remain same at all the times and therefore requires some past earnings to tide through the unfavourable conditions.

d. Profits also serve as the main source of finance for the growth of a business.

e. Profitability is essential for fulfilling social goals also. A firm by pursuing the objective of profit maximization also maximizes socio-economic welfare.

Although profit maximization has been adopted as a goal by several organizations, however, profit maximization has been criticized on several grounds. It is argued that a firm pursuing the objective of profit maximization starts exploiting workers as well as consumers. This leads to immoral and corrupt practices on the part of the organization. It is also argued that profit maximization should be the objective in the situation of perfect competition. However, since markets are characterized by imperfect competition, therefore, profit maximization cannot be a legitimate objective. Moreover, there are many stakeholders of a business and all the stakeholders may not be concerned with profit. Thus, profit maximization as an objective of financial management has been considered inadequate.

2. **Wealth Maximization :** Wealth maximization is the appropriate objective of an enterprise. According to financial theory, wealth maximization is the single substitute for a stockholder's utility. When the firm maximizes the stockholder's wealth, the individual stockholder can use this wealth to maximize his individual utility. Thus, by maximizing stockholder's wealth the firm is maximizing stockholder's utility.

   A stockholder's current wealth in the firm is the product of the number of shares owned, multiplied with the current stock price per share :

Stockholder's current wealth in a firm = (Number of shares owned) × (Current stock price per share)

Symbolically, $W_0 = NP_0$

This means that higher the stock price per share, the greater will be the stockholder's wealth. Therefore, rather than seeking maximization of profits a firm should aim at maximizing its current stock price. This objective will help in increasing the value of shares in the market. The price of the share serves as a performance index of the firm.

The following arguments are advanced in favour of wealth maximization as the goal of financial management :

a. It serves the interests of owners as well as other stakeholders in the firm.

b. It is consistent with the objective of owner's economic welfare.

c. The objective of wealth maximization implies long-run survival and growth of the firm.

d. It takes into consideration the risk factor and the time value of money as the current present value of any particular course of action is measured.

e. The effect of dividend policy on market price of shares is also considered as the decisions are taken to increase the market value of the shares.

f. The goal of wealth maximization leads towards maximizing stockholder's utility or value maximization of equity shareholders through increase in stock price per share.

The wealth maximization objective of financial management however, has been criticized on several grounds :

a. The idea of wealth maximization is prescriptive idea.

b. The objective of wealth maximization is not necessarily socially desirable.

c. There is some controversy as to whether the objective is to maximize the stockholders wealth or the wealth of the firm which includes other financial claimholders such as debenture holders, preferred stockholders, etc.

d. The objective of wealth maximization may also face difficulties when ownership and management are separated as is the case in most of the large corporate form of organizations.



CHECK YOUR PROGRESS

Q.4. State whether each of the following statements is *true* or *false* :

a) Traditional approach confines finance function only to raising of funds.

b) Finance function is one of the most important functions of business management.

c) Investment decisions are outside the purview of financial management.

d) Cash management is an important task of the finance manager.

e) Corporation finance is a wider term than business finance.

f) Corporation finance emerged as a distinct field of study in the beginning of eighteenth century.

g) The main aim of finance function is to maximize the profits

h) Modern approach of finance includes both raising of funds as well as their effective utilization.

i) A firm by focusing on maximizing the current stock price increases the wealth of the shareholders.

j) Finance function of a business is closely related to its other functions.

Q.5. Select the most appropriate answer :

a) The appropriate objective of an enterprise is :

i. Maximization of sales

ii. Maximization of owner's wealth

iii. Maximization of profits

b) The job of a finance manager is confined to :

i. Raising of funds

ii. Management of cash

iii. Raising of funds and their effective utilization

1.5 FINANCE DECISIONS

The function of financial management, as mentioned the sections above, Is not just limited to procuring funds. The scope of financial management, over the years, has widened to cover allocation of funds, capital structure, dividend policy, financial control etc. Financial management has thus, emerged as an important activity in organizations and some of the functional areas covered in financial management are as follows :

1. **Determining Financial Needs :** The basic objective of financial management is to meet the financial needs of the organization. Determining the financial needs of the organization is one of the basic functions of financial management. Funds are needed to meet manufacturing expenses, distribution expenses, and other fixed and working capital needs. It is important to correctly determine the financial needs of the organization as a wrong assessment may jeopardize the survival of a concern.

2. **Selecting the Sources of Funds :** The next major function of financial management is to select the sources of funds. There are various sources of finance. A firm may resort to issue of shares and debentures or may approach financial institutions to meet their financial needs. The finance manager must made a judicious decision in selecting the sources of funds for the firm as it will influence the profitability of the concern.

3. **Financial Analysis and Interpretation :** Financial analysis and interpretation has become an important area of financial management as correct analysis and interpretation forms the basis of financial decision making. The analysis of financial information helps the financial manager in assessing the profitability position, liquidity position, and short-term and long-term financial position of the organization.

4. **Capital Budgeting :** Capital budgeting is the process of making investment decisions in capital expenditures. The crux of capital budgeting is the allocation of available resources to various proposals. The crucial factor which influences the capital budgeting decision is the profitability of the prospective investment. For making correct capital budgeting decisions, the knowledge of its techniques is essential.

5. **Working Capital Management :** Working capital is the life blood of business. It refers to that part of the firm's capital which is required for financing the current assets such as cash, inventories, and receivables. It is important for the finance manager to determine the quantum of working capital required for maintaining the business activities of the firm. Proper management of working capital is thus an important area of financial management.

6. **Profit Planning and Control :** Profit planning and control is an important responsibility of the finance manager. Profit maximization is an important goal of financial management. Profit planning and control ultimately influences the declaration of dividends, creation of surpluses, etc.

7. **Dividend Policy :** Dividend is the return shareholders get for the investments made by them in the company. Shareholders want dividend out of their investments whereas management wants to retain profits for further growth and expansion. The task of the finance manager is to reconcile these two opposing interests of the shareholders and the management. A dividend policy is in turn influenced by a number of factors such as magnitude and trend of earnings, desire and type of shareholders, future requirements of the company, taxation policy, etc.

1.6 INTERFACES BETWEEN FINANCE AND OTHER BUSINESS FUNCTIONS

The finance function of any organization is closely inter-linked to its other functional areas. The flow and availability of funds affect other functions of the organization. The relationship between finance function and other business functions of an enterprise is discussed below :

1. **Purchase function :** The purchase function is responsible for procuring and maintaining the materials required for production of commodities. In this function, the finance manager plays a key role in providing finance. Several techniques such as economic order quantity (EOQ), determination of stock level, inventory system, etc. are exercised in order to minimize cost and maximize control of materials. The task of the finance manager is to arrange the availability of cash when the bills for purchase become due.

2. **Production function :** The production process is a continuous process and one of the most important processes in an organization. This function involves heavy investment in terms of fixed assets and also in working capital. This necessitates a tighter control by the finance manager. The prime guide in allocating funds should be the cost benefit criteria.

3. **Distribution function :** The distribution function deals with the flow of goods manufactured in the firm through the various distribution channels. It is an important activity, as the flow of goods also ensures flow of cash resulting from the sale of goods. It is important to check the cost benefit criterion while choosing between different distribution channels, media of advertisement, and sales promotion devices. As every aspect of the distribution function involves cash outflow and every distributing activity is aimed at bringing about inflow of cash, both the functions are closely inter-related and hence should be carried out in close unison.

4. **Accounting function :** Scientific arrangement of records is very important in managing the inflow and outflow of cash. Efficiency of the entire organization can be greatly increased with the correct recording of financial data. The accounting tools necessary for the appraisal of finance policy can be correctly formulated if the accounting data are properly recorded. Thus, the relationship between accounting and finance is intimate and the finance manager has to depend heavily on the accuracy of the accounting data.

5. **Personnel function :** Business functions cannot be carried out efficiently unless there is a sound personnel policy backed up by efficient management of personnel. Success or failure of business is ultimately related to management of employees. A sound personnel policy includes proper wage structure, incentive schemes, and promotional opportunities which affects the finance function. Thus, the finance manager must work closely with the personnel manager to ensure that expenditure incurred on personnel management and the expected return on such investment through labour productivity should be considered in framing a sound personnel policy.

6. **Research and development :** Organization constantly focuses on improving the quality of its products and one way to achieve this is to invest in research and development. Unless there is a constant

endeavour for improvement, the firm will be gradually marketed out. Sometimes expenditure on R&D involves amounts far higher than the financial capacity of the firm. On the other hand, lesser investment in R&D blocks the scope of development of the organization. The finance manager must ensure a fair balance in the investment in R&D and the financial capacity of the firm.



CHECK YOUR PROGRESS

Q.6. Write any two functional areas in financial management.

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Q.7. Define purchase functions.

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1.7 LET US SUM UP

In this unit we have discussed about the following.

- Finance is called as the lifeblood of an organization.
- Finance may be defined as the management of money in organizations.
- Financial management refers to the part of the management activity which is concerned with the planning and controlling of firm's financial resources.
- Ultimate goal of financial management is wealth maximization.
- No business can be started without an adequate amount of finance.
- Even an existing organization may require further finance for making improvements or for diversification and expansion.

- Traditional finance dealt with only the procurement of funds.
- Modern finance deals with not just procurement of funds but also utilization of funds.
- Finance function is related to all the other functions of the organization.



1.8 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I.M Pandey(2010), *Financial Management*, Vikas Publishing House; 10th edition.



1.9 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 : Financial management is important because it helps in :

a) Financial planning
b) Proper usage and allocation of funds
c) Improving profitability
d) Promoting and mobilizing corporate savings.

Ans to Q. 2 : The two approaches to finance functions are :

a) The traditional apporach
b) The modern approach.

Ans to Q.3 : The three scope of financial management are :

a) Estimating financial requirement
b) Deciding capital structure
c) Proper cash management.

Ans to Q. 4 : a) True b) True c) False d) True e) False
f) False g) False h) True i) True j) True

Ans to Q. 5 : a) ii b) iii

Ans to Q. 6 : The two functional areas in financial management are :

a) Selecting the source of funds

b) Capital budgeting.

Ans to Q. 7 : Purchase function is responsible for processing and maintaining the materials required for production of commodities.



1.10 MODEL QUESTIONS

1. What is financial management ?
2. What is finance function ? What are its objectives ?
3. Explain the scope of financial management.
4. Explain the functions if a financial manager in an organization.
5. “Finance function of a business is closely related to its other functions”. Discuss.
6. “Maximization of profits is regarded as the proper objective of investment decision, but it is not as exclusive as maximizing shareholders’ wealth.” Comment.
7. ‘Finance is the life blood of an organization’. Elucidate the statement.
8. Discuss the importance of financial management in an organization.
9. Write a note on profit maximization versus wealth maximization.
10. Describe in brief the aims of the finance function.

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UNIT - 2 : FINANCIAL PLANNING

UNIT STRUCTURE

2.1 Learning Objectives

2.2 Introduction

2.3 Financial Planning

2.4 Objectives of Financial Planning

2.5 Benefits of Financial Planning

2.6 Steps in Financial Planning

2.7 Factors affecting Financial Planning

2.8 Estimation of financial requirements of a firm

2.9 Capitalization

2.9.1 Overcapitalization and Undercapitalization

2.10 Let us Sum Up

2.11 Further Reading

2.12 Answer to Check Your Progress

2.13 Model Questions

2.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- discuss the meaning and significance of financial planning
- learn the steps in financial planning
- learn the concepts of capitalization, over-capitalization, and under-capitalization.

2.2 INTRODUCTION

Every organization, whether it is an industrial establishment, a trading concern or a construction company requires funds for carrying on its activities successfully. Funds are required to acquire fixed assets such as machines, equipments, furniture, buildings etc., and also to purchase raw materials, to pay the creditors, and to meet other day-to-day needs. Thus,

it is of paramount importance to determine the quantum of funds required to carry on the activities of an organization successfully. Hence, every organization has to be very careful in assessing the firm's requirement of finance and they must also decide on the forms in which the funds are raised and utilized. In this unit, we shall discuss about the planning of the financial requirements of a firm.

2.3 FINANCIAL PLANNING

Financial planning is about planning and organizing the future business activities of a firm. Planning is the managerial function that involves the selection, from amongst the various alternatives of future objectives, procedures, policies, and programs. Financial planning determines the direction for future growth of the business. It helps to establish the basic premises for fund procurement and utilization for value creation. Effective financial planning helps to establish future business plans for the firm like expansion, diversification, restructuring, etc.

Thus, financial planning is a predetermination of future course of action and encompasses the following activities :

- Translating the mission, vision, and objectives of the firm into quantifiable, measurable terms.
- Predetermine the policies and functional structures of the firm for attainment of its objectives.
- Laying down the detailed procedures, guidelines, and the activities to be pursued for moving the firm in the desired direction.

Financial planning lays down the realistic financial goals and further, establishes the financial policies and procedures to attain these goals. Financial planning is all about long-term investment decisions, budgeting, and cost benefit analysis of a firm.

2.4 OBJECTIVES OF FINANCIAL PLANNING

Financial planning for a firm has the following objectives :

- To ascertain the amount of fixed capital as well as working capital required for the functioning of the firm.
- To determine the quantum of funds to be raised through the various sources of finance.

- To ensure that the funds required are raised at the lowest possible cost.
- To ensure adequate liquidity so that there are no defaults in payments and all unforeseen expenses are met without any difficulty.
- To ensure optimal use of funds so that business is neither starved of funds nor has any unnecessary surplus funds at any point of time.



CHECK YOUR PROGRESS

Q.1. Define financial planning.

.....

.....

Q.2. State any two objectives of financial planning.

a.....

b.....

2.5 BENEFITS OF FINANCIAL PLANNING

Financial planning, as discussed in the earlier section, refers to the determination of the firm's financial objective, formulating and promulgating the financial policies and developing financial procedures. Financial planning is an important activity for all kinds of organizations. Following points highlight the importance or benefit of financial planning for organizations :

1. **Forecast of cash flows :** Financial planning is necessary for the day to day activities of the business which results in discharging the obligations. This helps in forecasting of cash inflows and outflows during the course of the business cycle.
2. **Raising finances :** Financial planning helps determine the quantum of funds required to continue business operations. This helps in raising of funds from different sources and mobilizing the same for business purpose.

3. **Facilitate cost control :** A major activity of financial planning is to measure cost of production, cost of administration, cost of sales, etc. This helps in comparing the actual cost with standard, thus leading to cost control.

4. **Forecasting profits :** Financial planning is a model demonstrating comprehensive and forecasted analysis of profitability for the particular business in a specific market condition, with a pre-determined projected financial plan. A forecasted profitability plan is required to estimate the course of action.

5. **Managing assets :** Financial planning is required to manage the assets of the business. Such assets shall be properly maintained to avoid any breakdown. This also helps in determining the total investment in assets to carry out business operations properly.

6. **Managing funds :** Financial planning is required to manage funds of the investors and to conduct the activities of the business in the interest of the organization.

2.6 STEPS IN FINANCIAL PLANNING

The following are the steps involved in the financial planning process :.
Setting the financial goals : Financial planning starts with establishing the financial goals for the overall firm and the various departments. Financial goals can be like cost reduction, increasing the market share by 7 per cent and so on.

2. **Establishing the financial policies related to various financial activities :** Once the feasible and realistic financial goals or targets are set, the firm lays down the policies regarding the various activities and course of action to be pursued to achieve the set targets.

3. **Establishing the financial procedures for attainment of financial goals :** The next step is to establish the financial procedures to be undertaken to attain the target.

4. **Monitoring the financial plan :** Once the financial plan is implemented in the organization, the firm needs to monitor the progress of the financial plan. Both real-time monitoring as well as post-activity monitoring are beneficial to control any deviation.



LET US KNOW

Financial planning includes various tools that can be used for financial analysis. Some of the financial tools are :

Financial Statements : Financial statements such as the forecasted balance sheet, the statement of income and the cash flow statement assist in the financial planning of a firm.

Ratio analysis : A tool that helps investors to evaluate the business performance and compare it with competitors.

Cost-Volume-Profit (CVP) analysis : CVP analysis establishes the relationship among cost incurred, volume produced and profits generated by the firm.

Budgeting : It involves forecasting future fund requirement for different activities of the firm. This helps in the fund raising process of the firm.

2.7 FACTORS AFFECTING FINANCIAL PLANNING

As we have seen that the main objective of financial planning is determinations of the quantum of funds, procurement of needed funds at minimum cost and establishment of effective coordination between costs and risks. A sound financial plan takes into account the long-term as well as short-term financial needs of the firm. The following are some of the important points that must be considered in the formulation of a financial plan :

1. **Nature of industry :** Nature of industry refers to whether the industry is labour intensive or capital intensive. Nature of the industry helps to determine the amount or quantum of capital. For example, banking industry is labour intensive whereas textile industry is capital intensive. Generally, labour intensive industries require less amount of capital as compared to capital intensive industries.

2. **Size of business :** The size of the business also has a great impact on the financial planning of the organization. Usually a firm working on a large scale requires heavy investment in fixed assets as it has to establish large production capacity. Hence, its capital requirement will be greater as compared to a business operating in a small scale.

3. **Types of products :** It is not only the nature of business and industry that determines the requirement of fixed capital but also the type of product involved. A firm manufacturing simple products like soap and toothpaste requires small amount of capital as against firms producing products like iron and steel.

4. **Evaluation of alternative sources of finance :** Procurement of the needed funds at the minimum cost is possible only when there is debt and equity combination. For determination of optimum debt-equity mix, finance manager needs to evaluate the various sources of finance in the light of cost, availability, limitations, etc.

5. **Attitude of management towards control :** Management's attitude towards control is another important factor which must be considered in the financial planning process. Any firm or management that is interested in retaining the control would not lie to raise funds through equity. Additional funds required for expansion, diversification or modernization may be raised by debt sources of funds if its capital structure permits.

6. **Magnitude of external capital requirements :** A financial manager needs to formulate financial plan after taking into account short-term and long-term financial needs of the enterprise. In other words, the financial manager must take into account the fixed capital requirements and the working capital requirements while formulating the financial plans for the organization. This will help in understanding how much can be funded from internal sources and the magnitude of external capital requirement.

2.8 ESTIMATION OF FINANCIAL REQUIREMENTS OF A FIRM

Forecasting or estimation of the financial or capital requirements is the most important financial decision or financial function of an enterprise. The amount of capital estimated by a firm should neither be more nor less than the amount which can be employed profitably by the organization. It is, therefore, important for a firm to assess its financial requirements properly.

The financial or capital requirements of a firm can be broadly classified into two categories. They are :

1. Fixed capital requirements or Fixed Capital, and
2. Working capital requirements or Working Capital.

Fixed capital refers to the fund requirement for meeting the permanent or long-term financial needs of the business. It is primarily used for acquiring fixed assets like land, buildings, machinery, etc. Fixed capital is required at the time of establishment of the organization. The existing business organizations also need fixed capital for meeting expansion and diversification requirements. The amount f fixed capital requirement can be determined by preparing a list of fixed assets needed by the organization and ascertaining their prices from the market.

Working capital represents the amount of funds invested in current assets like stock-in-trade, debtors, and cash required for meeting day-to-day expenses. It is also known as circulating capital because most of the amount invested in current assets is continuously recovered through realization of debtors and cash sale of goods, and is re-invested in current assets. It is important to note that a part of the working capital is permanent in nature because depending on the volume of business a certain amount of cash, debtors and stock-in-trade will always be maintained by a firm. This is known as permanent working capital. On the other hand, the remaining part of the working capital varies from time to time. This is called fluctuating or variable working capital. The permanent working capital must be financed through long-term sources whereas the fluctuating working capital should be financed through short-term sources of finance.



CHECK YOUR PROGRESS

Q.3. Name any two factors that affects fianancial Planning.

a.....

b.....

Q.4. State any two benefits of financial planning.

a.....

b.....

2.9 CAPITALIZATION

The term capitalization has various connotations. In common parlance, it refers to the amount at which a company is valued based on its capital employed. Some of the experts on finance used this concept in a narrower sense and defined it as the par value of a company's shares and debentures, while some of them interpreted it as the par value of its total long-term funds which includes owners fund, borrowed funds, reserves and surplus earnings. In the context of financial planning however, it refers to the process of determining the amount of capital required by a company.

There are two important theories to determine the amount of capitalization :

1. **The cost theory of capitalization :** According to the cost theory of capitalization, the amount of capital required by the company is calculated by adding up the cost of its fixed assets, the amount of its working capital and the cost of establishing the business. This approach is simple and used widely in case of new companies.
2. **The earnings theory of capitalization :** According to earning theory, the capital requirement of a company is calculated on the basis of the capitalized value of its earning. For example, if the average annual earning of a company is Rs. 5 lakh and the normal rate of return on the capital employed in case of companies in the same industry is 10%, then the amount of capitalization is Rs. 50 lakh. For a new company the amount of capitalization is calculated on the basis of its estimated earning. For example, if a new company expects to earn an average annual income of Rs. 3 lakh and the normal rate of return of the industry is 5%, then the amount of capitalization or the quantum of fund it would require to run the business is Rs. 60 lakh. This approach of capitalization is considered more rational and relevant because it helps in evaluating as to how far the actual capital employed is justified by the earning of the company. If the actual rate of return is same as the normal rate of return then it is said to be proper capitalized.

2.9.1 Overcapitalization and Undercapitalization

A company is said to be over-capitalized if its capital employed is more than its proper capitalization. For example, if a company's average annual earnings is Rs. 2,00,000 and the normal rate of return is 10%,

then its proper capitalization is Rs. 20,00,000. Now, if the actual capital employed (total long term funds) is Rs. 25,00,000 it will be treated as over-capitalized. You can also put it in another simpler way i.e, if a company's actual rate of earnings is less than the normal rate of return, it is treated as a case of over-capitalization. In the above example, the company's actual rate of earnings works out as 8%, which is less than the normal rate of return i.e., 10%. So, it is considered as over-capitalized and the company is not in a position to pay interest and dividends at a fair rate. Such a situation may be caused by the following factors : (a) Excessively high price paid for the purchase of goodwill and other fixed assets. (b) Underutilization of production capacity. (c) Raising more capital in the form of shares and debentures than required. (d) Liberal dividend policy. (e) Higher rate of corporate taxation. (f) Underestimation of capitalization rate or overesti-mation of earnings while deciding on the amount of capital to be raised.

Over-capitalization is not desirable in the long run interest of the shareholders and the company. It leads to lower rate of dividend, reduction in the market value of shares and difficulty in raising more funds. Hence, there is need to rectify such situation as quickly as possible by reducing debt, efficient utilization of assets, and by following a conservative dividend policy.

Under-capitalization is just the reverse of over-capitalization. In other words, a company is said to be under-capitalized if its capital employed is less than its proper capitalization i.e., the amount of capital invested is not justified by its annual earnings. In the earlier case, for example, if the company's actual capital employed is Rs. 16,00,000 it shall be treated as under-capitalized as it is less than Rs. 20,00,000, the proper capitalization. Alternatively, if a company's actual rate of earnings is more than the normal rate of return, it is treated as a case of under-capitalization. This does not imply that the company suffers from inadequacy of capital. In fact, such a situation may be the result of underestimation of expected earnings while deciding on the amount of capital to be raised or using low capitalization rate for the purpose or by following a conservative dividend policy. Of course, improvement in earnings can also be the result of cost reduction exercise or high efficiency. Thus, under-

capitalization is indicative of a sound financial position and may lead to increase in the market value of company's shares. However, it can encourage competition as high rate of return may attract new entrants in the field. The workers of the company may demand for higher wages and other benefits. When the company earns more profit, the customers may feel that they are being over-charged by the company. So, it is better to take corrective steps like capitalization of profits (issue bonus shares) or splitting up of the shares (a share of Rs.10 may be converted into five shares of Rs. 2 each). Although under-capitalization is considered a lesser evil than over-capitalization (as the situation can be remedied more quickly) it is better to ensure a fair or proper capitalization.



2.10 LET US SUM UP

In this unit we discussed the following :

- Financial planning refers to the determination of the firm's financial objective, formulating and promulgating the financial policies and developing financial procedures.
- Financial planning lays down the realistic financial goals and further, establishes the financial policies and procedures to attain these goals.
- Forecasting or estimation of the financial or capital requirements is the most important financial decision or financial function of an enterprise.
- The financial or capital requirements of a firm can be broadly classified into two categories : fixed capital and working capital.
- Fixed capital refers to the fund requirement for meeting the permanent or long-term financial needs of the business.
- Working capital represents the amount of funds invested in current assets like stock-in-trade, debtors, and cash required for meeting day-to-day expenses. It is also known as circulating capital
- Capitalization refers to the process of determining the amount of capital required by a company.

- According to the cost theory of capitalization, the amount of capital required by the company is calculated by adding up the cost of its fixed assets, the amount of its working capital and the cost of establishing the business.
- According to earning theory, the capital requirement of a company is calculated on the basis of the capitalized value of its earning.
- A company is said to be over-capitalized if its capital employed is more than its proper capitalization.
- A company is said to be under-capitalized if its capital employed is less than its proper capitalization i.e., the amount of capital invested is not justified by its annual earnings.



2.11 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I. M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



2.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 : Financial planning is a predetermination of future course of action.

Ans to Q. 2 : a. To ascertain the amount of fixed capital
b. To determine the quantum of funds to be raised through the various sources of finance.

Ans to Q. 3 : a. Nature of the Industry
b. Size of the business

Ans to Q. 4 : a. Forecast of Cashflow
b. Raising Finances



2.13 MODEL QUESTIONS

1. What is meant by financial planning ?
2. What are the steps involved in financial planning ?
3. State the objectives of financial planning.
4. Briefly explain the factors affecting the financial planning of an organization.
5. What is the importance of financial planning for a business organization ? Explain.
6. What is meant by capitalization ?
7. What is undercapitalization and overcapitalization ? Explain with example.
8. Explain the terms fixed capital and working capital. What is the difference between them ?
9. 'Financial planning helps in establishing the basic premises for fund procurement and utilization for value creation'. Elucidate.
10. What do you understand by the term capitalization ? Explain the various theories of capitalization.

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UNIT - 3 : SOURCES OF FUNDS

UNIT STRUCTURE

3.1 Learning Objectives

3.2 Introduction

3.3 Equity shares
- 3.3.1 Advantages and disadvantages of equity capital

3.4 Right shares

3.5 Bonus shares

3.6 Retained earnings or internal accruals
- 3.6.1 Advantages and Disadvantages of internal accruals

3.7 Preference shares
- 3.7.1 Advantages and disadvantages of preference shares

3.8 Debentures
- 3.8.1 Types of Debentures
- 3.8.2 Advantages and disadvantages of debentures

3.9 Term loan

3.10 Venture Capital Finance
- 3.10.1 Features of Venture Capital Finance

3.11 Let us Sum Up

3.12 Further Reading

3.13 Answers to Check Your Progress

3.14 Model Questions

3.1 LEARNING OBJECTIVES

After going through this unit you will be able to :

- discuss the different sources of long term finance
- explain the features, advantages and disadvantages of equity capital
- explain rights shares and bonus shares
- outline features, types, advantages and disadvantages of preference capital and debentures
- discuss the features, advantages and disadvantages of term loans
- describe the need of venture capital

3.2 INTRODUCTION

In this unit we are going to discuss the different sources of long term finance. A company needs lot of finance of long term nature when it is first set up or it wants to expand or modernise or start a new plant. The finance needed for these investments have to be of special characteristics. Broadly the long term finance can be grouped into equity and debt. The following sections will deal in detail regarding the different sources of finance.

The features, advantages and disadvantages of equity capital, preference capital and debentures will be discussed. We will also come to know about the features, advantages and disadvantages of term loans.

We will be able to know about right shares and bonus shares and the need of venture capital.

3.3 EQUITY SHARES

Equity shares, also known as ordinary shares or common shares, represents the ownership capital in a company. The holders of these shares are the real owners of the company. Equity shares have a number of features which distinguish them from other shares and securities. These features generally relate to the rights and position of equity shareholders. The following are some of the most significant features of equity shares :

(i) **Maturity :** Equity shares provide permanent capital to the company and cannot be redeemed during the life time of the company.

(ii) **Claim / Right to income :** Equity shareholders have a residual claim on the income of a company. They have a claim on income left after paying dividend to preference shareholders. The rate of dividend on these shares is not fixed; it depends upon the earnings available after paying dividends on preference shareholders. In many cases, they may not get anything if profits are insufficient; or may get even a

higher rate of dividend. That is why, equity shares are also known as 'variable income security'.

(iii) Claim on assets : Equity shareholders have a residual claim on ownership of company's assets. In the event of liquidation of a company, the assets are utilised first to meet the claims of creditors and preference shareholders but everything left thereafter, belongs to the equity shareholders. Thus, equity shares provide a cushion to absorb losses on liquidation and may, usually, remain unpaid.

(iv) Right to control or Voting Rights : Equity shareholders are the real owners of the company. They have voting rights in the meetings of the company and have a control over the working of the company.

(v) Pre-emptive Right : To safeguard the interests of equity shareholders and enable them to maintain their proportional ownership, Section 81 of the Companies Act,1956, provides that whenever a public limited company proposes to increase its subscribed capital by the allotment of further shares, after the expiry of two years from the formation of the company or the expiry of one year from the first allotment of shares in the company , whichever is earlier, such shares must be offered to holders of existing equity shares in proportion, as nearly as circumstances admit, to the capital paid-up on these shares. Shares so offered to existing shareholders are called Right Shares and their prior right to such shares is known as pre-emptive right.

(vi) Limited Liability : Although equity shareholders are the real owners of the company, their liability is limited to the value of shares they have purchased. If a shareholder has already fully paid the share price, he cannot be held liable further for any losses of the company even at the time of liquidation. This enables the equity shareholders to enjoy the ownership of a company without risking unlimited liability as is the case in sole-proprietorship or partnership businesses.



LET US KNOW

Some important terms :

- **Authorised Capital :** The amount of capital that a company can potentially issue, as per its memorandum, represents the authorised capital. In other words, it represents the maximum amount which a company can raise from the ordinary shareholders and can be changed in the prescribed manner.
- **Issued Capital :** The amount offered by a company to the investors is called issued capital
- **Subscribed Capital :** The part of issued capital which has been subscribed to by the investors represents the subscribed capital.
- **Paid-up Capital :** The actual amount paid up by the investors is called the paid-up capital.
- **Par value :** The par value of an equity share is the value stated in the memorandum and written on the share scrip.
- **Issue Price :** The issue price is the price at which the equity share is issued. The issue price is normally higher than the par value.
- **Market Price :** The market price of an equity share is the price at which it is traded in the secondary market. The equity share of a company is listed on the stock exchange. The market price of an equity share is determined by the demand and supply of the buyers and sellers in the stock exchange.

3.3.1 Advantages and Disadvantages of Equity Capital

Equity Capital offers the following advantages :

- There is no compulsion to pay dividends. A company is not legally obliged to pay dividend. In times of financial difficulties, it can reduce or suspend payment of dividend.
- Equity Capital has no maturity date and hence the company has no obligation to redeem. It is a permanent capital, and is available for use as long as the company runs its business operation.

- Equity Capital helps to enhance the credit worthiness of the company as it provides a kind of protection to lenders. By issuing equity capital, the company increases its financial capability.

Equity Capital has the following disadvantages :

- The issuance of new ordinary shares may dilute the ownership and control of the existing shareholders.
- Ordinary shares are riskier from investors' point of view as there is uncertainty regarding dividend and capital gains.
- The cost of issuing equity shares is generally higher than the cost of issuing other types of securities.
- The scattered and unorganised shareholders are unable to exercise effective and real control over the company.
- The shareholders cannot claim dividend as a matter of right.



CHECK YOUR PROGRESS

Q. 1. Describe the followings :

a. Par value

b. Issue Price

c. Market Price

Q. 2. Name the three types of debentures.

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.....

3.4 RIGHT SHARES

Rights shares are the shares issued to the existing shareholders of the company. It is a legal requirement that new ordinary shares must be first issued to the existing shareholders on a pro rata basis. Shareholders through a special resolution can forfeit this pre-emptive right.

In rights offerings, there is a date of record, which states the last day that the receiver of the right must be the legal owner as reflected in the company's stock ledger or as registered in the shareholders name. Because of delay in entering the information, shares are often sold ex rights (without rights) for a few days (usually 4 days) before the record date. Before this point, the share is sold rights on, which means that purchasers receive the rights. The recipient of the rights can exercise them, sell them, or let them expire. Since stock rights are transferable, many are traded on the stock exchange. They may be exercised for a given period of time at a subscription price, which is set somewhat below the prevailing market price. After the subscription price has been determined, management must ascertain the number of rights necessary to purchase a share. The total number of shares that must be sold equals :

$$\text{Shares to be sold} = \frac{\text{Amount of funds to be obtained}}{\text{Subscription price}}$$

The number of rights needed to acquire one share equals.

$$\text{Right per share} = \frac{\text{Total shares outstanding}}{\text{Shares to be sold}}$$

Features of Rights :

- The number of rights that a shareholder gets is equal to the number of shares held by the shareholder.
- The number of rights required to subscribe to an additional share is determined by the issuing company.
- The price per share for additional equity, called subscription price, is left to the discretion of the company.
- Rights are negotiable.
- Rights can be exercised only during the period when the issue is open.



Exercise : 3.1

Q.1 : A star company wishes to obtain Rs. 800,000 by a rights offering. There are currently 100,000 shares outstanding. The subscription price is Rs 40. How many rights shares are to be sold ? How many rights will be per share ?

Solution :

$$\text{Shares to be sold} = \frac{\text{Amount of funds to be obtained}}{\text{Subscription price}}$$

$$= \frac{\text{Rs } 800{,}000}{\text{Rs. } 40} = 20{,}000 \text{ shares}$$

$$\text{Rights per share} = \frac{\text{Total shares outstanding}}{\text{Shares to be sold}} = \frac{100{,}000}{20{,}000} = 5$$

Thus, five rights will be required to purchase each new share at Rs. 40.

3.5 BONUS SHARES

Bonus shares are shares that are issued to the existing shareholders by issuing shares out of free reserves built out of the genuine profit. In India, bonus shares are issued in addition to the cash dividend and not in lieu of cash dividend.

Features of bonus Shares :

- Bonus shares are distributed proportionately to the existing shareholders.
- The declaration of bonus shares will increase the paid-up share capital and reduce the reserves and surplus of the company. However the net worth (paid-up capital plus reserves and surplus) is not affected by the bonus issue.
- Issuing of bonus shares by a company indicates that the prospects of the company have brightened.

3.6 RETAINED EARNINGS OR INTERNAL ACCRUALS

Retained earnings are that portion of equity earnings (profit after tax less preference dividends) which are ploughed back in the company. Because retained earnings are the sacrifice made by equity shareholders, they are referred to as internal equity. Companies normally retain 30 percent to 80 percent of profit after tax for financing growth, which essentially represent accumulated retained earnings, are an important source of long-term financing.

3.6.1 Advantages and Disadvantages of Internal Accruals

Internal Accruals has the following **advantages :**

(i) Retained earnings are readily available.

(ii) Use of retained earnings eliminates issue cost.

(iii) There is no dilution of control when a company relies on retained earnings.

Internal Accruals has the following **disadvantages :**

(i) The amount that can be raised by way of retained earnings may be limited.

(ii) The opportunity cost of retained earnings is quite high.

(iii) Retained earnings represent dividends foregone by equity shareholders.

3.7 PREFERENCE SHARES

These shares have certain preferences as compared to other types of shares. The first preference is for payment of dividend and the second preference for these shares is the repayment of capital at the time of liquidation of the company. Normally, preference shares are of the following types :

(a) Cumulative Preference Shares : These shares have a right to claim dividend for those years also when there are no profits. Whenever there are divisible profits, cumulative preference shares are paid

dividend for all the previous years in which dividend could not be declared.

(b) Redeemable Preference Shares: Normally the capital of a company is repaid only at the time of liquidation. Neither the company can return the share capital nor can the shareholders demand its repayment. The company, however, can issue redeemable preference shares if the articles of association allow such an issue. The company has a right to return redeemable preference share capital after a certain period.

(c) Irredeemable Preference Shares : Those shares which cannot be redeemed unless the company is liquidated are known as irredeemable preference shares.

(d) Participating Preference Shares : The holders of these shares participate in the surplus profits of the company. They are firstly paid a fixed rate of dividend and then a reasonable rate of dividend is paid on equity shares. If some profits remain after paying both these dividends, then preference shareholders participate in the surplus profits. The mode for dividing surplus profits between preference and equity shareholders is given in the articles of association.

Features of Preference shares :

1. **Maturity :** Generally, preference shares resemble equity shares in respect of maturity. These are perpetual (irredeemable) and the company is not required to repay the amount during its lifetime. It is only at the time of liquidation that a company has to repay the preference shareholders after meeting the claim of creditors but before paying back the equity shareholders. However, a company may issue redeemable preference shares with a limited life after which they are supposed to be retired or paid back.

2. **Claims on income :** A fixed rate of dividend is payable on preference shares. Preference shareholders have prior claim on income (dividend) over equity shareholders. Whenever the company has distributable profits, the dividend is first paid back on preference share capital. The rate of dividend on preference shares is usually fixed.

3. **Claims on assets :** Preference shares have a preference in the repayment of capital at the time of liquidation of a company. Their claims on assets are superior to those of equity shareholders. In the event of liquidation of the company, their claim is to be settled first before making any payment to the equity shareholders.

4. **Voting Rights :** Preference shareholders ordinarily do not have any voting rights. They may be entitled to contingent or conditional voting rights. In India, if a preference dividend is outstanding for two or more years in the preceding six years, preference shareholders can nominate a member on the board of the company.

5. **Hybrid form of security :** Preference share capital can be said to represent a hybrid form of security as it includes some features of equity and others of debt financing. It resembles equity in the sense that (a) payment of dividend is not obligatory; (b) preference dividend is payable only out of distributable profits and, (c) it is not deductible as expense while determining tax liability of the company. At the same time, it has certain characteristics of debt financing such as (a) it carries a fixed rate of dividend like interest (b) Its holders are entitled to a right prior to equity shareholders and (c) it does not provide a right to vote.

3.7.1 Advantages and Disadvantages of Preference Shares

Preference Shares offer the following advantages :

- There is no legal obligation to pay preference dividend. It provides some financial flexibility to the company since it can postpone payment of dividend.
- There is no dilution of control as preference shares do not have voting rights.
- It enhances the credit worthiness of the company.

Preference Shares offer the following disadvantages :

- It is a very expensive source of financing because the dividend paid to preference shareholders is not a tax – deductible expense.

- Preference dividend may be omitted but have to be paid because of their cumulative nature.
- Preference shareholders acquire voting rights if the company does not pay preference dividend for a certain period.

3.8 DEBENTURES

A debenture is a marketable legal contract whereby the company promises to pay whoever owns it, a specified rate of interest for a defined period of time and to repay the principal at the specific date of maturity. An alternative form of debenture in India is called as bond.

Debenture holders are the creditors of company. The interest of debenture holders is looked by a trustee and is responsible for ensuring the borrowing company fulfils all its obligations. The par value of debenture is the face value appearing on the debenture certificate. Debentures provide a greater variety of choices with respect to maturity, interest rate, security, repayment and special features.

Features of Debentures :

- The interest rate on debentures is fixed and known. It indicates the percentage of the par value of the debenture that will be paid out annually (or semi-annually or quarterly) in the form of interest.
- Debentures are issued for a specified period of time. This is called the maturity period of debentures.
- Most debentures in India are secured by mortgages on the immovable properties of the company. This provides security to the debenture holders. If the company defaults, the trustee can seize the security on behalf of the debenture holders and make payment to them.

3.8.1 Types of Debentures

Debentures can be classified on conversion, security and redemption.

1. **Non-Convertible Debenture (NCDs) :** These debentures cannot be converted into equity shares and will be redeemed at the end of the maturity period.

2. **Fully Convertible Debentures (FCDs) :** These debentures will be converted into equity shares after a specified period of time. These debentures may or may not carry interest till the date of conversion.

3. **Partially Convertible Debentures (PCDs) :** These are debentures, a portion of which will be converted into equity share capital after a specified period, whereas the non-convertible portion of these debentures will be redeemed as per the terms of the issue after the maturity period.

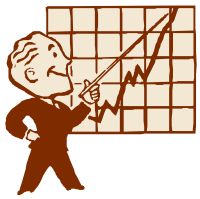
3.8.2 Advantages and disadvantages of debentures

The following are the advantages of debentures :

- The interest on debentures is a tax-deductible expense and therefore, the effective cost of this source is lower than the cost of equity or preference capital.
- Issue of non-convertible debentures does not result in dilution of control because debt holders are not entitled to vote.
- During periods of high inflation, debenture issue benefits the company. Their obligations of paying interest and principal decline in real terms as these are fixed.

The following are the disadvantages of debentures :

- Interest payments and capital repayments are obligatory payments, which if not paid can force the company into liquidation.
- Debentures must be paid on maturity, and sometimes involve huge cash outflow.
- Debenture trustees may give restrictive covenants which may limit the company's flexibility in future.



CHECK YOUR PROGRESS

Q. 3 : Fill in the blanks :

(a) The two sources of equity financing are..... and.....

(b) Preferred dividends are based on the total..... of the outstanding shares.

(c) The ..... right allows a stockholder to purchase new shares of stock before they are sold to the general public.

(d) A form of equity financing designed specially for funding high risk and high reward investments is known as.....

(e) Debentures can be classified on conversion, security and .....

3.9 TERM LOAN

Term loan represents long-term debt that is repayable after one year. They are obtained from banks and specially created by financial institutions. The purpose of term loans is mostly to finance the company's long term expenditures.

Features of Term Loan :

1. **Maturity :** Banks and financial institutions are the main sources of term loans in India. Loans are provided generally for a period 6 to 10 years.
2. **Security :** Term loans are always secured. Specifically the assets acquired using term loan funds becomes a guarantee for the loan.
3. **Restrictive Covenants :** The loan contract often contains restrictive covenants depending upon the nature and financial situation of the borrowing capacity. The borrowing company has generally to keep the

lender informed by furnishing financial statements and other information periodically.

4. **Convertibility :** Financial institutions provide huge amount of loan assistance to the companies. Because of huge financial stake of these institutions in the companies, the loan can be converted into the equity capital of the borrowing companies at the option of the financial institution subject to certain conditions.

Advantages and Disadvantages of Term Loan

The advantages and disadvantages of raising term loans are almost similar to the ones enumerated for debentures. The additional disadvantage associated with this option is the presence of a convertibility claim which can result in the dilution of control.

3.10 VENTURE CAPITAL FINANCE

A form of equity financing designed specially for funding high risk and high reward investments is known as 'Venture Capital'. In other words, venture capital may be described as pools of capital constituted for investing in relatively high-risk opportunities in anticipation for high rates of return. Venture capital investment is defined as an activity by which investors i.e. venture capitalists support entrepreneurial talent with finance and business skills to exploit market opportunities and thus obtain long-term capital gains. This financing may take place at any stage of implementation of the project, between start-up and commencement of commercial production. The rationale for the venture capital arises on account of the fact that there is high expectation for large gains by some entrepreneur, which acts as the motivation behind taking up risky investments that carry high return profiles. This business ventures which do not get finance from banks and Financial Institutions are being financed by venture capitalists in the form of venture capital. Venture capitalists get involved in the process of venture capital financing in the following three forms :

- **Equity participation :** Venture financing takes place through direct purchase of shares, options or convertible securities. The objective is to make capital gains by selling-off the investment once the business ventures become profitable.

- **Long-term investment :** Venture financing is a long-term illiquid investment; it is not repayable on demand. The venture capitalists have to invest for a long period, say 5 to 10 years before exiting from the venture with large profit.
- **Participation in management :** Venture capitalists continuously participate in the management of the business ventures. They provide hands-on management experience to protect and enhance their investment by being actively involved in the business planning, production, marketing and human resource development of the business ventures.

3.10.1 Features of Venture Capital Finance

(i) New Ventures : Venture capital investment is generally made in new ventures or investments that use new technology to produce new products, in expectation of high gains or sometimes, spectacular returns.

(ii) Continuous Involvement : Venture capitalists continuously involve themselves with the venture's investments, either by providing loans or managerial skills or any other support.

(iii) Mode of Investment : Venture capital is basically an equity financing method, the investment being made in relatively new businesses when it is too early to go to the capital market to raise funds. In addition, financing also takes the form of loan finance/ convertible debt to ensure a running yield on the portfolio of the venture capitalists.

(iv) Objective : The basic objective of a venture capitalist is to make capital gain on equity investment at the time of exit, and regular return on debt financing. It is a long-term investment in growth-oriented small/medium business ventures.

(v) High-risk-return ventures : Venture capitalists finance ventures having high risk. Resolving the uncertainty affecting these ventures becomes more complex because of the absence of historical information that can provide the basis for assessing the likelihood of various future outcomes of the ventures. However,

some of the ventures yield very high return in order to compensate for the heavy risks related to the ventures. Venture capitalists usually make huge capital gains at the time of exit from the business ventures.

(vi) Liquidity : Liquidity of venture capital investment depends on the success or otherwise of the new venture or product. Accordingly, there will be higher liquidity where the new ventures are highly successful.



CHECK YOUR PROGRESS

Q. 4. What is the main purpose of term loans ?

.....

.....

.....

Q. 5. State true or false :

(i) The principal sources of long-term finance for a company are: equity capital, preference capital, and debenture capital and term loans.

(ii) Equity shareholders enjoy the rewards of ownership and bear the risks of ownership.

(iii) The par value and issue price of an equity share are always equal.

(iv) All rights issue of shares involves equity shares to the existing shareholders.



3.11 LET US SUM UP

In this unit, we have discussed the following aspects :

- Equity and debt represent the two broad sources of finance for a company.
- Equity capital represents ownership capital.

- The pre-emptive right of the equity shareholders is maintained by raising new equity capital through rights offerings.
- Preference capital represents a hybrid form of financing. A fixed rate of dividend is payable on the preference shares. Preference shares could be redeemable i.e. with a maturity date or irredeemable i.e. perpetual, without maturity date.
- Debenture is a long-term promissory note. Debenture holders are long- term creditors of a company.
- Term loans are loans for more than a year of maturity.
- Term loans represent a source of debt finance provided by financial institutions and banks.



3.12 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I. M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



3.13 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 :

a. **Par value :** The par value of an equity share is the value stated in the memorandum and written on the share scrip.

b. **Issue Price :** The issue price is the price at which the equity share is issued. The issue price is normally higher than the par value.

c. **Market Price :** The market price of an equity share is the price at which it is traded in the secondary market. This price can be established for a company which is listed on the stock market and actively traded.

Ans to Q. 2 :

Non-Convertible Debenture, Fully Convertible Debentures, Partially Convertible Debentures.

Ans to Q. 3 :

a. Equity capital and Preference capital
b. Par value
c. Pre-emptive
d. Venture capital
e. Redemption

Ans to Q. 4 :

The purpose of term loans is mostly to finance the company's long term expenditures.

Ans to Q. 5 :

(i) True (ii) True (iii) False (iv) True



3.14 MODEL QUESTIONS

1. What are the key differences between equity capital and debenture ?
2. What are advantages and disadvantages of equity capital ?
3. Write three important features of debentures.
4. Why is preference capital considered as a hybrid form of financing ?
5. What are features of venture capital ?
6. What is the difference between rights shares and bonus shares ?
7. KFC Ltd. expects to raise Rs 2 million in rights offering. Currently, there are 250,000 shares outstanding. A subscription price of Rs 40 a share is assigned.
   (i) How many shares must be sold ?
   (ii) How many rights are required to purchase one share of stock ?

❖❖❖

UNIT - 4 : COST OF CAPITAL

UNIT STRUCTURE

4.1 Learning Objectives

4.2 Introduction

4.3 Concept and Definition of Cost of Capital

4.4 Significance of Cost of Capital

4.5 Classification of Cost of Capital

4.6 Determination of Specific Cost

4.7 Weighted Average Cost of Capital

4.8 Let us Sum Up

4.9 Further Reading

4.10 Answers to Check Your Progress

4.11 Model Questions

4.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- explain the concept and definition of Cost of Capital
- discuss the significance of Cost of Capital
- describe the Classifications of Cost of Capital
- outline the determination of specific Cost
- discuss weighted average cost of capital

4.2 INTRODUCTION

In this unit, we are going to discuss the concept of cost of capital. We will be discussing on the significance, classification of cost of capital. Again we will get an idea on the determination of specific cost and weighted average cost of capital. The items on the financing side of the balance sheet are called capital components. The major capital components are equity, preference, and debt and term loan. All these sources of capital have a cost. A company's cost of capital is the average cost of the various capital

components employed by it. In other words, it is the average rate of return required by the investors who provide capital to the company. It refers to the minimum rate of return a company must earn on its investment so that the market value of the company's equity share may not fall. In the words of Hampton, John J, "cost of capital is the rate of return the company requires from investment in order to increase the value of the company in the market place".

4.3 CONCEPT AND DEFINITION OF COST OF CAPITAL

The concept of cost is perceived in different dimensions, which Thus, cost of capital is an important concept in formulating a company's capital structure. Two major schools of thought have emerged having basic difference on the relevance of cost of capital. Modigliani Miller argued that a company's cost of capital is constant and it is independent of the method and level of financing. Whereas some analysts hold that cost of capital is varying and dependent on capital structure.

Some definitions are as follows :

Cost of capital is one rate of return the capital funds used should produce to justify their use within the company.

According to Solomon Ezra, "The cost of capital is the minimum required rate of earnings or the cut off rate for capital expenditure."

In the words of Haley and Schall, in a general sense, "Cost of capital is any discount rate used to value cash streams."

4.4 SIGNIFICANCE OF COST OF CAPITAL

The concept of cost of capital is very important and it is useful in the following financial management decisions.

(i) **Capital budgeting decisions :** In capital budgeting decisions, the cost of capital is often used as a discount rate on the basis of which the company's future cash flows are discounted to find out their present values. Thus, the cost of capital is the very basis for financial appraisal of new capital expenditure proposals. The decision of the finance

manager will be irrational and wrong in case the cost of capital is not correctly determined. This is because the business must earn at least at a rate which equals to its cost of capital in order to break-even.

(ii) Capital structure decisions : The cost of capital is also an important consideration in capital structure decisions. The finance manager must raise capital from different sources in a way that it optimizes the risk and cost factors. The sources of funds which have less cost involve high risk. Raising of loans may, therefore, be cheaper on account of income tax benefits, but it involves heavy risk because a slight fall in the earning capacity of the company may bring the company near to cash insolvency. It is, therefore, absolutely necessary that cost of each source of funds is carefully estimated and compared with the risk involved with it.

(iii) Financial Performance Appraisal : Cost of capital framework can be used to evaluate the financial performance of top management.

4.5 CLASSIFICATION OF COST OF CAPITAL

Cost of capital can be brought as under :

i) Explicit Cost

ii) Implicit Cost

iii) Specific Cost

iv) Average Cost

v) Marginal Cost

i) Explicit Cost : The explicit cost of any source of finance may be defined as the discount rate that equates the present value of the cash inflows with the present value of its expected cash outflows. When a company raises funds from different sources, it involves only a cash inflow at the beginning by the amount raised which is followed by a series of cash outflows in the form of interest payments, repayment of principal or repayment of dividends. The explicit cost may be defined as the internal rate of return the company pays for different financing. The explicit cost of capital may be computed by using the following equation :

$$I_0 = \frac{C_1}{(1+k)^1} + \frac{C_2}{(1+k)^2} + ... + \frac{C_n}{(1+k)^n}$$

Where I_0 = Net amounts of funds received by the company at time zero.

C = Outflow in the period concerned

n = Period for which the funds are provided

k = Explicit Cost of Capital

ii) Implicit Cost : The implicit cost may be defined as the rate of return associated with the best investments opportunity for the company, its shareholders and creditors that will be foregone for investing in that company. When the earnings are retained by a company, the implicit cost is the income which the shareholders could have earned if such earnings would have been distributed and invested by them.

iii) Specific Cost : The cost of each component of capital, i.e equity shares, preference shares, debentures, term loan etc is called the specific cost of capital.

iv) Average Cost or Weighted Average Cost : The combined cost of all sources of capital is called average or overall cost of capital. The component costs are combined according to the weight of each component capital to obtain the average cost of capital. Thus, the overall cost is also called the weighted average cost of capital (WACC).

v) Marginal Cost : Marginal cost of capital is the cost of additional amount of capital which is raised by a company for current and fixed capital investment. In other words, marginal cost is the new or the incremental cost that the company incurs if it were to raise capital at present or in the near future.



CHECK YOUR PROGRESS

Q.1. What do you mean by cost of capital ?

.....

.....

Q.2. Write down two different types of cost.

.....

.....

4.6 DETERMINATION OF SPECIFIC COST

A. Cost of Debt :

Companies raise debt capital through issue of debentures or raise loan from financial institution or deposits from public. All these funds need a specific rate of interest to be paid. Again, the interest payments made on debt issue qualify for tax deduction. Computation of cost of debt capital depends on the maturity, interest rate and tax rate.

B. Cost of Irredeemable Debt :

Cost of perpetual debt is the rate of return that lender expects, i.e. fixed interest rate. Debentures may be issued at (i) par or face value, (ii) discount and (iii) premium. The following formulae used to compute cost of debentures :

(i) Pre-tax Cost : $K_d = \frac{\text{Interest}}{\text{Principal amount or face value}}$

(ii) Post-tax Cost : $K_d = \frac{\text{Interest (1- tax rate)}}{\text{Principal amount or face value}}$



Exercise : 4.1

Alfa Ltd. decides to issue perpetual debt at 12 percent with a face value of Rs.100 each. The company is in 40 per cent tax bracket. Calculate cost of debenture.

Solution :

(i) Pre-tax Cost

Here interest = 0.12 × Rs 100 = Rs 12

Face value = Rs 100

$K_d = \frac{\text{Rs } 12}{\text{Rs } 100} = 12$ percent

(ii) Post-tax Cost

Here, interest = 0.12 × Rs 100 = Rs 12

Face value = Rs 100

Tax rate = 40 percent

$$K_d = \frac{\text{Rs } 12 \ (\ 1- 0.40)}{\text{Rs } 100} = 7.2 \text{ percent}$$



Exercise : 4.2

A company issues 10% debentures for Rs 1,00,000. Rate of tax is 50 percent. Calculate the cost of debt (post-tax) if the debentures are issued at (i) par (ii) 10% discount and (iii) 10% premium.

Solution :

Post-tax Cost : $K_d = \dfrac{\text{Interest } (1 - \text{tax rate})}{\text{Principal amount or face value}}$

(i) Issued at par : Here interest = 0.10 × Rs. 1,00,000 = Rs. 10,000

Principal amount = Rs. 1,00,000

Tax rate = 50 %

$$K_d = \frac{\text{Rs. } 10{,}000 \ (1-.50)}{\text{Rs } 1{,}00{,}000} = 0.05 = 5 \text{ percent}$$

(ii) Issued at 10% discount

Here interest = 0.10 × Rs. 1,00,000 = Rs. 10,000

Principal amount (at 10% discount) = Rs. 1,00,000 – Rs. 10,000

= Rs. 90,000

$$K_d = \frac{\text{Rs. } 10{,}000 \ (1-.50)}{\text{Rs. } 90{,}000} = 0.055 = 5.5 \text{ percent}$$

(iii) Issued at 10% premium

Here interest = 0.10 × Rs. 1,00,000 = Rs. 10,000

Principal amount (at 10% premium) =Rs. 1,00,000 + Rs. 10,000

= Rs. 110,000

$$K_d = \frac{\text{Rs. } 10{,}000 \ (1-.50)}{\text{Rs. } 110{,}000} = 0.045 = 4.5 \text{ percent}$$

C. Cost of Redeemable Debt :

Redeemable debentures are those having a maturity period or repayable after a certain given period of time. When debentures are redeemed after the expiry of a fixed period, the cost of debt (pre tax) can be computed with the help of the following formula :

(i) Cost of debt (pre tax)

$$K_d = \frac{I + (D - P)/n}{(D + P)/2}$$

Where I = Annual Interest

D = Par value of debentures

n = Number of years to maturity

P = Net proceeds

(ii) Cost of debt (post tax)

The cost of debt (post tax) can be computed as follows :

K_d (post tax) = K_d (pre tax) × (1 – tax rate)



Exercise : 4.3

A company issues 10% debentures for Rs 1,00,000 and realises Rs. 95,000 after 5% commission to brokers. The debentures are due for maturity at the end of the 10th year. Compute the effective cost of debt (pretax).

Solution :

$$K_d = \frac{I + (D - P)/n}{(D + P)/2}$$

Where, I = Rs. 10,000 (10% of Rs. 1,00,000)

P = Rs. 95,000

D = Rs. 1,00,000

n = 10

$$K_d = \frac{\frac{10,000 + (100,000 - 95,000)}{10}}{\frac{100,000+95,000}{2}}$$

$$= \frac{10,000+ 500}{97,500} = 10.77\%$$

D. Cost of Preference Capital :

The cost of preference share capital is a function of the dividend expected by the investors. Though dividend payment is not obligatory, it is expected that companies should pay dividend regularly except when the companies do not make profits. The cost of redeemable and irredeemable preference shares are given below.

Cost of Irredeemable Preference Share

$$\text{(i)} \quad K_p = \frac{\text{Dividend } (D_p)}{\text{Net proceeds (NP)}}$$



Exercise : 4.4

HLL Ltd. issues 12 per cent irredeemable share of face value of Rs 200 each. Compute cost of preference share.

Solution :

Here $D_p = 0.12 \times$ Rs. 200 = Rs. 24

Net proceeds (NP) = Rs. 200

$$K_p = \frac{D_p}{NP} = \frac{24}{200} = 0.12 \text{ or } 12\%$$



Exercise : 4.5

SRT Ltd. is planning to issue irredeemable preference share at 16 percent. The face value of each preference share will be Rs. 100. The floatation costs are estimated at 3 percent. Compute cost of preference shares if these are issued at (i) face value, (ii) 10 percent premium and (iii) 5 percent discount.

Solution :

(i) Here, Face value of preference share = Rs 100

Floatation cost = 0.03 × Rs100 = Rs 3

Net proceeds = Rs 100 – Rs 3 = Rs 97

Dividend = 0.16 × Rs. 100 = Rs. 16

$$K_p = \frac{D_p}{NP} = \frac{\text{Rs. 16}}{\text{Rs. 97}} = 0.164 \text{ or } 16.4\%$$

(ii) Here, Face value of preference share = Rs. 100

10% premium on face value = Rs. 0.10 × 100 = Rs. 10

Face value with 10% premium = Rs. 100 + Rs. 10 = Rs. 110

Floatation cost = 0.03 × Rs. 100 = Rs. 3

Net proceeds = Rs. 110 – Rs. 3 = Rs. 107

Dividend = 0.16 × Rs. 100 = Rs. 16

$$K_p = \frac{D_p}{NP} = \frac{\text{Rs. 16}}{\text{Rs. 107}} = 0.149 \text{ or } 14.9\%$$

(iii) Here Face value of preference share = Rs. 100

5% of discount on face value = Rs. 0.05 × 100 = Rs. 5

Face value with 5% of discount = Rs. 100 – Rs. 5 = Rs. 95

Floatation cost = 0.03 × Rs.100 = Rs. 3

Net proceeds = Rs. 95 – Rs. 3 = Rs. 92

Dividend = 0.16 × Rs. 100 = Rs. 16

$$K_p = \frac{D_p}{NP} = \frac{\text{Rs. 16}}{\text{Rs. 92}} = 0.173 \text{ or } 17.3\%$$

E. Cost of Redeemable Preference Share :

Shares that are issued for a specific maturity period are known as redeemable preference shares. Cost of preference share is the discount rate that equates the present value of cash inflows (net proceeds) with the present value of cash outflows (dividend and principal repayment). Generally dividend is paid at the end of every year, but principal amount will be paid at the end. Cost of preference share when the principal amount is paid at the end is given below.

$$NP = \frac{D_1}{(1+K_p)^2} + \frac{D_2}{(1+K_p)^2} + ... + \frac{D_n}{(1+K_p)^n} + \frac{P_n}{(1+K_p)^n}$$

Where K_p= Cost of preference share

NP = Net proceeds after discount, floatation cost

D_i = Dividend on preference share at the end of year i, i = 1, 2, ..., n

P_n = Repayment of principal amount at the end of year 'n' years.

This equation can be simplified and written as the following :

$$K_p = \frac{C + (D - P)/n}{(D + P)/2}$$

Where, C = Annual dividend

D = Par value of preference shares

n = Number of years to maturity

P = Net Proceeds

F. Cost of Equity Capital :

Cost of this source of capital is very difficult to measure. The difficulty arises from two factors: First it is very difficult to estimate the expected dividends. Second, the future earnings and dividends are expected to grow over time. Growth in dividends should be estimated and incorporated in the computation of the cost of equity. The dividend valuation method is discussed below.

Dividend Valuation Method

According to this method, the cost of equity capital is that discount rate which equates the current market price of the equity (P) with the sum of present value of expected dividends. That is,

$$P = \frac{D_1}{(1+K_e)} + \frac{D_2}{(1+K_e)^2} + ... + \frac{D_n}{(1+K_e)^n}$$

Where D_1, D_2 ..... are dividends expected during each time period (1, 2, ..., n) and K_e is the cost of equity or the discount rate. The above equation can be simplified and written as the following :

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

Where D = dividend at the end of year, P = Current market price of share or Net proceeds per share.

However dividends are expected to grow over years. In order to overcome this problem, a constant growth rate (g) in dividend has to be assumed. Then the cost of equity can be obtained by the following formula :

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

Where D_1 = D (1+g) = dividend a year hence growing at 'g' rate;

P = Current market price of share or net proceeds per share;

g = growth in dividend.



Exercise : 4.6

SFL Ltd. offers equity shares of Rs. 10 each for public subscription. The rate of dividend expected by equity shareholders is 30%. What will be the cost of equity if the present market price of SFL share is Rs. 13 ?

Solution :

Here D = Dividend amount = 0.30 × Rs. 10 = Rs. 3

P = Current market price = Rs. 13

$$K_e = \frac{\text{Rs. } 3}{\text{Rs. } 13} = 0.23 \text{ or } 23\%$$



Exercise : 4.7

The current market price of equity of an equity share of ACC Ltd is Rs. 540. The current dividend per share is Rs. 15. Dividends are expected to grow at 7%. Calculate the cost of equity.

Solution :

Here, D = Dividend amount = Rs. 15

D_1 = Rs. 15 (1 + 0.07) = Rs. 16.05

P = Current market price = Rs. 540

g = Growth rate in dividend = 7%

$$K_e = \frac{16.05 + 0.07}{540} = 0.029 \text{ or } 2.9\%$$

G. Cost of Retained Earnings :

The part of income which is left with after paying interest on debt capital and dividend to its shareholders is called retained earnings. These also involve cost in the sense that by withholding the distribution of part of income to shareholders the company is denying them the opportunity to invest these funds elsewhere and earn income. In this sense the cost of retained earnings is the opportunity cost. In other words, the opportunity costs of retained earnings are the earnings foregone by the shareholders. However, the following adjustments are required for determining the cost of retained earnings :

(i) Income Tax Adjustment : Usually, the dividends receivable by the shareholders are subject to income tax. Thus the dividends actually received by them are the amount of net dividend (i.e. gross dividends less income tax).

(ii) Brokerage Cost Adjustment : Usually, the shareholders cannot utilize the amount of dividend received from the company for the purpose of investment as they have to incur some expenses by way of brokerage, commission etc for purchasing new shares against the dividend.

The cost of retained earnings after making proper adjustments (i.e. income tax, brokerage cost) can be computed by using the following formula :

$$K_r = K_e (1 - T) (1 - C)$$

Where K_r = Cost of retained earnings

K_e = Cost of Equity Capital

T = Tax rate applicable to the shareholders

C = Commission and Brokerage costs, etc.

4.7 WEIGHTED AVERAGE COST OF CAPITAL

The term cost of capital is used to denote the overall composite of capital or weighted average of the cost of each specific type of funds i.e weighted average cost. The weighted average cost of capital implies an average of the costs of each of the source of funds employed by the company properly weighted by the proportion they hold in the company's capital structure. The computation of weighted average cost of capital involves the following steps :

(i) Calculate the cost of each specific source of funds.

(ii) Assign proper weights to specific costs.

(iii) Multiply the cost of each source by the appropriate weight.

(iv) Divide the total weighted cost by the total weights to get the overall cost of capital.

Assignments of weights

The weights to specific funds may be assigned based on the following :

(i) Book values : Book value weights are based on the values found on the balance sheet. The weight applicable to a given source of fund is simply the book value of the source of fund divided by the book value of total weights.

(ii) Market values : Under this method, assigned weights to a particular component of capital structure is equal to the market value of the component of capital divided by the market value of all components of capital and capital employed by the company.

For example, let us assume that the proposed capital structure of a company after new financing would be as follows :

Equity capital	.....	25 Percent
Debt capital	.....	50 Percent
Preference capital	.....	10 Percent
Retained earnings	.....	15 Percent
Total		**100%**

Suppose the company has calculated the cost of each source of capital as follows :

Item	.....	**Cost**
Equity Capital	.....	24 Percent
Debt capital	.....	8 percent
Preference capital	.....	23 Percent
Retained earnings	.....	19 Percent

With these figures, the weighted average cost of capital is calculated for the company as shown in the following table.

Types of capital	Proportion in the New capital structure (W)	Cost of capital (X)	(WX) (2 × 3)
1	**2**	**3**	**4**
Equity capital	25	24	600
Debt capital	50	8	400
Preference capital	10	23	230
Retained earnings	15	19	285
	100		**1515**

The formula for the weighted cost of capital is :

$$WX / W = 1515 / 100$$
$$= 15.15\%$$

This average cost of capital provides a measure of the minimum rate of return which the proposed investment must earn to become acceptable.



Exercise : 4.8

The specific cost components (post tax) of E-net Ltd. are given below :

Cost of debt	4.00%
Cost of preference shares	11.5%
Cost of equity capital	15.50%
Cost of retained earnings	14.50%

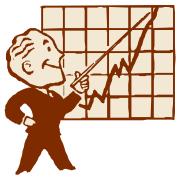
Debt	3,00,000
Preference Share Capital	4,00,000
Equity Share Capital	6,00,000
Retained Earnings	2,00,000
	15, 00,000

Calculate the weighted average cost of capital using 'Book Value Weights'.

Computation of Weighted Average Cost of Capital under Book Value Weights

Sources (a)	Amount (Rs.) (b)	Proportion (c)	Post tax cost (d)	Weighted Cost (e) = (c) × (d)
Debt	3,00,000	$\frac{3,00,000}{15,00,000}$ = 0.200	0.04	0.200 × 0.040 = 0.0080
Preference shares capital	4,00,000	$\frac{4,00,000}{15,00,000}$ = 0.267	0.115	0.267 × 0.115 = 0.0307
Equity share capital	6,00,000	$\frac{6,00,000}{15,00,000}$ = 0.400	0.155	0.400 × 0.155 = 0.0620
Retained earnings	2,00,000	$\frac{2,00,000}{15,00,000}$ = 0.133	0.145	0.133 × 0.145 = 0.0193
Total	15,00,000			0.1200

Therefore, weighted average cost of capital is 12%.



CHECK YOUR PROGRESS

Q.3. Fill in the blanks with appropriate words :

i. Cost of capital is the ..... required rate of return expected by investors.

ii. The explicit cost is the ..... which equates the present value of cash inflows with present value of cash outflows.

iii. ..... is the cost associated with particular component at capital structure.

iv. ..... is the additional cost incurred to obtain additional funds required by a company.

v. An average of the cost of each source of funds employed by the company for capital formation is called as.....

Q.4. Ajax Ltd. has made an issu of debentures for Rs. 400 lakhs. The terms of the issue are as follows : each debenture has a face value of Rs. 100 and carries a rate of interest of 14 per cent. The interest is payable annually and the debenture is redeemable at a premium of 5 per cent after 10 years. If Ajax realizes Rs. 97 per debenture and the corporate tax rate is 50 per cent, what is the cost of the debenture to the company ?

Q.5. The market price per share of MDH Ltd. is Rs. 125. The dividend per share expected a year hence is Rs. 12 per share and dividend per share is expected to grow at a constant rate of 8 per cent per annum. What is the cost of the equity capital ?



4.8 LET US SUM UP

In this unit we have discussed the following :

- Cost of capital refers to the minimum rate of return a company must earn on its investments in order to satisfy the various categories of investors who have made investments in the form of shares, debentures or term loans.
- The determination of cost of capital is very significant from the point of view of (i) Capital Budgeting Decisions (ii) Capital Structure Decisions and (iii) Financial Performance.
- Cost of capital can be broadly classified as Explicit cost, Specific cost, Average cost and Marginal cost.
- Cost of irredeemable debt is calculated as :

$$\text{Pre-tax Cost : } K_d = \frac{\text{Interest}}{\text{Principal amount or face value}}$$

Post-tax Cost : $K_d = \frac{\text{Interest (1– tax rate)}}{\text{Principal amount or face value}}$

- Cost of redeemable debt

  Pre-tax Cost : $K_d = \frac{I + (D - P)/n}{(D+P)/2}$

  Post-tax Cost $K_d = K_d$ (pre tax) $\times$ (1 – tax rate)

- Cost of Irredeemable Preference Share

  $K_p = \frac{\text{Dividend } (D_2)}{\text{Net proceeds (NP)}}$

- Cost of redeemable preference shares

  $K_p = \frac{C + (D - P)/n}{(D+P)/2}$

- Cost of equity capital can be calculated as the following

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

- Cost of retained earnings

  $K_r = K_e (1 - T) (1 - C)$

- The weighted average cost of capital implies an average of the costs of each of the source of funds employed by the company properly weighted by the proportion they hold in the company's capital structure.



4.9 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I.M Pandey(2010), *Financial Management*, Vikas Publishing House; 10th edition.



4.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1.

Cost of capital is one rate of return the capital funds used should produce to justify their use within the company.

Ans to Q. 2.

Explicit Cost, Implicit Cost, Specific Cost, Average Cost, Marginal Cost.

Ans to Q. 3.

i. Minimum, ii. Discount rate, iii. Specific,

iv. Marginal cost, v. Weighted average cost of capital.

Ans to Q. 4.

7.7 per cent (Hint : Interest = Rs. 14, Tax rate = 0.5, Net proceed = Rs. 97 and number of years = 10)

Ans to Q. 5.

18.4 per cent (Hint : Dividend = Rs. 12.96, growth rate = 0.08 and current market price = Rs. 125)



4.11 MODEL QUESTIONS

1. State the importance of cost of capital. How is component cost of capital calculated ?
2. How is cost of (i) debt capital (ii) preference share and (iii) equity share calculated ?
3. What are the steps involved in calculation of overall cost of capital ?
4. The XYZ Company is expected to grow at 9% p.a. Its market price per share is Rs. 40. The company pays a dividend of Rs. 3.6 per share. What is the cost of equity ?

5. The Indian Plastic Ltd has on its books the following amounts and specific after-tax current costs for each type capital.

Types of capital	Book Value	Cost of capital
Long- term debt	700000	4.5 %
Preference share	50000	6 %
Equity share	600000	10 %

Calculate the weighted average cost of capital of the firm.

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UNIT - 5 : LEVERAGE

UNIT STRUCTURE

5.1 Learning Objectives

5.2 Introduction

5.3 Meaning of leverage

5.4 Financial Leverage

- 5.4.1 Measures of Financial Leverage
- 5.4.2 Degree of Financial Leverage
- 5.4.3 Impact of Financial Leverage on Investor's Rate of Return

5.5 Operating Leverage

5.6 Degrees of Operating Leverage

5.7 Combined effect of Financial and Operating Leverage

5.8 Let us Sum Up

5.9 Further Reading

5.10 Answers to Check Your Progress

5.11 Model Questions

5.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- define financial leverage
- explain operating leverage
- describe measurement of operating and financial leveraging
- explain combined effect of operating and financial leveraging.

5.2 INTRODUCTION

This unit explains about leverage. It aims to provide us the information about financial leverage, its measures and degree of financial leverage. We will also discuss on the impact of financial leverage on Investor's rate of return. And at the end of this unit we will discuss about operating leverage, degrees of operating leverage and after that we will discuss the combined effect of financial and operating leverage.

5.3 MEANING OF LEVERAGE

Leverage is the existence of fixed costs among a company's cost. These fixed costs can be classified as :

- Those elements of operating expenses which are fixed in nature, and
- Those non-operating expenses, such as interest payments, which are relatively fixed in nature.

The first, namely fixed operating expenses, determine a company's operating leverage and the second, namely fixed financial expenses, determine a company's financial leverage. Operating leverage arises from fixed operating costs (fixed costs other than financing costs), such as depreciation, salaries, advertising expenditures, and taxes. Financial leverage stems from the presence of fixed financing costs such as interest.

5.4 FINANCIAL LEVERAGE

Financial leverage relates to the financing activities of a company. The sources from which funds can be raised by a company can be those which carry a fixed financial charge or cost and those which do not involve any fixed charge. The sources of funds in the first category consist of various types of long-term debt, including debentures and bonds and preference shares. The second source mainly consists of equity capital. Long-term debts carry fixed rate of interest which is a contractual obligation. The dividend on preference shares is not a contractual obligation but is a fixed charge which must be paid before anything is paid to the equity shareholders.

The use of the fixed-charges sources of funds, such as debt and preference capital along with the owners' capital is described as financial leverage. It is also commonly referred as trading on equity. This is because the financial leverage employed by a company is intended to earn more return on the fixed-charge funds than their costs. This is expected to earn more return to the shareholders. However, it is based on the assumption that the company earns more on the assets that are acquired by funds having fixed cost.

Favourable or positive leverage occurs only when the company earns more than the fixed cost. However, unfavourable or negative leverage occurs

when the company does not earn as much as the cost of funds. Therefore, in situations when the earnings of the company is depressed, financial leverage may bring risk to the company. This is because the company has to pay interest even when its earnings are declining. This is also referred to as financial risk.

5.4.1 Measures of Financial Leverage

The most common measures of financial leverage are the followings :

i. **Debt Ratio :** It is the ratio of debt to the total available funds of the company, i.e. sum of owner's equity and outside debt. The owner's equity can be measured in terms of either book value or the market value.

It is calculated as $D / D + E$
$= D / V$

Where D is the value of debt, E is the value of shareholders' equity and V is the value of total capital (i.e. D + E). D and E may be measured in terms of book value.

ii. **Debt Equity Ratio:** It is the ratio of debt to the total equity. Here too, the equity can be measured in terms of either book value or the market value.

It is calculated as **D/E**, where D is the value of debt and E is the shareholders' equity. The book value of equity is called net worth. Shareholder's equity may be measured in terms of market value.

iii **Interest Coverage :** It is the ratio of earnings before interest and taxes (EBIT) to the interest liability. This is known as coverage ratio i.e. debt coverage ratio or debt service coverage ratio.

It is calculated as $\frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Interest}}$

The first two measures of financial leverage are also known as measures of capital gearing. These measures show the borrowing position of the company at a point of time. The third measure, known as coverage ratio, indicates the capacity of the company to meet fixed financial charges. This measure helps to indicate the financial risk of the company.

5.4.2 Degree of Financial Leverage

The degree of financial leverage (DFL) is defined as the percentage change in earnings per share (EPS) that results from a given percentage change in earnings before interest and taxes (EBIT) and it is calculated as follows.

DFL = Percentage change in EPS divided by Percentage change in EBIT

This calculation produces an index number which if, for example, it is 1.43, this means that a 100 percent increase in EBIT would result in a 143 percent increase in earnings per share. When the economic conditions are good and the company's Earnings before interest and tax are increasing, its EPS increases faster.

The degree of financial leverage is expressed as the percentage change in EPS due to a given percentage change in EBIT.

$$\text{DFL} = \frac{\%\text{ change in EPS}}{\%\text{ change in EBIT}}$$

Financial leverage on the one hand increases shareholders' return and on the other, it also increases their risk. For a given level of EBIT, EPS varies more with more debt. Thus financial leverage is a double edged weapon. It may assure a higher return but with a higher risk. Normally, a trade off between the return and risk will be arrived at to determine the appropriate amount of debt.

5.4.3 Impact of Financial Leverage on Investor's Rate of Return

Let us understand how financial leverage affects investor's return on equity by the following illustration. A company needs a capital of Rs 10,000 to operate. This fund may be brought by the shareholders of the company. Alternatively, a part of this amount may be brought in through debt financing. If the company has money only from the shareholders than the company is not financially leveraged and would have the following balance sheet.

Liabilities	Rs.	Assets	Rs.
Equity Capital	10,000	Cash	10,000

The company starts operations and has the following simplified version of income statement :

Sales (Rs.)	10,000
Expenses (Rs.)	7,000
EBIT (Rs)	3,000
Tax @ 50%	1,500
Net Profit	1,500

We know calculate the return on equity (ROE) :

$$ROE = \frac{\text{Net Profit}}{\text{Equity Capital}}$$

$$= \frac{\text{Rs. 1500}}{\text{Rs. 10000}} = 15\%$$

Now, if the company takes debt at the ratio of 2 : 1 then the return on equity will change. Assuming that the company borrows 10,000 × 2/3 = Rs. 6667 at the rate of 15%, the balance sheet of the company will be as follows :

Liabilities	Rs.	Assets	Rs.
Equity Capital	3,333	Cash	10,000
Debt Capital	6,667		
Total	10,000	Total	10,000

The income statement will be now as follows :

	Rs.
Sales (Rs)	10,000
Expenses	7,000
EBIT	3,000
Interest Charges	1,000
Profit before tax (PBT)	2,000
Tax @ 50%	1,000
Net Profit	1,000

We now calculate the Return on Equity (ROE) :

$$ROE = \frac{\text{Net Profit}}{\text{Equity Capital}}$$

$$= \frac{\text{Rs. 1,000}}{\text{Rs. 3,333}} = 30\%$$

The factors that have contributed to this additional return are the followings :

- Though the company has to pay interest at 15% on borrowed capital, the company has been able to generate more than 15% which is being transferred to the shareholders.
- Interest is a tax deductible expense. The greater the tax rate, the more is the tax shield available to a company which is financially leveraged.



CHECK YOUR PROGRESS

Q.1. Define financial leverage.

.....

.....

Q.2. Define degree of financial leverage.

.....

.....

5.5 OPERATING LEVERAGE

High fixed costs and low variable costs provide the greater percentage change in profits both upward and downward. If a high percentage of a company's cost are fixed, and do not decline when demand decreases, this increases the company's business risk. This factor is called operating leverage.

If a high percentage of a company's total costs are fixed, the company is said to have a high degree of operating leverage. The degree of operating leverage (DOL) is defined as the percentage change in operating income (or EBIT) that results from a given percentage change in sales. In effect, the DOL is an index number which measures the effect of a change in sales on operating income, or EBIT. When fixed costs are very large and variable costs consume only a small percentage of each rupee of revenue, even a slight change in revenue will have a large effect on reported profits .Operating leverage, then, refers to the magnified effect on operating earnings (EBIT) of any given change in sales. One of the most dramatic examples of operating leverage is in the airline industry, where a large portion of total costs are fixed.

Thus, in general terms, operating leverage is defined as the percentage change in the earnings before interest and taxes relative to a given percentage change in sales.

5.6 DEGREES OF OPERATING LEVERAGE

The degree of operating leverage is also defined as the change in a company's earnings before interest and tax due to change in sales. Since variable costs change in direct proportion of sales and fixed costs remain constant, the variability in EBIT when sales change is caused by fixed costs. Operating leverage refers to the use of fixed costs in the operation of a firm. A firm will not have operating leverage if its ratio of fixed costs to total cost is nil. For such a firm, a given change in sales would produce same percentage change in the operating profit or earnings before interest and taxes.

Fixed operating costs include administrative costs, depreciation, selling and advertisement expenses etc. With positive (i.e. greater than zero) fixed operating costs, a change of 1% in sales produces a more than 1% change in Earnings Before Interest and Taxes (EBIT). A measure of this effect is referred to as the Degree of Operating Leverage (DOL). Thus DOL measures the responsiveness of operating income (EBIT) to change in the level of output and indicates its impact on profits when the levels of sales vary. Specially, DOL is defined as the percentage change in operating income (EBIT) divided by the percentage change in the level of output.

$$DOL = \frac{\% \Delta EBIT}{\% \Delta D} = \frac{\Delta EBIT / EBIT}{\Delta Q / D}$$

In other words,

$$DOL = \frac{Q\ (P–V)}{Q\ (P–V) – F}$$

Where Q = Quantity produced and sold
P = Selling price per unit
V = Variable cost per unit
F = Operating fixed costs



Exercise : 5.1

A company sells products for Rs. 100 per unit, has variable operating costs of Rs. 50 per unit and fixed operating costs of Rs. 50,000 per year. Show the various levels of EBIT that would result from sale of (i) 1,000 units (ii) 2,000 units and (iii) 3,000 units.

	Decrease	Base level	Increase
Sales in units	1,000	2,000	3,000
Sales revenue (Rs.)	1,00,000	2,00,000	3,00,000
Less : Variable operating cost (Rs.)	50,000	1,00,000	1,50,000
Sales revenue-Variable cost (Rs.)	50,000	1,00,000	1,50,000
Less : Fixed Operating Cost (Rs.)	50,000	50,000	50,000
EBIT (Rs.)	0	5 0,000	1,00,000
Percentage (Decrease/Increase)	–100%		+100%

Interpretation :

From the above illustration, we get the following result :

(i) A 50 percent increase in sales (from 2,000 to 3,000 units) results in a 100 percent in EBIT (from Rs. 50,000 to Rs. 1, 00,000).

(ii) A 50 percent decrease in sales (from 2,000 to 1,000 units) results in a 100 percent decrease in EBIT (from Rs. 50,000 to zero).



Exercise : 5.2

A company sells its products for Rs. 50 per unit, has variable costs of Rs. 30 per unit and fixed operating costs of Rs. 17,000 per year. Its current level of sales is 1000 units.

(i) Determine the degree of operating leverage.

(ii) What will happen to EBIT if sales change (i) rise to 1350 units and (ii) decrease to 850 units ?

Solution : EBIT at various sales levels

Sales in units	850 units	1000 units	1250 units
Sales revenue (Rs.)	42,500	50,000	62,500
Less : Variable cost (Rs)	25,500	30,000	37,500
Sales revenue-Variable cost	17,000	20,000	25,000
Less : Fixed operating cost	17,000	17,000	17,000
EBIT	0	3,000	8,000

Interpretation :

(i) A decrease of 25% in sales volume (from 1000 units to 850 units) leads to 100 percent decline in EBIT (from Rs. 3,000 to zero).

(ii) An increase of 25% in sales volume (from 1000 units to 1250 units) results in 1.66% increase in EBIT.

The two illustrations (5.1 and 5.2) show that when a company has fixed operating costs, an increase in sales volume results in a more than

proportionate increase in EBIT. Similarly, a decrease in the level of sales has an exactly opposite effect. This is called as operating leverage, the former being favourable leverage, while the latter is unfavourable.

Thus it is clear that the greater the DOL, the more sensitive is EBIT to a given change in unit sales. DOL is therefore a measure of company's or business risk. Business risk refers to the uncertainty or variability of the company's EBIT.

5.7 COMBINED EFFECT OF FINANCIAL AND OPERATING LEVERAGE

The combined effect of two leverages can be quite significant for the earnings available to ordinary shareholders. They cause wide fluctuation in earnings per share for a given change in sales. If a company employs a high level of operating and financial leverage, even a very small change in the level of sales will cause significant effect on the earning per share.

The operating leverage has its effects on operating risk and is measured by the percentage change in EBIT due to percentage change in sales. The financial leverage has its effects on financial risk and is measured by the percentage change in EPS due to percentage change in EBIT. Since both these leverages are closely concerned with the ability to cover fixed charges, if they are combined, the result is total leverage and the risk associated with combined leverage is known as total risk.

The degree of combined leverage is expressed in the following manner

DCL = DOL × DFL, where DCL = Degree of combined leverage
DOL = Degree of operating leverage
DFL = Degree of financial leverage

Substituting the values of DOL and DFL, we have :

$$DCL = \frac{\%\text{ change in EBIT}}{\%\text{ change in sales}} \times \frac{\%\text{ change in EPS}}{\%\text{ change in EBIT}}$$

$$= \frac{\%\text{ change in EPS}}{\%\text{ change in sales}}$$

$$DCL = \frac{\text{Sales revenue} - \text{Variable cost}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBIT} - I} = \frac{\text{Sales revenue} - \text{Variable cost}}{\text{EBIT} - I}$$

A greater DOL or DFL will raise DCL. DCL is a measure of the total risk or uncertainty associated with shareholders' earnings that arises because of operating and financial leverage. Operating and financial leverage can be obtained in a number of different ways to obtain a desirable degree of total leverage and an acceptable level of total risk.



Exercise : 5.3

Suppose company FGL ltd. sells 1000 units at Rs. 10. It has a variable cost of Rs. 3 per unit and fixed costs of Rs. 4.00. EBIT is Rs. 3000 and Interest amount is Rs. 1000. Fixed cost is Rs 4000.

(i) Calculate DCL.

Solution :

$$DCL = DOL \times DFL$$

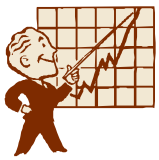
$$DOL = \frac{Q\ (P - V)}{Q\ (P - V) - F} = \frac{1000\ (10 - 3)}{1000\ (10 - 3) - 4000} = 2.33$$

$$DFL = \frac{EBIT}{EBIT - I} = \frac{3000}{3000 - 1000} = 1.5$$

$$DCL = 2.33 \times 1.5 = 3.5$$

Interpretation :

This means that a output of 1000 units, a 1% variation in the quantity produced and sold will cause a 3.5 change in EPS.



CHECK YOUR PROGRESS

Q.3. Fill in the blanks with appropriate words :

i) _____ refers to the incurrence of fixed operating costs in the company's income statement.

ii) A simple indication of _____ is to look at how earnings are affected by a change in sales.

iii) Total leverage is a measure of _____ risk. It measures how _____ is affected by a change in sales.

iv) Total leverage is the _____ of _____ and _____.

Q.4. A company's sales, variable costs and fixed cost amount to Rs. 75,00,000, Rs. 42,00,000 and Rs. 6,00,000 respectively. It has borrowed Rs. 45,00,000 at 9 percent and its equity capital totals Rs. 55,000.

(i) What are the operating, financial and combined leverage of the company ?

(ii) If the sales drop to Rs. 50,00,000, what will the new EBIT be ?

Q.5. An income statement of ACC ltd. is as follows :

	Rs.
Sales	9,60,000
Variable Cost	5,60,000
Earning before Fixed Cost	4,00,000
Fixed Cost	2,40,000
	1,60,000
Interest	60,000
Earning before tax	1,00,000
Tax	50,000
Net Income	50,000

Compute the degree of (i) Operating Leverage (ii) Financial Leverage and (iii) Combined Leverage



5.8 LET US SUM UP

In this unit we have discussed the following :

- Leverage is the existence of fixed costs among a company's cost.
- There are three types of leverage, namely, financial, operating and combined.
- Financial leverage results from the presence of fixed financial charges such as interest on debt and dividend on preference shares.
- Financial leverage is defined as the ability of a company to use fixed financial charges to magnify the effect of changes in EBIT on the earnings per share (EPS).

- The degree of financial leverage (DFL) is defined as the percentage change in earnings per share (EPS) that results from a given percentage change in earnings before interest and taxes (EBIT) and it is calculated as DFL = Percentage change in EPS divided by Percentage change in EBIT.
- Operating leverage refers to the company's ability to use fixed operating costs to magnify the effect of changes in sales on its operating profits (EBIT).
- The degree of operating leverage (DOL) is defined as the percentage change in operating income (or EBIT) that results from a given percentage change in sales.
- The combined leverage refers to the combination of operating leverage and financial leverage.



5.9 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I.M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



5.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 :

Financial leverage relates to the financing activities of a company.

Ans to Q. 2. :

The degree of financial leverage is defined as the percentage change in earnings per share that results from a given percentage change in earnings before interest and taxes.

Ans to Q. 3. :

1. Operating leverage, 2. Operating leverage, 3. Total risk, EPS, 4. Product, Operating leverage, Financial leverage.

Ans to Q. 4. :

1. (i) 1.22, 1.18, 1.44 (ii) Rs. 16,00,000

Ans to Q. 5. :

1. (i) 2.50 (ii) 1.60 (iii) 4.00



5.11 MODEL QUESTIONS

1. What is meant by the term "leverage" ?
2. What are the types of risk generally associated with financial leverage ?
3. Explain the concept of financial leverage. Show the impact of financial leverage on the Return on Equity.
4. Outline the concept of Operating leverage.
5. Write the formula for the Degree of Combined Leverage.
6. Calculate the degree of operating leverage, degree of financial leverage and degree of combined leverage :

	A	B
Output in units	70,000	25,000
Fixed costs	10,000	13,000
Variable costs / per unit	0.2	1.5
Interest on borrowed funds	5,000	18,000
Selling price per unit	0.6	0.5

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UNIT - 6 : CAPITAL STRUCTURE

UNIT STRUCTURE

6.1 Learning Objectives

6.2 Introduction

6.3 Meaning and Definition of Capital Structure

6.4 Difference between Captial Structure and Capitalisation

6.5 Features of an Ideal Capital Structure

6.6 Factors Affecting Capital Structure

6.7 Theories of Capital Structure
- 6.7.1 Net Income Approach
- 6.7.2 Traditional Approach
- 6.7.3 Net Operating Income Approach
- 6.7.4 Modigliani and Miller Approach

6.8 Let us Sum Up

6.9 Further Reading

6.10 Answer to Check Your Progress

6.11 Model Questions

6.1 LEARNING OBJECTIVES

After going through this unit, you will be able to :

- discuss the significance and meaning of capital structure
- describe the characteristics of an ideal capital structure
- outline the factors affecting the capital structure
- learn the theories of capital structure

6.2 INTRODUCTION

Every company requires funds for its operations. Business suffers if funds are not adequate, and if funds are not managed properly then the entire organization suffers. It is important for organizations that correct estimates of capital needs are determined and an optimum capital structure is maintained at all times. In this unit, we shall be discussing about the meaning and definition of capital structure. The unit will also cover the

theories of capital structure and the characteristics of an ideal capital structure.

6.3 MEANING AND DEFINITION OF CAPITAL STRUCTURE

The term capital structure ordinarily implies the proportion of debt and equity in the capital of a company. According to Weston and Brigham (1965), “capital structure is the permanent financing of the firm represented by long-term debt, preferred stock and net worth”. According to Grestenberg, “Capital structure of a company refers to the composition or make-up of its capitalization and it includes all long-term capital resources viz. : loans, reserves, shares and bonds. J. J. Hampton (1995) defines capital structure as the combination of debt and equity securities that comprise a firms financing of its assets. Thus, the capital structure of an organization refers to permanent financing and it is composed of debt and equity securities. Capital structure is made up of long-term debt, preference share capital and shareholders’ fund or equity.

It is important to note here that the terms capitalization and capital structure are not synonymous. Capitalization, on one hand, refers to the total amount of securities issued by a company. On the other hand, capital structure refers to the kinds of securities and proportionate amounts that make up capitalization. As mentioned earlier, for raising long-term finances, a company may issue three types of securities, viz., equity shares, preference shares and debentures. Capital structure thus, refers to the proportion among these types of securities.

6.4 DIFFERENCE BETWEEN CAPITAL STRUCTURE AND CAPITALIZATION

Capital Structure	Capitalisation
It refers to the *kind* of securities that are used.	Refers to the *amount* of securities that are to be used
It is concerned with the composition or make-up of the amount of long-term financing.	It is concerned with the amount of long-term investment.
It is concerned with the qualitative aspect of financial planning of an enterprise.	It is concerned with the quantitative aspect of financial planning of an enterprise.
It refers to the kinds of securities and the proportionate amounts that make-up capitalization.	Its emphasis is on total amount of securities issued by a company.

Based on the three types of securities: equity shares, preference shares and debentures, the capital structure of the company may be of the following forms :

i. Equity shares only

ii. Equity and Preference shares

iii. Equity shares and Debentures

iv. Equity shares, Preference shares and Debentures.

Long term loans and retained earnings are also a part of capital structure



LET US KNOW

On the basis of nature and type of capital, capital structure is classified as simple and complex. When the capital structure is composed of a single source, it is called as *simple capital structure*. For example, a capital structure comprising only of equity shares is a simple capital structure. When the capital structure is composed of more than one source of capital, which are not identical, is called *complex capital structure*. For example, if the capital structure is composed of preference shares, equity shares, debentures, and retained earnings, it is known as complex capital structure.

6.5 FEATURES OF AN IDEAL CAPITAL STRUCTURE

The term ideal capital structure or optimum capital structure refers to the safest and the most economical capital structure or the best ratio between the various types of securities. The ideal capital structure ensures that the mixture of debt and equity securities is in relation to the amount of earnings. Thus, ideal capital structure or optimum capital structure refers to the best combination of debt and equity capital.

A sound capital structure has the following features :

1. **Profitability :**An appropriate capital structure must be advantageous for the company. The company should focus on using maximum leverage at a minimum cost. In other words, a capital structure should generate maximum returns without increasing additional costs.

2. **Solvency :** The ideal or optimum capital structure should be used to avoid the significant risk of use of excessive debt which threatens the solvency of the company.
3. **Flexibility :** The capital structure of the company should be flexible, that is, it should be possible to increase or reduce, without incurring abnormally high cost of either owned or borrowed capital. This is important to adopt changes in the capital structure based on changing conditions.
4. **Simple :** An ideal capital structure is easy and simple to understand.
5. **Economy :** A good capital structure should ensure that the cost of capital is minimum. The considerations regarding payment of interests and dividend should be carefully evaluated.
6. **Continued existence and growth :** The capital structure should not adversely affect the survival and growth of the firm. The ideal capital structure should be designed in such a way that it helps in the growth of the company in the long run.



CHECK YOUR PROGRESS

Q.1. Define Capital Structure.

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Q.2. State two features of capital structure.

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6.6 FACTORS AFFECTING CAPITAL STRUCTURE

The capital structure of a firm depends on a large number of factors such as leverage, nature and size of business, growth of the company, etc. The factors affecting the capital structure are discussed below :

1. **Financial leverage :** The use of long term fixed interest bearing debt and preference capital along with equity share capital is called financial leverage or trading on equity. The use of long-term debt magnifies the earnings per share of the firm and thus yields a higher return than the cost of debt. However, leverage can operate adversely also if the rate of interest on long-term loans is more than the expected rate of earnings. The firm must therefore, maintain a balance in the use of leverage.

2. **Growth and stability :** The capital structure of a firm is greatly influenced by the growth and the stability of the sales of the firm. If the sales of the firm remain fairly stable then the firm can take the benefit of financial leverage. Similarly, greater the rate of growth of sales, greater can be the use of debt in the capital structure.

3. **Cost of capital :** Cost of capital refers to the minimum return expected by the suppliers of capital. The capital structure should aim at minimising the cost of capital. Usually, debt is a cheaper source of finance compared to preference and equity capital due to a fixed rate of interest, legal obligation to pay interest, and repayment of the loan amount. Equity, on the other hand, is costlier as the equity shareholders undertake the highest risk as they cannot be paid back except at the time of the winding up of the company. A firm should therefore, must try to minimize the overall cost of capital by formulating an ideal capital structure.

4. **Risk :** There are two types of risk, viz., business risk and financial risk. Business risk refers to the variability in the earnings before interest and taxes. Financial risk, on the other hand, refers to the risk of a firm that may not be able to cover its fixed financial costs. Financial risk of a company is directly related to the capital structure of a firm. A firm with no debt financing has no financial risk. The extent of financial risk depends on the leverage of the firm's capital structure. Thus, a firm has to reach a balance between the financial risk and the risk of non-employment of debt capital to increase its market value.

5. **Cash flow ability to service debt :** A firm which shall be able to generate larger and stable cash inflows can employ more debt in the capital structure as compared to the one which has unstable and lesser cash inflows.

6. **Nature and size of the firm :** Nature and size of the firm has a lot of influence in its capital structure. Large concerns or public utility concerns can employ more debt because of stability and continuity of earnings because of its size. On the other hand, a concern which cannot provide stable earnings due to the nature of its business will have to rely mainly on equity capital.

7. **Control :** When the management does not want to dilute the control over the firm, funds are raised through fixed interest bearing debt capital. However, caution must be exercised while employing debt funds as too much debt capital might create a lot of obligation of the firm towards the lenders. This might in turn lead to some loss of control.

8. **Flexibility :** Capital structure of the firm should be flexible. It should be such that it is capable of being adjusted according to the needs of the changing conditions. It should be possible to raise additional funds, whenever the need be, without much of difficulty and delay.

9. **Requirements of investors :** The requirement of investors is another factor that influences the capital structure of a firm. It is necessary to understand the requirements of the investors. Investors may be institutional investors or they may be individual investors. Some investors are risk averse whereas some of them are ready to take risk. Equity shares are suitable for the risk loving investors whereas debentures are more suitable for the risk averse.

6.7 THEORIES OF CAPITAL STRUCTURE

Different kinds of theories have been propounded by different authors to explain the relationship between capital structure, cost of capital and value of the firm. The capital structure theories can be demarcated into two types : i) Relevance of Capital Structure and ii) Irrelevance of Capital Structure. The relevance view states that capital structure decisions are relevant for the firm and they affect the value of the firm whereas, the irrelevance theories state the capital structure of the firm does not affect the firm value.



LET US KNOW

It is important to understand two terms related to capital structure : *levered* and *unlevered*. Levered firms are those which have debt in their capital structure. Unlevered firms are those that do not use any debt in their capital structure; they have only equity in their capital structure.

Two prominent theories of the relevance group are : Net Income approach and Traditional approach and two prominent theories of irrelevance group are : Net Operating Income approach and Modigliani and Miller approach. Let us now discuss these theories in the following sections.

6.7.1 Net Income Approach

The net income approach states that the capital structure of a firm creates an impact on the value of the firm. Thus, capital structure is important as a determinant of a firm's value. According to this approach, the average cost of capital (k_0) of a firm decreases as the debt proportion in its capital structure increases. The cost of equity (k_e) and cost of debt (k_d) are independent of each other. Since the cost of debt (k_d) is usually less than the cost of equity (k_e), because debt is less risky as compared to equity from investor's point of view, an increase in leverage results in a decrease in overall cost of capital (k_0).

If we assume the earnings to be constant forever, the value of the firm can be calculated.

Value of the firm 'V' is

V = EBIT (Net Income) / K_0 (Overall cost of capital)

OrK_0 = EBIT / V

The value of the firm is also the sum total of values of all its securities, i.e.,

V = D + S + P

Where D is the market value of debt, S is the market value of equity, and P is the market value of preference capital. As the cost of capital, K_0, is the weighted average cost of capital (WACC), it can also be expressed as :

$$K_0 = \frac{K_d \times D}{D+S+P} + \frac{K_e \times E}{D+S+P} + \frac{K_p \times P}{D+S+P}$$

To make the discussion simpler, let us assume that our capital structure consists only of debt and equity. Financial leverage or use of debt benefits a firm in the following ways :

i) Debt is less costly than equity

ii) Debt bears a tax advantage that lowers its effective costs

Let us take an example to understand the net income approach. Company A has INR 10,000, 5 per cent debt with EBIT of INR 5,000 and the cost of shareholders' funds is K_e = 10%. The cost of debt funds for the firm is 5 per cent per annum.

The value of the firm is :

EBIT	5,000
Interest	500
Equity Earnings	4,500
Cost of Equity	0.10
Market value of equity	45,000
Market value of debt	10,000
Value of the firm	55,000

Overall cost of capital of firm A is, K_0 = EBIT/ Value of the firm
= 5,000/ 55,000 = 9.09%

Now, consider another Company B, similar in all respects to Company A except for its capital structure. Company B has 3,500 shares at INR 10 each at par and holds debt of INR 20,000 at 5 per cent per annum. As already stated, the business risk and EBIT of the company B is same as that of company A.

The value of the firm is :

EBIT	5,000
Interest (20,000 @ 5%)	1000
Equity Earnings	4,000
Cost of Equity	0.10
Market value of equity	40,000
Market value of debt	20,000
Value of the firm	60,000

Overall cost of capital of firm A is, K_0 = EBIT/ Value of the firm
= 5,000/ 60,000 = 8.33%

Thus, we see that for Company B, there is a lower cost of capital. The reason for the decrease in overall cost of capital is increased leverage, i.e., more and more use of debt.

The net income approach states that for maximum benefit to a firm's value, its debt proportion should be increased or rather maximized. Thus, the extreme net income postulate favors maximization of debt by all firms in order to enhance their market value. Figure 6.1 shows the graphical representation of the net income approach.

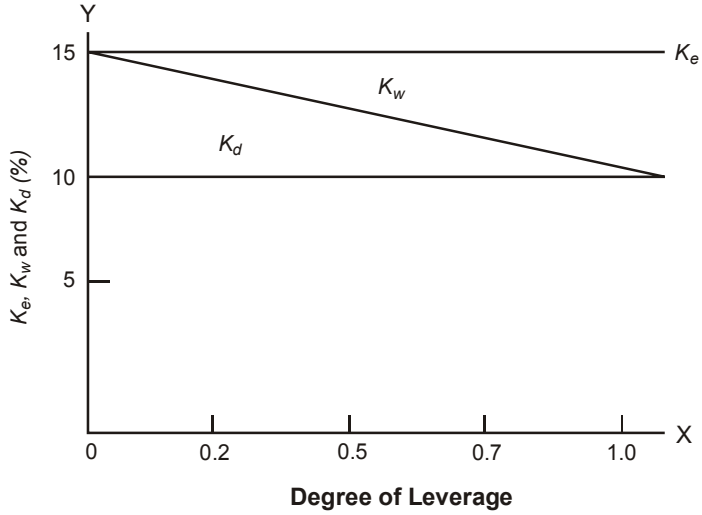


Figure - 6.1 : The effect of leverage on cost of capital under net income approach

6.7.2 Traditional Approach

The traditional view holds that there is an optimal capital structure. At this optimal capital structure, the weighted average cost of capital (WACC) is minimized thereby maximizing the value of the firm. The traditional theory is in continuation of the net income approach. Like the net income approach, the traditional view also argues that there exists benefit to the firm as well as the shareholders of the firm that employs high leverage.

According to this theory, the value of the firm can be increased initially or the cost of capital can be decreased by using more debt as debt

is a cheaper source of finance as compared to equity. However, beyond a particular point, the cost of equity increases because increased debt increases the risk perception of the equity share-holders. The advantage of cheaper debt at this point of capital structure is offset by the increase in cost of equity. Thus, the overall cost of capital, according to this theory, decreases up to a certain point, remains more or less constant for moderate increase in debt; and increases or rises beyond a certain point.

Let us take the example of firm A whose earning is INR 2,00,000. We assume three hypothetical situations : i) where the firm employs no debt ii) where the firm employs INR 4,00,000 debenture at 5 per cent per annum and iii) where the firm employs INR 6,00,000 debenture at 6 per cent per annum. The corresponding cost of equity when the firm employs no debt is 10 percent, when the firm employs INR 4,00,000 debt is 11% and when the firm employs INR 6,00,00 debt is 13%.The cost of capital of the firm in the three situations is as follows :

	No debt	**INR 4,00,000 debt**	**INR 6,00,000 debt**
EBIT	2,00,000	2,00,000	2,00,000
Less : Interest		(5% of Rs 4,00,000) =20,000	(6% of Rs 6,00,000) =36,000
Equity Earnings =(EBIT-Interest)	2,00,000	2,00,000-20,000 =1,80,000	2,00,000-36,000 =1,64,000
Cost of equity	0.10	0.11	0.13
Market value of equity = (Equity earnings / Cost of equity)	2,00,000/0.10 =20,00,000	1,80,000/0.11 =16,36,363	1,64,000/0.13 =12,61,538
Market value of debt		4,00,000	6,00,000
Market value of firm = (Market value of Equity +Market value debt)	20,00,000	20,36,363	18,61,538
Overall cost of capital = (EBIT/Market value of the firmx100)	2,00,000/20,00,000 =10%	2,00,000/20,36,363 =9.8%	2,00,000/18,61,538 =10.7%

Thus, it is clear from the above example that as the value of debt increases the cost of capital decreases but beyond a certain point of leverage the cost of capital increases and the value of the firm decreases. Figure 6.2 shows the graphical representation of the traditional approach of capital structure.

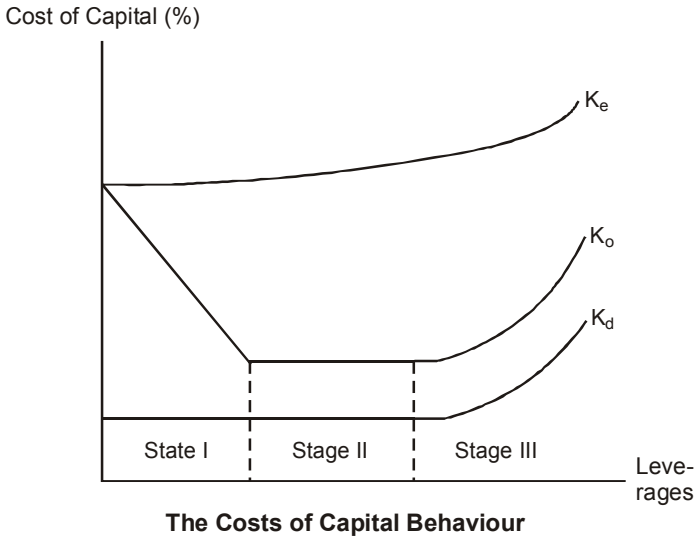


Figure - 6.2 : Traditional approach to capital structure

6.7.3 Net Operating Income Approach

According to the net operating income approach, there is no optimal capital structure for any firm, that is, capital structure is irrelevant for a given firm. It is diametrically opposite to the net income approach. According to this approach, change in the capital structure of a company does not affect the market value of the firm and the overall cost of capital remains the same irrespective of the debt-equity mix of the ratio of leverage.

This theory presumes that :

i) The market capitalizes the value of the firm as a whole

ii) The business risk remains constant at every level of debt equity mix

iii) There are no corporate taxes

The reasons propounded for such assumptions are that the increased use of debt increases the financial risk of the equity shareholders and hence the cost of equity increases. On the other hand, the cost of debt

remains constant with the increasing proportion of debt as the financial risk of the lenders is not affected. Thus, the advantage of using the cheaper source of funds is exactly offset by the increased cost of equity.

Say, for example, a firm X is under two conditions : Condition A and Condition B. Under both the conditions, the firm is similar in its functioning and size except that under condition B, the firm has more debt than under Condition A. the table below shows the financial data for the firm :

Firm X	**Condition A**	**Condition B**
EBIT	10,000	10,000
Overall cost of capital	0.16	0.16
Total value of firm	62,500	62,500
Interest on debt @10%	1,500	3,000
Total value of debt	15,000	30,000
Total value of equity	47,500	32,500
Debt-Equity ratio	0.32	0.92
PAT available to shareholders	10,000–1,500 =8,500	10,000–3,000 =7,000

Cost of equity of firm X under condition A = Equity earnings / Value of equity
= 8,500/47,500 = 17.8%

Cost of equity of firm X under condition B = Equity earnings / Value of equity
= 7,000/32,500 = 22%

Thus, we see that as the debt proportion rises in Firm X under the condition B, its cost of equity also rises as compared to the condition A. Thus, at lower cost of debt, as the firm goes on increasing the debt proportion its cost of equity rises due to increase in financial leverage resulting in financial risk. The advantage of lower cost of debt is offset by higher cost of equity. As the cost of debt increases, the cost of

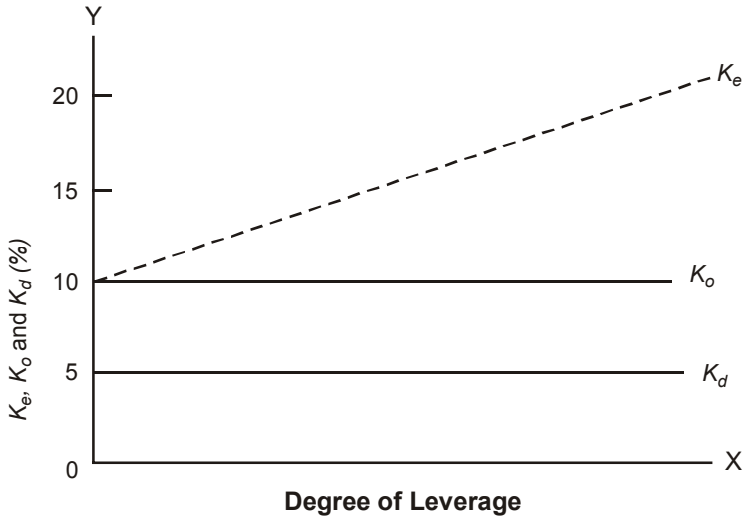


Figure - 6.3 : The Net Operating Income Approach

CHECK YOUR PROGRESS

Q.3. State four factors affecting capital structure.

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Q.4. What is meant by Net Operating Income.

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equity decreases. So the change in the cost of debt proportion is offset by the change in the cost of equity proportion. Ultimately, there is no net change in the value of the firm. Figure 6.3 shows the graphical representation of the net operating income approach.

6.7.4 Modigliani and Miller Approach

In 1958, Modigliani and Miller (abbreviated as MM) published their research stating that the value of a firm does not change with the change in the firm's capital structure. However, their hypothesis was

made under the assumption of no corporate taxes, and is often referred to as "MM without taxes". In 1963, they corrected their research to show the impact of including corporate taxes on the firm's value and is often referred to as "MM with taxes".

Assumptions of the MM Model

- There are perfect capital markets with perfect information available to all investors and no transaction costs.
- The investors are rational. They evaluate risk and return of each investment proposal rationally before investing. Rational investors are able to substitute personal leverage for corporate leverage. They are able to create home-made leverage if the company is unable to provide them any advantage.
- The firms can be classified into distinct homogeneous risk classes.
- There is zero tax environment.
- Earnings are perpetual. Future earnings are known and definite.
- Investment decisions are known and definite.
- Only debt and equity are issued in case the firm needs funds and debt is risk less.
- There are no costs of financial distress and liquidation.
- Individuals can borrow as cheaply as corporations, i.e., r = k. If investors and firms can borrow at the same rate, then the investors can neutralize any capital structure decision of the firm by creating home-made leverage.
- There are no transaction costs in the arbitrage process.

Propositions

MM model propositions are based on the following premises:

- The total market value of the firm is independent of its capital structure.
- Cost of equity, k_e, increases to exactly offset the use of cheaper debt.
- Required rate of return for investment is independent of the financing decisions of the firm.

- The required rate of return for investment is dependent on the earnings of the firm.

The MM propositions can be put forward as Proposition I and Proposition II.

The first proposition of the MM model is, “the value of a firm falling in a particular risk category is equal to its expected operating income divided by the discount rate appropriate to its risk class. The value of the firm is independent of its capital structure”.

Proposition I states that the value of the firms falling in a similar risk category is determined by its real assets, and not by its mode of financing its assets. The investment and financing decisions are two separate functions of the firm and the firm’s value depends upon the investing decisions and not on the financing decisions. That means,

$$V_L = V_U$$

where V_L is the value of the levered firm (that has debt in its capital structure) and V_U is the value of the unlevered firm (no debt).

Proposition I of the MM theory

According to Proposition I, they argued that the value of a firm remains the same and is independent of the amount and cost of debt. Similar to the net operating income approach, they stated that as the proportion of debt is increased, the cost of equity also increases thereby having no impact on the overall cost of capital. Thus, WACC remains constant. Thus, capital structure is irrelevant for a firm.

The Arbitrage Process

It is important to understand how MM proposition I works. The simple logic of proposition I is that two firms with identical assets, irrespective of how these assets have been financed, cannot command different market values. Suppose, this were not true and two identical firms, except for their capital structures, have different market values. In this situation, arbitrage (or switching) will take place to enable investors to engage in the personal or homemade leverage as against the corporate leverage, to restore equilibrium in the market.

Suppose there are two firms U (an unlevered firm) and L (a levered firm) which have identical assets. Relevant financial particulars of the two firm are shown below :

	FIRM U	**FIRM L**
Operating income (EBIT)	150,000	150,000
Interest	0	60,000
Equity earnings	150,000	(150,000 – 60,000) = 90,000
Cost of equity	0.15	0.16
Market value of equity	(150,000/0.15) = 1,000,000	(90,000/0.16) = 562,500
Cost of debt	—	0.12
Market value of debt	0	500,000
Market value of the firm	1,000,000 (is same as market vaue of equity)	(500,000 + 562,500) = 1,062,500
Average cost of capital	(150,000/1,000,000) = 0.15	(150,000/1,062,500) = 0.1412

Thus, it can be seen that the value of the levered firm L is higher than that of the unlevered firm even though both the firms have the same operating income and belong to the same risk class. MM proposition I argues that such a situation cannot persist because equity investors would do well to sell their equity in firm L (the firm which is valued more) and invest in firm U (the firm which is valued less) with personal leverage. So, if an investor owns 10% equity in firm L, he would do well to :

1. Sell his equity in firm L for Rs. 56,250 (10% of 562,500)
2. Borrow Rs. 50,000, an amount equal to 10% of L's debt at an interest of 12%, and
3. Buy 10% of firm U's equity for Rs. 100,000

It is important to note that while the investor collects Rs. 106,250 (Rs. 56,250 as sale proceeds of firm L's shares and Rs. 50,000 as borrowings), his investment is only Rs.100000 leaving him with a surplus amount of Rs. 6,250. Yet his income remains the same :

	Old income from investment in L	**New income from investment in U**
10% of firm's equity income	9,000 (10% of equity earnings of 90,000)	15,000 (10% of equity earnings of 150,000)
12% interest on Rs. 50,000 loan	—	(6.000)
	9,000	9,000

If the investor invests the surplus amount of Rs. 6,250 also, his new income will be greater than his old income. His risk exposure remains unchanged because he has merely replaced Rs. 50,000 of personal borrowing for his share of firm L's corporate borrowing. In other words, he has substituted homemade leverage for corporate leverage.

When investors sell their equity in firm L and buy equity in firm U, the market value of the firm L will tend to decline and the market value of the firm U will tend to increase. This process continues until both the firms have the same market value.

Proposition II of the MM theory

Proposition II of the MM theory states that the cost of equity is a linear function of the firm's debt equity ratio. It states that "the expected return on equity is equal to the expected rate of return on assets, plus a premium. The premium is equal to the debt-equity ratio times the difference between the expected return on assets and the expected return on debt."

Formula for Proposition II :

$$R_E = R_O + (R_o - R_D) (D/S)$$

where R_E is the required return on equity, R_O is the overall required return on an unlevered firm, R_D is the required return on debt, D is the market value of debt and S is the market value of equity in the capital structure.

Let us look at this example to understand the concept better. Xenon pharmaceuticals currently is an all-equity financed company. Its financials are as follows :

Expected operating income :	Rs. 4,000,000
Number of shares :	1,000,000
Earnings per share :	Rs. 4
Dividend per share :	Rs. 4
Price per share :	Rs. 20
Market value of shares :	Rs. 20,000,000

Since it has an all-equity capital structure, return on equity will be :

$R_E = R_O$ = equity earnings /market value of equity

= 4,000,000 / 20,000,000

= 0.20 or 20%

If Xenon pharmaceuticals switch to a debt equity ratio of 1:1 (a capital structure in which debt and equity are in equal proportions) with Rs. 1,000,000 debentures carrying an interest rate of 15%, the expected return on equity will be :

$$R_E = R_O + (R_o - R_D)\ (D/S)$$
$$R_E = 0.20 + (0.20 - 0.15)\ (1)$$
$$R_E = 0.20 + (0.05)$$
$$R_E = 0.25 \text{ or } 25\%$$

The expected rate of return on equity of a levered firm increases in proportion to the debt equity ratio, expressed as market value. This is explained by the fact that for low levels of debt, the firm's debt is considered risk free. However, as the debt proportion increases due to

cheaper cost, the bankruptcy cost of the firm increases. The bankruptcy risk or default risk occurs due to the firm's inability to pay off its interest on debt from its earnings. As risk of default increases, the equity owners demand more return to compensate for such higher risks. Thus, the cost of equity rises with the rise in the financial risk of the firm. Therefore, as the debt equity ratio increases, so does the cost of equity. Thus, the resultant effect on the firm value is zero.

Now, as the amount of debt increases due to its low cost, the financial risk of the firm continues to increase. Thus, high level of debt enhances the default risk of the firm so much so that the new debt investors demand high return because their investment with the firm is exposed to high risk of default. Now, as the cost of debt increases, the cost of equity starts increasing at a slower rate and later on starts decreasing. The cost of equity declines due to high debt payments, as low level of earnings are left for the shareholders. Also, the reason for decline in the cost of equity is that with increased debt, the firm's business risk is partially transferred to the debt holders. In extreme leveraged condition, they not only own part of the assets but also bear the risk of the firm. Thus, as risk is directly proportional to the rerun, the total value of the firm remains the same. Hence, any combination of debt/equity is as good as another. The firm's market value is independent of its capital structure.

MM Model with Corporate Tax

The real world is quite different from the world explained by MM Model and one of the differences between the MM world and the real world is the presence of taxes. In the real world, investors (both individuals and firms) do have to pay taxes. Modigliani and Miller, in their article of 1963 corrected their hypothesis for this assumption.

In the previous MM model without taxes, we discussed that with the use of cheaper debt, the cost equity increases. Now in the condition of tax environment, the debt further economizes as it incurs a tax advantage. The value of earnings available to the shareholders increases as tax liability decreases. Thus, the overall cost of capital, k_0, decreases by increasing the proportion of cheaper debt in firm's capital structure, till the point the

firm incurs taxable profits. Therefore, leveraging tends to further lower the overall cost of capital of the firm and increases the value of the firm. Under extreme leverage, we can say that the value of the firm is maximized and the overall cost of capital is minimized.

The formulas for MM model with taxes are as follows :

$$V_U = EBIT\ (1- t)\ /\ R_U$$

where V_U is the value of the unlevered firm, EBIT is the earnings before interest and taxes, *t* is the corporate tax rate and R_U is the required return for an unlevered firm.

$$V = D + S$$

Where V is the market value of the firm, D is the market value of the debt in the capital structure and S is the market value of the equity in the capital structure.

The main formulas for MM with taxes are discussed below :

$$V_L = V_U + t \times D$$

Where V_L is the value of the levered firm, V_U is the value of the unlevered firm, *t* is the corporate tax rate and D is the level of debt in the capital structure.

Now, $$R_E = R_O + (R_O - R_D)\ (D/S)\ (1- t)$$

where R_E is the required return on equity, R_O is the overall required return on an unlevered firm, R_D is the yield to maturity on outstanding bonds, D is the market value of debt in the capital structure, S is the market value of equity in the capital structure and *t* is the corporate tax rate.

As can be observed from the formula, MM proposition with taxes includes the term (1 – *t*). The value of (1 – *t*) is always less than 1. So, the required return on equity or the cost of equity does not increase as fast as it increases in the condition where there are no corporate taxes. The weighted average cost of capital now decreases as the debt proportion increases. The increase in the cost of equity or return on equity is less than the benefits that are arrived at by using

higher proportion of the cheaper cost of debt. Thus, the cost of debt decreases more as compared to the marginal increase in the cost of equity. This results in a decrease in the cost of capital, thereby increasing the value of the firm.

$$V = EBIT\ (1- t)/\ k_o$$

where EBIT is the earning of the firm before taxes, *t* is the corporate tax rate and k_o is the overall cost of capital.

Thus, the value of the firm is enhanced as debt is added to the capital structure. The debt provides an added advantage to the cost of debt, due to tax deductibility of interest payments, which reduces not only the cost of debt but the overall cost as well. And as the cost declines, the value of the firm rises.

Now, $$R_E = R_O + (R_O - R_D)\ (D/S)\ (1 - t)$$

where R_E is the required return on equity, R_O is the overall required return on an unlevered firm, R_D is the yield to maturity on outstanding bonds, D is the market value of debt in the capital structure, S is the market value of equity in the capital structure and *t* is the corporate tax rate.

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$$V = EBIT\ (1– t)\ /\ k_o$$

where EBIT is the earning of the firm before taxes, *t* is the corporate tax rate and k_o is the overall cost of capital.

Thus, the value of the firm is enhanced as debt is added to the capital structure. The debt provides an added advantage to the cost of debt, due to tax deductibility of interest payments, which reduces not only the cost of debt but the overall cost as well. And as the cost declines, the value of the firm rises.



6.8 LET US SUM UP

In this unit we discussed the following :

- The term capital structure ordinarily implies the proportion of debt and equity in the capital of a company.
- The terms 'capitalization' and 'capital structure' are not synonymous.
- When the capital structure is composed of a single source, it is called as *simple capital structure.*
- When the capital structure is composed of more than one source of capital, which are not identical, is called *complex capital structure*.
- Levered firms are those which have debt in their capital structure. Unlevered firms are those that do not use any debt in their capital structure.
- The net income approach states that the capital structure of a firm creates an impact on the value of the firm.
- Like the net income approach, the traditional view also argues that there exists benefit to the firm as well as the shareholders of the firm that employs high leverage.
- According to the net operating income approach, there is no optimal capital structure for any firm, that is, capital structure is irrelevant for a given firm.
- MM hypothesis is identical with net operating income approach if taxes are ignored. However, when corporate taxes are assumed to exist, their hypothesis is similar to net income approach.



6.9 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.
2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.
3. I.M Pandey (2010), *Financial Management*, Vikas Publishing House; 10th edition.



6.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1 :

Capital structure is the permanent financing of the firm represented by long-term debt, preferred stock and net worth.

Ans to Q. 2. :

a) Profitability and b) Conservatism.

Ans to Q. 3. :

a) Financial leverage

b) Cash flow ability to service debt

c) Requirements of investors.

Ans to Q. 4. :

This approach suggests that the capital structure decisions of a firm is irrelevance and that any change in the leverage or debt will not result in a change in the total value of the firm as well as the market price of its shares.



6.11 MODEL QUESTIONS

1. Define capital structure.
2. Write a note on the importance of capital structure.
3. Differentiate between capital structure and capitalization.

4. What is meant by capital structure ? What are the major determinants of capital structure ?
5. Explain the Net Income Approach theory.
6. Explain the Net Operating Income theory.
7. Give a critical appraisal of the traditional approach and the MM approach to the problem of capital structure.
8. What do you meant by financial leverage ? What is its significance ? Explain and illustrate the impact of financial leverage.
9. What are the features of an ideal capital structure ?
10. What are the assumptions of the MM hypothesis ?

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UNIT - 7 : CAPITAL BUDGETING DECISION

UNIT STRUCTURE

7.1 Learning Objectives

7.2 Introduction

7.3 Meaning and definition of Capital Budgeting

7.4 Importance of Capital Budgeting

7.5 Need for Capital Investment

7.6 Types of Investments Decisions

7.7 Investment Criteria

7.8 Capital Rationing

7.9 Let us Sum Up

7.10 Further Reading

7.11 Answers to Check Your Progress

7.12 Model Questions

7.1 LEARNING OBJECTIVES

After going through this unit you will be able to :

- discuss the meaning of capital budgeting
- explain the types of investment decision
- outline Investment criteria
- explain about capital rationing

7.2 INTRODUCTION

In this unit we are going to discuss the meaning of capital budgeting and its importance. We will also come to know about the types of investments decisions, investment criteria and capital rationing.

Capital budgeting is the process of making investment decisions in capital expenditures.

7.3 MEANING AND DEFINITION OF CAPITAL BUDGETING

Efficient allocation of capital is one of the most important functions of financial management in modern times. The function involves the firm's

decision to commit its funds in long-term assets and other profitable activities.

Capital Budgeting may be defined as "the firm's decision to invest its current funds efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years." It is the process of identifying, analyzing and selecting investment projects whose returns are expected to extend beyond one year. For example, a cement firm may want to start a new plant because of high demand; again a textile engineering graduate would like to start his own textile processing house. All these involve investment in fixed assets which will generate return in terms of cash flows to them. All these will essentially involve capital budgeting decisions.

Capital budgeting has been formally defined as follows :

1) "Capital budgeting is long-term planning for making and financing proposed capital outlay". —Charles T. Horngreen

2) "The capital budgeting generally refers to acquiring inputs with long-term returns". —Richards & Greenlaw

3) "Capital budgeting involves the planning of expenditure for assets, the returns from which will be realized in future time periods".

—Milton H. Spencer

7.4 IMPORTANCE OF CAPITAL BUDGETING

The capital budgeting decisions are important because of the following inter-related reasons :

1. **Long-term effects :** These involve decisions in long-term assets which involve high cost. As such the impacts of these investments have to be checked carefully by using modern techniques or investment criteria.
2. **Irreversibility :** Long- term assets investment decisions are not easily reversible once implementation has taken place. If these have to be reversed then huge financial loss may occur to the firm.
3. **More Risky :** Investment in long-term assets increases profit but it may lead to fluctuations in its earnings, the firm will become more risky. Hence, investment decisions decide the future of the business concern.

Capital budgeting decisions are difficult to take because (i) the decisions are based on expected future years cash inflows and (ii) the uncertainty of future.

Apart from the above mentioned imporatnce of capital budgeting, let us now discuss the some more significance of capital budgeting.

1. Capital budgeting involves capital rationing. This is the available funds that have to be allocated to competing projects in order of project potential. Normally the individuality of project poses the problem of capital rationing due to the fact that required funds and available funds may not be the same.
2. Capital budget becomes a control device when it is employed to control expenditure. Because manned outlays are limits to actual expenditure, the concern has to investigate the variation in order to keep expenditure under control.
3. A firm contemplating a major capital expenditure programme may need to arrange funds many years in advance to be sure of having the funds when required.
4. Capital budgeting provides useful tool with the help of which the management can reach prudent investment decision.
5. Capital budgeting is significant because it deals with right mind of evaluation of projects. A good project must not be rejected and a bad project must not be selected. Capital projects need to be thoroughly evaluated as to costs and benefits.
6. Capital projects involve investment in physical assets such as land building plant, machinery etc. for manufacturing a product as against financial investments which involve investment in financial assets like shares, bonds or mutual funds. The benefits from the projects last for few to many years.
7. Capital projects involve huge outlay and last for years.
8. Capital budgeting thus involves the making of decisions to earmark funds for investment in long term assets yielding considerable benefits in future, based on a careful evaluation of the prospective profitability / utility of such proposed new investment.

7.5 NEED FOR CAPITAL INVESTMENT

The factors that give rise to the need for capital investments are :

- Expansion
- Diversification
- Obsolescence
- Wear and tear of old equipment
- Productivity improvement
- Learning – curve effect
- Product improvement
- Replacement and modernization

The firm's value will increase in investments that are profitable. They add to the shareholders' wealth. The investment will add to the shareholders' wealth if it yields benefits, in excess of the minimum benefits as per the opportunity cost of capital.

It is clear from the above discussion what capital investment proposals involve :

- Longer gestation period
- Substantial capital outlay
- Technological considerations
- Irreversible decisions
- Environmental issues

7.6 TYPES OF INVESTMENT DECISIONS

There are many ways to classify investments. One classification is as follows :

- Expansion of existing business
- Establishments of new business
- Replacement and modernisation

1. **Expansion of existing buisness :** A firm may add capacity to its existing product lines to expand existing operations. A firm may expand its activities in a new business. Expansion of a new business requires investment in new products and a new kind of production activity within the firm. If a packaging manufacturing company invests in a new plant

and machinery to produce ball bearings, which the firm has not manufactured before, this represents expansion of new business or unrelated diversification. Sometimes a firm acquires existing firms to expand its business. In either case, the firm makes investment in the expectation of additional revenue.

2. **Establishment of new business :** A firm may establish entirely new business which may or may not be related to the existing business. For example a soap manufacturing company may start producing detergent or may even produce food items.

3. **Replacement and Modernization :** The main objective of modernization and replacement is to improve operating efficiency and reduce costs. Costs savings will reflect in the increased profits, but the firm's revenue may remain unchanged if the assets become outdated with technological changes. The firm must decide to replace those assets with new assets that operate more economically. If a cement company changes from dry process to wet process, it is an example of modernization and replacement. Replacement decisions help to introduce more efficient and economical assets and therefore, are also called cost reduction investments.

4. Another useful way to classify investments is as follows :
   - Mutually exclusive investments
   - Independent investments
   - Contingent investments

   a. **Mutually Exclusive Investments :** Mutually exclusive investments serve the same purpose and compete with each other. If one investment is undertaken, others will have to be excluded. A firm may, for example, either use a more labour-intensive, semi-automatic machine, or employ a more capital-intensive, highly automatic machine for production. Choosing the semi-automatic machine precludes the acceptance of the highly automatic machine.

   b. **Independent Investments :** Independent investments serve different purposes and do not complete with each other. For example, a heavy engineering firm may be considering expansion of its plant capacity to manufacture additional equipments for oil drilling firms and addition of new production facilities to

manufacture excavators for construction businesses. Depending on their profitability and availability of funds, the firm can undertake both investments.

3. **Contingent Investments :** Contingent investments are dependent projects; the choice of one investment necessities undertaking one or more other investments. For example, if a firm decides to build a factory in a remote, backward area, it may have to invest in houses, roads, hospitals, schools etc. for employees to attract the work force. Thus, building of factory also requires investment in facilities for employees. The total expenditure will be treated as one single investment.

7.7 INVESTMENT CRITERIA

Capital budgeting decisions form the framework for a firm's future development. Selection of a profitable investment decision will help to maximize value of the firm through the maximization of profits. A wide range of criteria has been suggested to select the investment decisions. The investment evaluation criterion used, should possess the following characteristics :

- It should provide a means of distinguishing between acceptable and unacceptable projects.
- It should provide a ranking of projects in order of their desirability.
- It should also solve the problem of choosing among alternative projects.
- It should be a criterion which is applicable to any conceivable investment project.
- It should recognize the fact that bigger benefits are preferable to smaller ones and early benefits are preferable to latter benefits.

The investment criteria are broadly divided into two categories :

1. Non-discounted Cash Flow Criteria :
   i) Payback period,
   ii) Accounting rate of return.

2. Discounted Cash Flow (DCF) criteria
   i) Net present value,
   ii) Internal rate of return,
   iii) Profitability index or Benefit-cost ratio.

It should be realized that different firms may use different methods. Which method is appropriate for a particular purpose of the firm will depend upon the circumstances. A large firm may use more than one technique for making capital budgeting decisions, while a small firm may contend with using only one technique which involves minimum funds and time. However, to avoid confusion, same method or methods should be used uniformly for every project throughout the firm. Though these selection criteria will help management in making decisions objectively, the (management) must still exercise their common sense and judgment in making the decisions.

1. NON-DISCOUNTED CASH FLOW CRITERIA :

i. Payback Period: The payback (or payout) period is one of the most popular and widely recognized criteria or technique of evaluating investment decisions. Pay back period may be defined as that period which is required to recover the original cash outflow made in the investment. In other words it is the minimum number of years required to recover the original investment. It is defined as the number of years required to recover the original cash outlay invested in a project. The cash flow after taxes are used to compute pay back period.

If the project generates constant annual cash inflows, the payback period can be computed dividing cash outlay by the annual cash inflow. That is—

$$\text{Payback period} = \frac{\text{Cash outlay (investment)}}{\text{Annual cash inflow}}$$

If the cash flows after taxes are unequal or not uniform over the periods in which these are expected to occur then the payback period can be found out by adding up the cash inflows until the total is equal to the initial cash outlay.

Acceptance Rule :

The payback period can be used as an accept-or-reject criterion as well as a method of ranking different investment decisions. If the payback period calculated for an investment budget is less than the maximum payback period set up by the management, it would be accepted, if not, it would be rejected. As a ranking method, it gives highest ranking to the capital budgets which has shortest payback period and lowest ranking to those with highest payback period. Thus, if the firm has to choose among two mutually exclusive projects, capital budgets with shorter payback period will be selected.

Advantages of Payback Period :

- It is simple, both in concept and application.
- It emphasizes earlier cash inflows; it may be sensible criterion when the firm is pressed with problems of liquidity.
- The risk of investment decision may be solved by having a shorter standard payback period as it may ensure guarantee against loss.

Disadvantages of Payback Period :

- Payback is not an appropriate method of measuring the profitability of an investment decision as it does not consider all cash inflows yielded over the life of the investment.
- It fails to consider the time value of money. Cash inflows, in the payback calculation, are simply added without suitable discounting. This violates the basic principle of financial analysis which stipulates that cash flows occurring at different points of time can be added or subtracted only after suitable compounding or discounting.
- There is no rational basis for setting a maximum payback period .It may lead to subjective decision as a firm may face difficulty in determining the maximum acceptable payback period.

ii. Accounting Rate of Return Method

The Accounting Rate of Return (ARR) is based upon accounting information rather than cash flows. There are a number of alternative methods for calculating the ARR. The most common method is as follows :

$$ARR = \frac{\text{Profit after tax}}{\text{Book value of the investments}}$$

The numerator of this ratio may be measured as the average annual post-tax profit over the life of the investment and the denomenetor is the average book value of investment in the project.

Acceptance Rule

As an accept-or-reject criterion, this method will accept all those investment outlays whose ARR is higher than the minimum rate established by management and reject those which have ARR less than the minimum rate. Alternatively, the ranking method can be used to select or reject investment proposals.

Advantages :

The following are the advantages of the accounting rate of return methods.

i. It is very simple to understand and use.

ii. It can be readily calculated using the accounting data.

iii. It uses the entire stream of incomes in calculating the accounting rate.

Disadvantages :

The Accounting Rate of Return method suffers from the following weaknesses :

i. It uses accounting profits and not cash flows.

ii. It ignores the time value of money. Profits occurring in different periods are valued equally.

iii. It does not consider the lengths of expected life of the investment. For example, it assumes that 25 percent accounting rate for ten years is better than 20 per cent for twenty years.



Exercise : 7.1

Determine the Accounting Rate of Return(ARR) from the following data :

Year	Book vaslue of Investment (in Rs.)	Profit After Tax (in Rs)
1	90,000	20,000
2	80,000	22,000
3	70,000	24,000
4	60,000	26,000
5	50,000	28,000

iv. It is incompatible with the firm's objective of maximizing the market. The Accounting Rate of Return (ARR) is

$$= \frac{1/5(20,000+22,000+24,000+26,000+28,000}{1/5(90,000+80,000+70,000+60,000+50,000}$$

$$= 34\%$$

The heigher the Accounting Rate of Return (ARR), the better the project.Normally, projects which have an Accounting Rate of Return equal to or greater than a pre-specified cutt off rate of return, which is usually between 20% to 30% are accepted;others are rejected.

2. DISCOUNTED CASH FLOW METHODS :

In order to overcome the limitations of Pay-back Period and Accounting Rate of Return, the discounted cash flow methods are recognized. The distinguishing feature of this method is that they take into consideration the time value of money. These methods also consider all benefits and costs that occur during the expected life of the investment. The commonly used discounted cash flow methods are (i) Net Present Value (ii) Profitability Index or Benefit Cost Ratio and (iii) Internal Rate of Return.

i. Net Present Value Method :

The Net Present Value (NPV) method is the classic economic method of evaluating the investment proposals. It is one of the Discounted Cash Flow (DCF) techniques explicitly recognizing the time value of money. The net present value may be described as the summation of the present values of cash proceeds (CFAT) in each year minus the summation of present values of the cash outflows in each year.

The steps involved in the NPV method are: First an appropriate rate of interest should be selected to discount cash flows. Generally, the appropriate rate of interest is the firm's cost of capital which is equal to the minimum rate of return expected by the investors to be earned by the firm on its investment proposal. Second, the present value of cash inflows/benefits and the present value of investment outlay/cash outflows should be computed using cost of capital as the discounting rate. If all cash outflows are made in the initial year, then their present value will be equal to the amount of cash actually spent. Third, the net present value should be found out by subtracting the present value of cash outflows from the present value of cash inflows.

Thus, the NPV method is a process of calculating the present value of cash flows (inflows and outflows) of an investment proposal, using the cost of capital as the appropriate discounting rate, and finding out the net present value of subtracting the present value of cash outflows from the present value of cash inflows. The equation for the net present value, assuming that all cash outflows are made in the initial year will be :

$$NPV = \sum_{t=1}^{n} \frac{A_t}{(1+k)^t} - C$$

Where A_1, A_2..... represent cash inflows, C is the initial investment, n is the expected life of the proposal. It should be noted that the cost of capital k, is assumed to be known; otherwise the net present value cannot be calculated.

Acceptance Rule

The acceptance rule, using the NPV method, is to accept the investment decision if its net present value is positive (i.e. (NPV > 0) and to reject it if the net present value is negative (i.e. NPV < 0). If the NPV is zero, it is a matter of indifference.

Advantages :

i. It is superior to other methods of evaluating the economic worth of investments. Because present values are measured in today's rupees, the net present values of different investment proposals may be added to get the combined economic value of investments.

ii. It recognizes all cash flows throughout the life of the project.

iii. It helps to satisfy the objectives for maximizing values of tye firm.

iv. It recognizes time value of money.

Disadvantages :

i. It fails to give satisfactory answer when investment decisions under consideration involve different amount of investments and with different expected life periods.

ii. There is problem in ascertaining the required rate of return to discount cash flows. The discount rate is the most important element used in the calculation of the present values because different discount rates will give different present values.

iii. The NPV is an absolute measure; hence it cannot be used to compare different investments.



Exercise : 7.2

Calculate the net present value for project X which initially costs Rs. 20,000 and generates year-end cash inflows of Rs. 900, Rs. 800, Rs. 700, Rs. 600 and Rs. 500 in one through five years. The required rate of return is assumed to be 10 per cent.

Solution : Net Present Value of Project X

Year	Cash inflows	Discounting factor at 10%	PV of cash inflows
1	Rs. 900	0.909	Rs. 818
2	Rs. 800	0.826	661
3	Rs. 700	0.751	526
4	Rs. 600	0.683	410
5	Rs. 500	0.620	310
			Rs. 2,725
		(Less) Investment Outlay	20.000
		Net Present Value	Rs. 17,275

The net present value for project X can be calculated by referring to present value table, where we find the appropriate discount factors. Multiplying the discount factors and cash inflows, we shall obtain the present value of cash inflows. The difference between the present value of cash inflows and the initial cash outlay will represent the net present value.

Profitability Index or Benefit Cost Ratio :

It is the ratio of the present value of future cash benefits, at the required rate of return to the initial cash outflow of the investment. It is also known as Benefit Cost Ratio because the numerator measures benefits and denominator measures costs. The formula to calculate benefit-cost ratio or profitability index is as follows :

$$\text{Benefit cost ratios or PI} = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outflows}}$$

Acceptance Rule

The accept-or-reject rule, using Benefit Cost ratio or PI, is to accept the project if it's PI is greater than one. Such a project will have positive net present value. However, in the case of mutually exclusive investments, the acceptance criterion is: the higher the index, the more profitable is the investment.

Advantages :

i. It is a conceptually sound technique of evaluating investments because it satisfies the requirements of time value of money, totality of benefits and so on.

ii. It measures net present value per rupee of outlay; hence can discriminate between large and small investments and is preferable to the net present value criterion.

Disadvantages :

i. It involves more calculations than the traditional methods (i.e. Payback and A.R.R.) and hence it is very difficult to understand.

ii. When cash outflows occur beyond the current period, the benefit- cost ratio criterion is not suitable.



Exercise : 7.3

The initial cash outlay of an investment is Rs. 100,000 and it generates cash inflows of Rs. 50,000, Rs. 60,000, Rs. 65,000 and Rs. 50,000 in the four years. Calculate PI of the investment assuming 10 percent rate of discount.

Solution : Calculation of Profitability Index			
Year	**Cash inflows (Rs)**	**Discount Factor**	**Present value (Rs)**
1	50,000	0.909	45,450
2	60,000	0.826	49,560
3	65,000	0.751	48,815
4	50,000	0.683	34,150
			177,975
		Less Outlay	–100,000
		NPV	Rs. 77,975
PI = (177975/100000) =1.77			

Internal Rate of Return Method :

The Internal Rate of Return (IRR) method is another discounted cash flow technique which takes into account of the magnitude and timing of cash flows. This method is also known as yield on investment, marginal efficiency of capital, rate of return over cost, time adjusted rate of return and so on. But it is appropriately called as internal rate of return as it exclusively depends on the initial outlay and cash inflows of the investment.

The internal rate of return can be defined as that rate which equates the present value of cash inflows with the present value of cash outflows of an investment. In other words, it is the rate at which the net present value of the investment is zero. It is called internal rate because it depends solely on the outlay and proceeds associated with the investment and not any rate determined outside the investment. It can be determined by solving the following equation :

$$C \quad \frac{A_1}{(1 \quad r)} \quad \frac{A_2}{(1 \quad r)^2} \quad \text{.....} \quad \frac{A_n}{(1 \quad r)^n}$$

$$0 \quad \sum_{t \ 1}^{n} \frac{A_t}{(1 \quad r)^t} \quad C$$

Where r = The internal rate of return

A_t = Cash inflows at different time periods, t = 1, 2, …, n

C = Cash outflows or Initial investment

It can be noticed that the IRR equation is the same as used for the NPV method with the difference that in the NPV method the discount rate (cost of capital), k, is assumed to be known and the net present value is found, while under the IRR method the value of r has to be determined at which the net present value is zero.

The value of r in Equation can be found out by trial and error. The approach is to select any discount rate to compute the NPV.If NPV>0, a heigher discount rate should be applied. This process will be repeated until the net present value becomes zero. The following illustration explains the procedure to calculate the internal rate of return.



Exercise : 7.4

An investment has been assumed to costs Rs. 16,200 and is expected to generate cash inflows of Rs. 8,000, Rs. 7,000 and Rs. 6,000 over its life of three years. You are required to calculate the internal rate of return of the internal rate of return.

To start with, we select a rate of 20 per cent and calculate the present value of cash inflows.

Year	Cash inflows (Rs)	Discount Factor at 20%	Present value (Rs)
1	Rs. 8,000	0.833	Rs. 6,664
2	Rs. 7,000	0.694	Rs. 4,858
3	Rs. 6,000	0.579	Rs. 3,474
			Rs. 14,996
		(Less) Cash outlay	Rs. 16,200
		NPV (–)	Rs. 1,204

The net present value indicates that this is a higher rate. Therefore, lower rates should be tried. It should be tried at 14% and 16%.

Year	Cash	Discount Factor @14%	PV	DF @16%	PV
1	8,000	.877	7,016	.862	6,896
2	7,000	.769	5,383	.743	5,201
3	6,000	.675	4,050	.641	3,846
			16,449		15,943
		Less Cash outlay	16,200		16,200
			NVP (+)Rs. 249		(–) Rs. 257

It can be observed from the above calculations that the true rate of return lies between 14 per cent and 16 per cent. It should be now tried at 15 per cent .It is seen that at 15% the net present value is zero.

Year	Cash	Discount Rate (15%)	Present value (Rs)
1	8,000	.870	6,960
2	7,000	.756	5,292
3	6,000	.658	3,948
			Rs. 16,200
		(Less) Cash outlay	Rs. 16,200
		NPV	0

Acceptance Rule :

The use of IRR as measure to accept investment decision involves a comparison of the actual IRR with the required rate of return. The investment would qualify to be accepted if the IRR (r) exceeds the cut-off rate.

Advantages :

i. Like the NPV method, it considers the time value of money.

ii. It considers cash flows over the entire life of the project.

iii. It has a psychological appeal to the users. The percentage figure calculated under this method is more meaningful and acceptable to them, because it satisfies them in terms of the rate of return on capital.

iv. The internal rate of return suggests the maximum rate of return and gives fairly good idea regarding the profitability of the project, even in the absence of the firm's cost of capital. It is also compatible with the firm's maximizing owner's welfare.

Disadvantages :

In spite of its theoretical superiority, the internal rate of return method is said to suffer from the following limitations :

i. It is difficult to understand and use in practice as it involves complicated computation problems.

ii. It may yield results inconsistent with the NPV method if the investments differ in their (a) expected lives, or (b) cash outlays, or (c) timing of cash flows.

iii. It may not give unique answer in all situations. It may yield negative rate or multiple rates under certain circumstances.

7.8 CAPITAL RATIONING

Capital rationing refers to a situation where a firm is not in a position to invest in all capital investments due to the constraints on availability of funds. It may be defined as "a situation where a constraint is placed on the total size of capital investment during a particular period." Normally resources are always limited and the demand for them far exceeds their availability. It is for this reason that the firm cannot take up all the investments though profitable, and has to select a combination of these which will yield the greatest profitability. Selection of projects for this purpose will require the taking of the following steps;

i. Ranking of investments according to profitability index or internal rate of return.



Exercise : 7.5

The H L Limited had Rs. 10, 00,000 allocated for capital expenditure purpose. The following five investments with required investment, expected annual cash inflows and expected life are under consideration. If the firms minimum required rate of returns is 12 percent, which projects can be accepted with the budget ceiling of Rs. 10,00,000 ?

Investment	Initial Investment	Cash Inflow resective life	Discount rate (12%) of Cash	Present value	Project life
A	5,00,000	169,200	3.605	609,966	5
B	1,25,000	28,600	4.968	142,085	8
C	3,50,000	74,300	5.650	419,795	10
D	3,00,000	34,000	6.811	231,574	15
E	4,00,000	57,000	6.194	353,058	12

ii. Selecting investments in descending order of profitability until the budget figures are exhausted keeping in view the objective of maximizing the value of the firm.

Investment	A	B	C	D	E
Profitability Index	609,966 / 5,00,000	142,085 / 1,25,000	419,795 / 3,50,000	231,574 / 3,00,000	353,058 / 1,00,000
	= 1.2	= 1.13	= 1.19	0.7	0.8

Investment	Profitability Index	Ranking
A	1.20	1
B	1.13	2
C	1.19	2
D	0.70	5
E	0.80	4

The first step is to rank the investment according to profitability index. The second step is to accept the investment in the descending order. The following three investment would be accepted :

Investment	Initial Investment (Rs.)	Profitability Index	NPV (Rs.)
A	5,00,000	1.20	109,966
C	3,50,000	1.19	69,795
B	1,25,000	1.13	17,085
Total	Rs. 975,000		Rs. 196,820



CHECK YOUR PROGRESS

Q.1. Fill in the blanks with appropriate words :

i) _____ is the process of making decisions.

ii) _____ is the _____ divided by the annual cash inflow through the expected life of the investment.

iii) Accounting rate of return does not recognize the _____

iv) Accept the investment if its IRR exceeds _____

v) _____ is used widely in ranking the investments competing for limited funds.

Q.2. The following data are given for Assam Roofing Ltd.

Initial cost of proposed machine	Rs. 75,000
Estimated useful life	7 years
Estimated annual cash inflows	Rs. 18,000
Salvage value	Rs. 3,000
Cost of capital	12%

[Note : Salvage value is cash inflow occurring at the end of the useful life]

Compute the (i) Pay back period; (ii) Present value of estimated annual cash inflows; (iii) NPV and (iv) IRR.

Q.3 P. Bose Ltd. being a traditional firm wants to appraise the investment decision by using accounting rate of return. It is planning to invest Rs. 10,00,000 in a new plant which will provide a salvage value of Rs. 80,000 at the end of its economic life of 5 years. The profits after depreciation and tax are estimated to be as under :

Year	1	2	3	4	5
Rs	50,000	75,000	1,25,000	1,30,000	80,000



Exercise : 7.6

ERM Ltd. wants to install a new machine in the place of an existing old one, which has become obsolete. The company made extensive enquiries and from the replies received short-listed two offers. The two models differ in cost, output and anticipated net revenue. The estimated life of both the machines is as follows :

Anticipated after-tax cash flow

Machine	Cost	Year 1	Year 2	Year 3	Year 4	Year 5
A	25	—	5	20	14	6
B	40	10	14	16	17	8

The firm's cost of capital is 16%. You are required to make an appraisal of the two offers and advise the firm by using the following : (i) Payback Period, (ii) Net Present Value, (iii) Profitability Index, (iv) Internal Rate of Return.

Note : Present Value of Re. 1

End of year	16%	18%	20%
1	0.862	0.847	0.833
2	0.743	0.718	0.694
3	0.641	0.609	0.579
4	0.552	0.516	0.482
5	0.476	0.437	0.402

SOLUTION :

(i) Pay-back Period :

Year	Machine A		Machine B	
	Cash Flow	Cumulative Cash Flow	Cash Flow	Cumulative Cash Flow
1	—	—	10	10
2	5	5	14	25
3	20	25	16	40
4	14	39	17	57
5	6	45	8	65

Pay-back Period is 3 years for both machines.

(ii) Net Present Value

		Machine A		Machine B	
Year	DCF @16%	Cash flow	Present Value	Cash flow	Present Value
1	0.862	—	—	10	8.620
2	0.743	5	3.715	14	10.402
3	0.641	20	12.820	16	10.256
4	0.552	14	7.728	17	9.384
5	0.476	6	2.856	8	3.808
Total Present Value			27.119		42.470
Less : Initial Cost			25.000		40.000
Net Present Value (Rs)			2.119		2.470

(iii) Profitability Index = $\frac{\text{Present value of cash inflows}}{\text{Investment}}$

Machine A = $^{27.119}/_{25}$ = 1.085 Machine B = $^{42.470}/_{40}$ = 1.062

(iv) Internal Rate of Return

Machine A

Year	Cash flow	DCF 18%	Present Value	DCF 20%	Present Value
1	—	0.847	—	0.833	—
2	5	0.718	3.590	0.694	3.470
3	20	0.609	12.180	0.579	11.580
4	14	0.516	7.224	0.482	6.748
5	6	0.437	2.622	0.402	2.412
Total Present Value			25,616		24.210
Less : Initial Cost			25.000		25.000
Net Present Value			0.616		(–) 0.790

$$\text{IRR} = 18\% - \frac{(25 - 25.616)}{(25.616 - 24.210)} \times (20\% - 18\%)$$

$$= 18\% - \frac{(-)\ .616}{1.406} \times 2\%$$

$$= 18\% + \frac{.616}{1.406} \times 2\% = 18.88\%$$

Machine B

Year	Cash flow	DCF 18%	Present Value	DCF 20%	Present Value
1	10	0.847	8.470	0.833	8.33
2	14	0.718	10.052	0.694	9.716
3	16	0.609	9.744	0.579	9.264
4	17	0.516	8.772	0.482	8.194
5	8	0.437	3.496	0.402	3.216
Total Present Value			40.534		38.720
Less : Initial Cost			40.000		40.000
Net Present Value			0.534		(–) 1.28

Thus the firm is able to utilize Rs. 975,000 out of Rs. 10,00,000. The expected net present value from these investments is Rs. 196,820.

$$\text{IRR} = 18\% - \frac{(40 - 40.534)}{(40.534 - 38.720)} \times (20\% - 18\%)$$

$$= 18\% - \frac{(-)\ .534}{1.814} \times 2\%$$

$$= 18.59\%$$

Summary of Investment Decision :

Particulars	Machine A	Machine B
i) Payback period	3 Years	3 Years
ii) Net Present Value [@ 16%]	Rs 2.119 Lakh	Rs. 2.47 Lakh
iii) Profitability Index	1.085	1.062
iv) IRR	18.8%	18.59%

Suggestion : From the analysis of the above it is observed that Profitability Index and IRR are greater in case of Machine A. Hence Machine A is to be selected even though NPV of it is slightly lesser than Machine B. Payback period of both the machines is equal.



7.9 LET US SUM UP

In this unit we have discussed the following :

i. Capital Budgeting is defined as "the firm's decision to invest its current funds efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years."

ii. A wide range of criteria can be used to judge the viability of investment decisions. They fall into two broad categories : discounting criteria and non-discounting criteria. The important discounting criteria are net present value, profitability index and internal rate of return. The major non-discounting criteria are pay back period and accounting rate of return.

iii. The Net Present Value (NPV) is the sum of the present values of all cash flows whether positive or negative that occur over the expected life of the investment decision.

iv. The profitability index is defined as the present value of benefits (cash inflows) divided by the present value of costs (cash outflows).

v. The Internal Rate of Return (IRR) of investment is the discount rate which makes its NPV equal to zero.



7.10 FURTHER READING

1. P K Jain & M. Y Khan (2014); *Financial Management : Text, Problems and Cases.* Mcgraw Hill Education.

2. Prasanna Chandra (2011). *Financial Management : Theory and Practice*; McGraw Hill Education; 8 edition.

3. I.M Pandey(2010), *Financial Management*, Vikas Publishing House; 10th edition.



7.11 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q. 1. :

(i) Capital budgeting; long-term investment

(ii) Payback period; Initial investment

(iii) Time value of money

(iv) The cost of capital

(v) Profitability Index.

Ans to Q. 2. :

(i) 4.167 years (ii) Rs. 82,148 (iii) Rs. 8,505 (iv) 14.95%

Ans to Q. 3. :

A.R.R. = 20%



7.12 MODEL QUESTIONS

1) Define Capital Budgeting. Discus the importance of capital budgeting.

2) Define Capital Rationing. How would investments be ranked under capital rationing ?

3) Define and explain the following with their respective advantages and disadvantages

   (i) Pay-back period (ii) Average Rate of Return (iii) NPV (iv) IRR

4) Evaluate the following :

   a) Payback period

   b) Accounting rate of return

   c) Net Present Value

   d) Internal Rate of Return

   e) Calculate Profitability Index for each project from the given data :

A firm is considering two mutually exclusive projects. Both require an initial cash outlay of Rs.10, 000 each and have a life of five years. The firm's required rate of return is 10% and pays tax @ 50%. The investments will be depreciated on a straight line basis. The net cash flows (before taxes) expected from the projects are as follows :

	Project 1	Project 2
Year 1	Rs. 4000	Rs. 6000
Year 2	Rs. 4000	Rs. 3000
Year 3	Rs. 4000	Rs. 2000
Year 4	Rs. 4000	Rs. 5000
Year 5	Rs. 4000	Rs. 5000

Which investment should be accepted and why ?

5) From the following information, calculate NPV and PI :

Initial outlay : Rs 50,000

Cash inflow :

Year	1	2	3	4
Cash inflow (Rs) :	20,000	15,000	25,000	10,000

Assume discount factor at 10%.

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