PGBA (S2) 03-1

FINANCIAL MANAGEMENT

2 nd Semester

MASTER IN BUSINESS ADMINISTRATION

Maniram Dewan School of Management

MASTER IN BUSINESS ADMINISTRATION

FINANCIAL MANAGEMENT

Block 1

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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.

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.

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 :

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

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



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

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

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



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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vour for improvement, the firm will be gradually marketed out. imes 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.

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.

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.

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.

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

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

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.

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.

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-



ization is considered a lesser evil than over-capitalization (as the n can be remedied more quickly) it is better to ensure a fair or 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.



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.

VVV

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



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.

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.

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

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.

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.

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 :

1 **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.

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 areholders.



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.

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 ?

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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

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

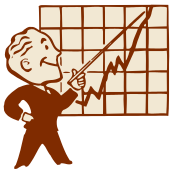
k = Explicit Cost of Capital

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



CHECK YOUR PROGRESS

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

.....

.....

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

.....

.....

Here, interest = 0.12 × Rs 100 = Rs 12

Face value = Rs 100

Tax rate = 40 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.

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

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

$$\frac{100,000+95,000}{2}$$

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

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

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



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 × Rs. 200 = Rs. 24

Net proceeds (NP) = Rs. 200

$K_p = \frac{D_p}{} = \frac{24}{} = 0.12$ 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.

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,

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

P = Current market price = Rs. 13

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

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

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

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**

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

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



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%

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 ?



h the proposed investment must earn to become acceptable.

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 :

$$\frac{\text{Interest}}{}$$

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 ?

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.

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.

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

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.

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

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 _____.

- 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.

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

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.

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.



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 :

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.

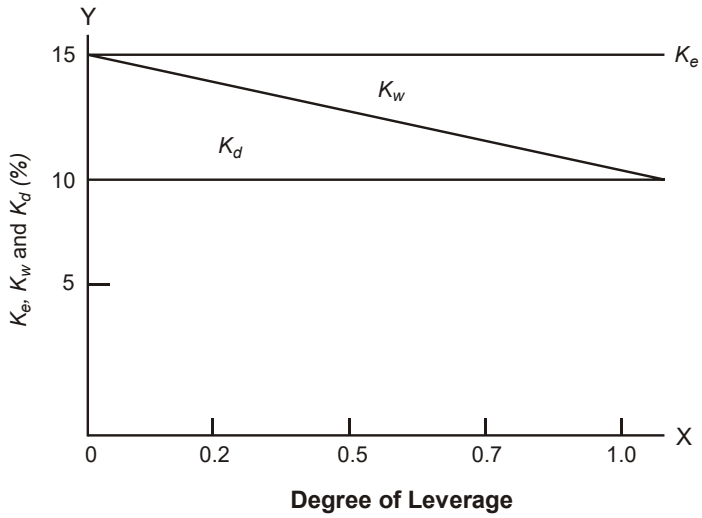


Figure - 6.1 : The effect of leverage on cost of capital under net income approach

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

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.

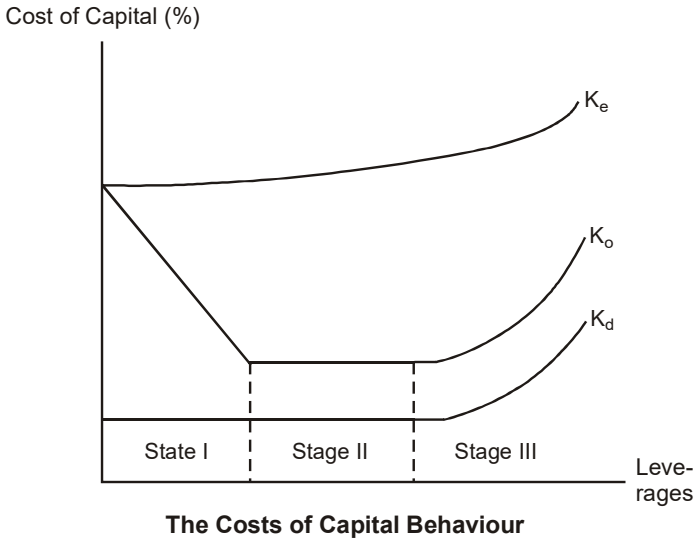


Figure - 6.2 : Traditional approach to capital structure

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

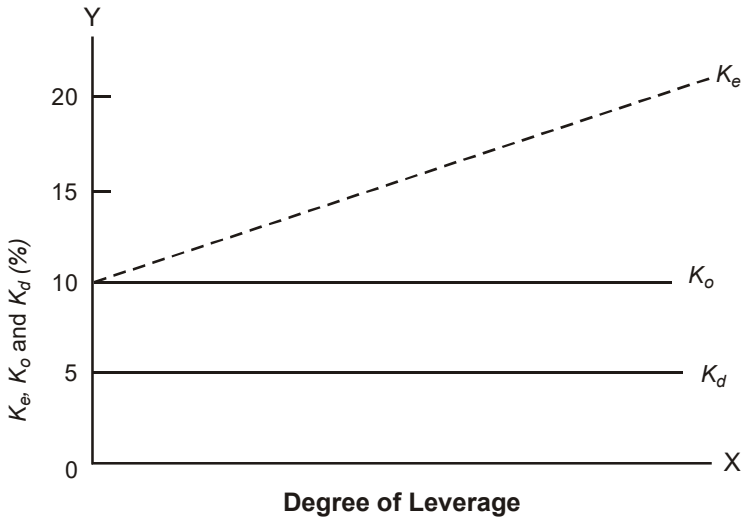


Figure - 6.3 : The Net Operating Income Approach



CHECK YOUR PROGRESS

Q.3. State four factors affecting capital structure.

.....

.....

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

.....

.....

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

- 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

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

	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

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 :
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."

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

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.

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 proportiom of the cheaper cost ofdebt. 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.



ypothesis is identical with net operating income approach if taxes nored. 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 vance and that any change in the leverage or debt will not result change in the total value of the firm as well as the market price of hares.

6.11 MODEL QUESTIONS

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

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

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

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

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.

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

= 1/5(20,000+22,000+24,000+26,000+28,000



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

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 :

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

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

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.

Internal Rate of Return Method :

The Internal Rate of Return (IRR) method is another discounted cash flow



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.

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.
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%.



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

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

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.

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



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 ?



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

(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

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

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

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



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

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%.

vvv