UNIT I Financial Management, Role of finance manager and sources of finance

Financial Management: Meaning, nature and scope of finance goal – profit vs. wealth maximization; Finance decisions – investment, financing and dividend decisions. Role of finance manager – Treasurer Vs. Controller. Agency conflict and agency cost. Indian financial System - Long Term Sources of Finance: Equity, Debentures, Preference Shares, Long term loan, Private equity, Venture capital and Angel investor. Short term Sources of Finance : Short term loan, commercial paper, certificate of deposits, commercial paper, bill of exchange, factoring.

INTRODUCTION

Business concern needs finance to meet their requirements in the economic world. Any kind of business activity depends on the finance. Hence, it is called as lifeblood of business organization. Whether the business concerns are big or small, they need finance to fulfil their business activities.

In the modern world, all the activities are concerned with the economic activities and very particular to earning profit through any venture or activities. The entire business activities are directly related with making profit. (According to the economics concept of factors of production, rent given to landlord, wage given to labour, interest given to capital and profit given to shareholders or proprietors), a business concern needs finance to meet all the requirements. Hence finance may be called as capital, investment, fund etc. , but each term is having different meanings and unique characters. Increasing the profit is the main aim of any kind of economic activity.

MEANING OF FINANCE

Finance may be defined as the art and science of managing money. It includes financial service and financial instruments . Finance also is referred as the provision of money at the time when it is needed. Finance function is the procurement of funds and their effective utilization in business concerns.

The concept of finance includes capital, funds, money, and amount. But each word is having unique meaning. Studying and understanding the concept of finance become an important part of the business concern.

DEFINITION OF FINANCE

According to **Khan and Jain,** "Finance is the art and science of managing money".

According to **Oxford dictionary**, the word 'finance' connotes 'management of money'.

Webster's Ninth New Collegiate Dictionary defines finance as "the Science on study of the management of funds' and the management of fund as the system that includes the circulation of money, the granting of credit, the making of investments, and the provision of banking facilities.

DEFINITION OF BUSINESS FINANCE

According to the **Wheeler,** "Business finance is that business activity which concerns with the acquisition and conversation of capital funds in meeting financial needs and overall objectives of a business enterprise ".

According to the **Guthumann and Dougall**, "Business finance can broadly be defined as the activity concerned with planning, raising, controlling, administering of the funds used in the business".

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

Corporate finance is concerned w ith budgeting, financial forecasting, cash management, credit administration, investment analysis and fund procurement of the business concern and the business concern needs to adopt modern technology and application suitable to the global environment.

According to the **Encyclopedia of Social Sciences**, "Corporation finance deals with the financial problems of corporate enterprises. These problems include the financial aspects of the promotion of new enterprises and their administration during early development, the accounting problems connected with the distinction between capital and income, the administrative questions created by growth and expansion, and finally, the financial adjustments required for the bolstering up or rehabilitation of a corporation which has come into financial difficulties".

TYPES OF FINANCE

Finance is one of the important and integral part of business concerns, hence, it plays a major role in every part of the business activities. It is used in all the area of the activities under the different names.

Finance can be classified into two major parts:

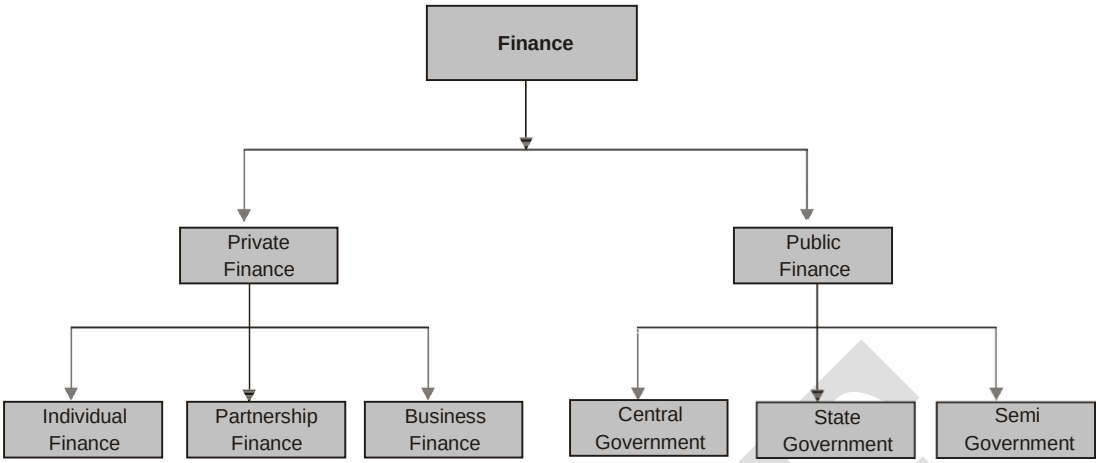

***Fig. 1.1** Types of Finance*

Private Finance, which includes the Individual, Firms, Business or Corporate Financial activities to meet the requirements.

Public Finance which concerns with revenue and disbursement of Government such as Central Government, State Government and Semi-Government Financial matters.

DEFINITION OF FINANCIAL MANAGEMENT

Financial management is an integral part of overall management. It is concerned with the duties of the financial managers in the business firm.

The term financial management has been defined by **Solomon**, "It is concerned with the efficient use of an important economic resource namely, capital funds".

The most popular and acceptable definition of financial management as given by **S.C. Kuchal** is that "Financial Management deals with procurement of funds and their effective utilization in the business".

Howard and Upton : Financial management "as an application of general managerial principles to the area of financial decision-making.

Weston and Brigham : Financial management "is an area of financial decision-making, harmonizing individual motives and enterprise goals".

Joshep and Massie : Financial management "is the operational activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operations.

Thus, Financial Management is mainly concerned with the effective funds management in the business. In simple words, Financial Management as practiced by business firms can be called as Corporation Finance or Business Finance.

SCOPE OF FINANCIAL MANAGEMENT

Financial management is one of the important parts of overall management, which is directly related with various functional departments like personnel, marketing and production. Financial management covers wide area with multidimensional approaches. The following are the important scope of financial management.

1. **Financial Management and Economics**

   Economic concepts like micro and macroeconomics are directly applied with the financial management approaches. Investment decisions, micro and macro environmental factors are closely associated with the functions of financial manager. Financial management also uses the economic equations like money value discount factor, economic order quantity etc. Financial economics is one of the emerging area, which provides immense opportunities to finance, and economical areas.

2. **Financial Management and Accounting**

   Accounting records includes the financial information of the business concern. Hence, we can easily understand the relationship between the financial management and accounting. In the olden periods, both financial management and accounting are treated as a same discipline and then it has been merged as Management Accounting because this part is very much helpful to finance manager to take decisions. But nowaday's financial management and accounting discipline are separate and interrelated.

3. **Financial Management or Mathematics**

   Modern approaches of the financial management applied large number of mathematical and statistical tools and techniques. They are also called as econometrics. Economic order quantity, discount factor, time value of money, present value of money, cost of capital, capital structure theories, dividend theories, ratio analysis and working capital analysis are used as mathematical and statistical tools and techniques in the field of financial management.

4. **Financial Management and Production Management**

   Production management is the operational part of the business concern, which helps to multiple the money into profit. Profit of the concern depends upon the production performance. Production performance needs finance, because production department requires raw material, machinery, wages, operating expenses etc. These expenditures are decided and estimated by the financial department and the finance manager allocates the appropriate finance to production department. The financial manager must be aware of the operational process and finance required for each process of production activities.

5. **Financial Management and Marketing**

   Produced goods are sold in the market with innovative and modern approaches. For this, the marketing department needs finance to meet their requirements.

The financial manager or finance department is responsible to allocate the adequate finance to the marketing department. Hence, marketing and financial management are interrelated and depends on each other.

6. Financial Management and Human Resource

Financial management is also related with human resource department, which provides manpower to all the functional areas of the management. Financial manager should carefully evaluate the requirement of manpower to each department and allocate the finance to the human resource department as wages, salary, remuneration, commission, bonus, pension and other monetary benefits to the human resource department. Hence, financial management is directly related with human resource management.

OBJECTIVES OF FINANCIAL MANAGEMENT

Effective procurement and efficient use of finance lead to proper utilization of the finance by the business concern. It is the essential part of the financial manager. Hence, the financial manager must determine the basic objectives of the financial management. Objectives of Financial Management may be broadly divided into two parts such as :

1. Profit maximization
2. Wealth maximization.

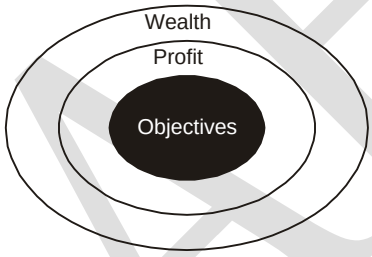

Fig. 1.2 *Objectives of Financial Management*

Profit Maximization

Main aim of any kind of economic activity is earning profit. A business concern is also functioning mainly for the purpose of earning profit. Profit is the measuring techniques to understand the business efficiency of the concern. Profit maximization is also the traditional and narrow approach, which aims at, maximizes the profit of the concern. Profit maximization consists of the following important features.

1. Profit maximization is also called as cashing per share maximization. It leads to maximize the business operation for profit maximization.
2. Ultimate aim of the business concern is earning profit, hence, it considers all the possible ways to increase the profitability of the concern.

3. Profit is the parameter of measuring the efficiency of the business concern. So it shows the entire position of the business concern.
4. Profit maximization objectives help to reduce the risk of the business.

Favourable Arguments for Profit Maximization

The following important points are in support of the profit maximization objectives of the business concern:

(i) Main aim is earning profit.
(ii) Profit is the parameter of the business operation.
(iii) Profit reduces risk of the business concern.
(iv) Profit is the main source of finance.
(v) Profitability meets the social needs also.

Unfavourable Arguments for Profit Maximization

The following important points are against the objectives of profit maximization:

(i) Profit maximization leads to exploiting workers and consumers.
(ii) Profit maximization creates immoral practices such as corrupt practice, unfair trade practice, etc.
(iii) Profit maximization objectives leads to inequalities among the sake holders such as customers, suppliers, public shareholders, etc.

Drawbacks of Profit Maximization

Profit maximization objective consists of certain drawback also:

(i) **It is vague :** In this objective, profit is not defined precisely or correctly. It creates some unnecessary opinion regarding earning habits of the business concern.
(ii) **It ignores the time value of money:** Profit maximization does not consider the time value of money or the net present value of the cash inflow. It leads certain differences between the actual cash inflow and net present cash flow during a particular period.
(iii) **It ignores risk:** Profit maximization does not consider risk of the business concern. Risks may be internal or external which will affect the overall operation of the business concern.

Wealth Maximization

Wealth maximization is one of the modern approaches, which involves latest innovations and improvements in the field of the business concern. The term wealth means shareholder wealth or the wealth of the persons those who are involved in the business concern.

Wealth maximization is also known as value maximization or net present worth maximization. This objective is an universally accepted concept in the field of business.

Favourable Arguments for Wealth Maximization

(i) Wealth maximization is superior to the profit maximization because the main aim of the business concern under this concept is to improve the value or wealth of the shareholders.

(ii) Wealth maximization considers the comparison of the value to cost associated with the business concern. Total value detected from the total cost incurred for the business operation. It provides extract value of the business concern.

(iii) Wealth maximization considers both time and risk of the business concern.

(iv) Wealth maximization provides efficient allocation of resources.

(v) It ensures the economic interest of the society.

Unfavourable Arguments for Wealth Maximization

(i) Wealth maximization leads to prescriptive idea of the business concern but it may not be suitable to present day business activities.

(ii) Wealth maximization is nothing, it is also profit maximization, it is the indirect name of the profit maximization.

(iii) Wealth maximization creates ownership-management controversy.

(iv) Management alone enjoy certain benefits.

(v) The ultimate aim of the wealth maximization objectives is to maximize the profit.

(vi) Wealth maximization can be activated only with the help of the profitable position of the business concern.

APPROACHES TO FINANCIAL MANAGEMENT

Financial management approach measures the scope of the financial management in various fields, which include the essential part of the finance. Financial management is not a revolutionary concept but an evolutionary. The definition and scope of financial management has been changed from one period to another period and applied various innovations. Theoretical points of view, financial management approach may be broadly divided into two major parts.

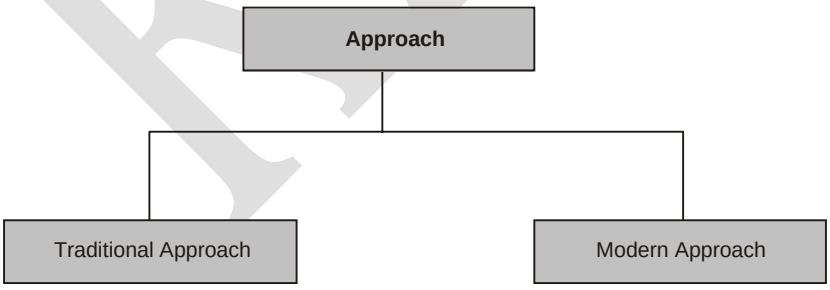

Fig. 1.3 *Approaches to Finance Management*

Traditional Approach

Traditional approach is the initial stage of financial management, which was followed, in the early part of during the year 1920 to 1950. This approach is based on the past experience and the traditionally accepted methods. Main part of the traditional approach is rising of funds for the business concern. Traditional approach consists of the following important area.

Arrangement of funds from lending body.

Arrangement of funds through various financial instruments.

Finding out the various sources of funds.

FUNCTIONS OF FINANCE MANAGER

Finance function is one of the major parts of business organization, which involves the permanent, and continuous process of the business concern. Finance is one of the interrelated functions which deal with personal function, marketing function, production function and research and development activities of the business concern. At present, every business concern concentrates more on the field of finance because, it is a very emerging part which reflects the entire operational and profit ability position of the concern. Deciding the proper financial function is the essential and ultimate goal of the business organization.

Finance manager is one of the important role players in the field of finance function. He must have entire knowledge in the area of accounting, finance, economics and management. His position is highly critical and analytical to solve various problems related to finance. A person who deals finance related activities may be called finance manager.

Finance manager performs the following major functions:

1. **Forecasting Financial Requirements**

   It is the primary function of the Finance Manager. He is responsible to estimate the financial requirement of the business concern. He should estimate, how much finances required to acquire fixed assets and forecast the amount needed to meet the working capital requirements in future.

2. **Acquiring Necessary Capital**

   After deciding the financial requirement, the finance manager should concentrate how the finance is mobilized and where it will be available. It is also highly critical in nature.

3. **Investment Decision**

   The finance manager must carefully select best investment alternatives and consider the reasonable and stable return from the investment. He must be well versed in the field of capital budgeting techniques to determine the effective utilization of investment. The finance manager must concentrate to principles of safety, liquidity and profitability while investing capital.

4. Cash Management

Present days cash management plays a major role in the area of finance because proper cash management is not only essential for effective utilization of cash but it also helps to meet the short-term liquidity position of the concern.

5. Interrelation with Other Departments

Finance manager deals with various functional departments such as marketing, production, personel, system, research, development, etc. Finance manager should have sound knowledge not only in finance related area but also well versed in other areas. He must maintain a good relationship with all the functional departments of the business organization.

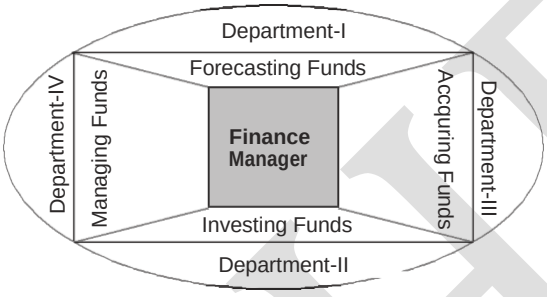

***Fig 1.4** Functions of Financial Manager*

IMPORTANCE OF FINANCIAL MANAGEMENT

Finance is the lifeblood of business organization. It needs to meet the requirement of the business concern. Each and every business concern must maintain adequate amount of finance for their smooth running of the business concern and also maintain the business carefully to achieve the goal of the business concern. The business goal can be achieved only with the help of effective management of finance. We can't neglect the importance of finance at any time at and at any situation. Some of the importance of the financial management is as follows:

Financial Planning

Financial management helps to determine the financial requirement of the business concern and leads to take financial planning of the concern. Financial planning is an important part of the business concern, which helps to promotion of an enterprise.

Acquisition of Funds

Financial management involves the acquisition of required finance to the business concern. Acquiring needed funds play a major part of the financial management, which involve possible source of finance at minimum cost.

Proper Use of Funds

Proper use and allocation of funds leads to improve the operational efficiency of the business concern. When the finance manager uses the funds properly, they can reduce the cost of capital and increase the value of the firm.

Financial Decision

Financial management helps to take sound financial decision in the business concern. Financial decision will affect the entire business operation of the concern. Because there is a direct relationship with various department functions such as marketing, production personnel, etc.

Improve Profitability

Profitability of the concern purely depends on the effectiveness and proper utilization of funds by the business concern. Financial management helps to improve the profitability position of the concern with the help of strong financial control devices such as budgetary control, ratio analysis and cost volume profit analysis.

Increase the Value of the Firm

Financial management is very important in the field of increasing the wealth of the investors and the business concern. Ultimate aim of any business concern will achieve the maximum profit and higher profitability leads to maximize the wealth of the investors as well as the nation.

Promoting Savings

Savings are possible only when the business concern earns higher profitability and maximizing wealth. Effective financial management helps to promoting and mobilizing individual and corporate savings.

Nowadays financial management is also popularly known as business finance or corporate finances. The business concern or corporate sectors cannot function without the importance of the financial management.

MODEL QUESTIONS

1. What is finance? Define business finance.
2. Explain the types of finance.
3. Discuss the objectives of financial management.
4. Critically evaluate various approaches to the financial management.
5. Explain the scope of financial management.
6. Discuss the role of financial manager.
7. Explain the importance of financial management.

Sources of Financing

INTRODUCTION

Finance is the lifeblood of business concern, because it is interlinked with all activities performed by the business concern. In a human body, if blood circulation is not proper, body function will stop. Similarly, if the finance not being properly arranged, the business system will stop. Arrangement of the required finance to each department of business concern is highly a complex one and it needs careful decision. Quantum of finance may be depending upon the nature and situation of the business concern. But, the requirement of the finance may be broadly classified into two parts:

Long-term Financial Requirements or Fixed Capital Requirement

Financial requirement of the business differs from firm to firm and the nature of the requirements on the basis of terms or period of financial requirement, it may be long term and short-term financial requirements.

Long-term financial requirement means the finance needed to acquire land and building for business concern, purchase of plant and machinery and other fixed expenditure. Long-term financial requirement is also called as fixed capital requirements. Fixed capital is the capital, which is used to purchase the fixed assets of the firms such as land and building, furniture and fittings, plant and machinery, etc. Hence, it is also called a capital expenditure.

Short-term Financial Requirements or Working Capital Requirement

Apart from the capital expenditure of the firms, the firms should need certain expenditure like procurement of raw materials, payment of wages, day-to-day expenditures, etc. This kind of expenditure is to meet with the help of short-term financial requirements which will meet the operational expenditure of the firms. Short-term financial requirements are popularly known as working capital.

SOURCES OF FINANCE

Sources of finance mean the ways for mobilizing various terms of finance to the industrial concern. Sources of finance state that, how the companies are mobilizing finance for their requirements. The companies belong to the existing or the new which need sum amount of finance to meet the long-term and short-term requirements such as purchasing of fixed assets, construction of office building, purchase of raw materials and day-to-day expenses.

Sources of finance may be classified under various categories according to the following important heads:

1. Based on the Period

Sources of Finance may be classified under various categories based on the period.

Long-term sources: Finance may be mobilized by long-term or short-term. When the finance mobilized with large amount and the repayable over the period will be more than five years, it may be considered as long-term sources. Share capital, issue of debenture, long-term loans from financial institutions and commercial banks come under this kind of source of finance. Long-term source of finance needs to meet the capital expenditure of the firms such as purchase of fixed assets, land and buildings, etc.

Long-term sources of finance include:

- Equity Shares
- Preference Shares
- Debenture
- Long-term Loans
- Fixed Deposits

Short-term sources: Apart from the long-term source of finance, firms can generate finance with the help of short-term sources like loans and advances from commercial banks, moneylenders, etc. Short-term source of finance needs to meet the operational expenditure of the business concern.

Short-term source of finance include:

- Bank Credit
- Customer Advances
- Trade Credit
- Factoring
- Public Deposits
- Money Market Instruments

2. Based on Ownership

Sources of Finance may be classified under various categories based on the period:

An ownership source of finance include

- Shares capital, earnings
- Retained earnings
- Surplus and Profits

Borrowed capital include

- Debenture
- Bonds
- Public deposits
- Loans from Bank and Financial Institutions.

3. Based on Sources of Generation

Sources of Finance may be classified into various categories based on the period.

Internal source of finance includes

- Retained earnings
- Depreciation funds
- Surplus

External sources of finance may be include

- Share capital
- Debenture
- Public deposits
- Loans from Banks and Financial institutions

4. Based in Mode of Finance

Security finance may be include

- Shares capital
- Debenture

Retained earnings may include

- Retained earnings
- Depreciation funds

Loan finance may include

- Long-term loans from Financial Institutions
- Short-term loans from Commercial banks.

The above classifications are based on the nature and how the finance is mobilized from various sources. But the above sources of finance can be divided into three major classifications:

- Security Finance
- Internal Finance
- Loans Finance

SECURITY FINANCE

If the finance is mobilized through issue of securities such as shares and debenture, it is called as security finance. It is also called as corporate securities. This type of finance plays a major role in the field of deciding the capital structure of the company.

Characters of Security Finance

Security finance consists of the following important characters:

1. Long-term sources of finance.
2. It is also called as corporate securities.
3. Security finance includes both shares and debentures.
4. It plays a major role in deciding the capital structure of the company.
5. Repayment of finance is very limited.
6. It is a major part of the company's total capitalization.

Types of Security Finance

Security finance may be divided into two major types:

1. Ownership securities or capital stock.
2. Creditorship securities or debt capital.

Ownership Securities

The ownership securities also called as capital stock, is commonly called as shares. Shares are the most Universal method of raising finance for the business concern. Ownership capital consists of the following types of securities.

- Equity Shares
- Preference Shares
- No par stock
- Deferred Shares

EQUITY SHARES

Equity Shares also known as ordinary shares, which means, other than preference shares. Equity shareholders are the real owners of the company. They have a control over the management of the company. Equity shareholders are eligible to get dividend if the company earns profit. Equity share capital cannot be redeemed during the lifetime of the company. The liability of the equity shareholders is the value of unpaid value of shares.

Features of Equity Shares

Equity shares consist of the following important features:

1. **Maturity of the shares:** Equity shares have permanent nature of capital, which has no maturity period. It cannot be redeemed during the lifetime of the company.

2. **Residual claim on income:** Equity shareholders have the right to get income left after paying fixed rate of dividend to preference shareholder. The earnings or the income available to the shareholders is equal to the profit after tax minus preference dividend.
3. **Residual claims on assets:** If the company wound up, the ordinary or equity shareholders have the right to get the claims on assets. These rights are only available to the equity shareholders.
4. **Right to control:** Equity shareholders are the real owners of the company. Hence, they have power to control the management of the company and they have power to take any decision regarding the business operation.
5. **Voting rights:** Equity shareholders have voting rights in the meeting of the company with the help of voting right power; they can change or remove any decision of the business concern. Equity shareholders only have voting rights in the company meeting and also they can nominate proxy to participate and vote in the meeting instead of the shareholder.
6. **Pre-emptive right:** Equity shareholder pre-emptive rights. The pre-emptive right is the legal right of the existing shareholders. It is attested by the company in the first opportunity to purchase additional equity shares in proportion to their current holding capacity.
7. **Limited liability:** Equity shareholders are having only limited liability to the value of shares they have purchased. If the shareholders are having fully paid up shares, they have no liability. For example: If the shareholder purchased 100 shares with the face value of Rs. 10 each. He paid only Rs. 900. His liability is only Rs. 100.

   Total number of shares 100

   Face value of shares Rs. 10

   Total value of shares $100 \times 10 = 1{,}000$

   Paid up value of shares 900

   Unpaid value/liability 100

   Liability of the shareholders is only unpaid value of the share (that is Rs. 100).

Advantages of Equity Shares

Equity shares are the most common and universally used shares to mobilize finance for the company. It consists of the following advantages.

1. **Permanent sources of finance:** Equity share capital is belonging to long-term permanent nature of sources of finance, hence, it can be used for long-term or fixed capital requirement of the business concern.
2. **Voting rights:** Equity shareholders are the real owners of the company who have voting rights. This type of advantage is available only to the equity shareholders.
3. **No fixed dividend:** Equity shares do not create any obligation to pay a fixed rate of dividend. If the company earns profit, equity shareholders are eligible for

profit, they are eligible to get dividend otherwise, and they cannot claim any dividend from the company.

4. **Less cost of capital:** Cost of capital is the major factor, which affects the value of the company. If the company wants to increase the value of the company, they have to use more share capital because, it consists of less cost of capital (K_e) while compared to other sources of finance.
5. **Retained earnings:** When the company have more share capital, it will be suitable for retained earnings which is the less cost sources of finance while compared to other sources of finance.

Disadvantages of Equity Shares

1. **Irredeemable:** Equity shares cannot be redeemed during the lifetime of the business concern. It is the most dangerous thing of over capitalization.
2. **Obstacles in management:** Equity shareholder can put obstacles in management by manipulation and organizing themselves. Because, they have power to contrast any decision which are against the wealth of the shareholders.
3. **Leads to speculation:** Equity shares dealings in share market lead to secularism during prosperous periods.
4. **Limited income to investor:** The Investors who desire to invest in safe securities with a fixed income have no attraction for equity shares.
5. **No trading on equity:**When the company raises capital only with the help of equity, the company cannot take the advantage of trading on equity.

PREFERENCE SHARES

The parts of corporate securities are called as preference shares. It is the shares, which have preferential right to get dividend and get back the initial investment at the time of winding up of the company. Preference shareholders are eligible to get fixed rate of dividend and they do not have voting rights.

Preference shares may be classified into the following major types:

1. **Cumulative preference shares:** Cumulative preference shares have right to claim dividends for those years which have no profits. If the company is unable to earn profit in any one or more years, C.P. Shares are unable to get any dividend but they have right to get the comparative dividend for the previous years if the company earned profit.
2. **Non-cumulative preference shares:** Non-cumulative preference shares have no right to enjoy the above benefits. They are eligible to get only dividend if the company earns profit during the years. Otherwise, they cannot claim any dividend.

3. **Redeemable preference shares:** When, the preference shares have a fixed maturity period it becomes redeemable preference shares. It can be redeemable during the lifetime of the company. The Company Act has provided certain restrictions on the return of the redeemable preference shares.

Irredeemable Preference Shares

Irredeemable preference shares can be redeemed only when the company goes for liquidator. There is no fixed maturity period for such kind of preference shares.

Participating Preference Shares

Participating preference sharesholders have right to participate extra profits after distributing the equity shareholders.

Non-Participating Preference Shares

Non-participating preference sharesholders are not having any right to participate extra profits after distributing to the equity shareholders. Fixed rate of dividend is payable to the type of shareholders.

Convertible Preference Shares

Convertible preference sharesholders have right to convert their holding into equity shares after a specific period. The articles of association must authorize the right of conversion.

Non-convertible Preference Shares

There shares, cannot be converted into equity shares from preference shares.

Features of Preference Shares

The following are the important features of the preference shares:

1. **Maturity period:** Normally preference shares have no fixed maturity period except in the case of redeemable preference shares. Preference shares can be redeemable only at the time of the company liquidation.
2. **Residual claims on income:** Preferential sharesholders have a residual claim on income. Fixed rate of dividend is payable to the preference shareholders.
3. **Residual claims on assets:** The first preference is given to the preference shareholders at the time of liquidation. If any extra Assets are available that should be distributed to equity shareholder.
4. **Control of Management:** Preference shareholder does not have any voting rights. Hence, they cannot have control over the management of the company.

Advantages of Preference Shares

Preference shares have the following important advantages.

1. **Fixed dividend:** The dividend rate is fixed in the case of preference shares. It is called as fixed income security because it provides a constant rate of income to the investors.

2. **Cumulative dividends:** Preference shares have another advantage which is called cumulative dividends. If the company does not earn any profit in any previous years, it can be cumulative with future period dividend.
3. **Redemption:** Preference Shares can be redeemable after a specific period except in the case of irredeemable preference shares. There is a fixed maturity period for repayment of the initial investment.
4. **Participation:** Participative preference sharesholders can participate in the surplus profit after distribution to the equity shareholders.
5. **Convertibility:** Convertibility preference shares can be converted into equity shares when the articles of association provide such conversion.

Disadvantages of Preference Shares

1. **Expensive sources of finance:** Preference shares have high expensive source of finance while compared to equity shares.
2. **No voting right:** Generally preference sharesholders do not have any voting rights. Hence they cannot have the control over the management of the company.
3. **Fixed dividend only:** Preference shares can get only fixed rate of dividend. They may not enjoy more profits of the company.
4. **Permanent burden:** Cumulative preference shares become a permanent burden so far as the payment of dividend is concerned. Because the company must pay the dividend for the unprofitable periods also.
5. **Taxation:** In the taxation point of view, preference shares dividend is not a deductible expense while calculating tax. But, interest is a deductible expense. Hence, it has disadvantage on the tax deduction point of view.

DEFERRED SHARES

Deferred shares also called as founder shares because these shares were normally issued to founders. The shareholders have a preferential right to get dividend before the preference shares and equity shares. According to Companies Act 1956 no public limited company or which is a subsidiary of a public company can issue deferred shares.

These shares were issued to the founder at small denomination to control over the management by the virtue of their voting rights.

NO PAR SHARES

When the shares are having no face value, it is said to be no par shares. The company issues this kind of shares which is divided into a number of specific shares without any specific denomination. The value of shares can be measured by dividing the real net worth of the company with the total number of shares.

$$\text{Value of no. per share} = \frac{\text{The real net worth}}{\text{Total no. of shares}}$$

CREDITORSHIP SECURITIES

Creditorship Securities also known as debt finance which means the finance is mobilized from the creditors. Debenture and Bonds are the two major parts of the Creditorship Securities.

Debentures

A Debenture is a document issued by the company. It is a certificate issued by the company under its seal acknowledging a debt.

According to the Companies Act 1956, "debenture includes debenture stock, bonds and any other securities of a company whether constituting a charge of the assets of the company or not."

Types of Debentures

Debentures may be divided into the following major types:

1. **Unsecured debentures:** Unsecured debentures are not given any security on assets of the company. It is also called simple or naked debentures. This type of debentures are treaded as unsecured creditors at the time of winding up of the company.
2. **Secured debentures:** Secured debentures are given security on assets of the company. It is also called as mortgaged debentures because these debentures are given against any mortgage of the assets of the company.
3. **Redeemable debentures:** These debentures are to be redeemed on the expiry of a certain period. The interest is paid periodically and the initial investment is returned after the fixed maturity period.
4. **Irredeemable debentures:** These kind of debentures cannot be redeemable during the life time of the business concern.
5. **Convertible debentures:** Convertible debentures are the debentures whose holders have the option to get them converted wholly or partly into shares. These debentures are usually converted into equity shares. Conversion of the debentures may be:

   Non-convertible debentures

   Fully convertible debentures

   Partly convertible debentures
6. **Other types:** Debentures can also be classified into the following types. Some of the common types of the debentures are as follows:
   1. Collateral Debenture
   2. Guaranteed Debenture
   3. First Debenture
   4. Zero Coupon Bond
   5. Zero Interest Bond/Debenture

Features of Debentures

1. **Maturity period:** Debentures consist of long-term fixed maturity period. Normally, debentures consist of 10–20 years maturity period and are repayable with the principle investment at the end of the maturity period.
2. **Residual claims in income:** Debenture holders are eligible to get fixed rate of interest at every end of the accounting period. Debenture holders have priority of claim in income of the company over equity and preference shareholders.
3. **Residual claims on asset:** Debenture holders have priority of claims on Assets of the company over equity and preference shareholders. The Debenture holders may have either specific change on the Assets or floating change of the assets of the company. Specific change of Debenture holders are treated as secured creditors and floating change of Debenture holders are treated as unsecured creditors.
4. **No voting rights:** Debenture holders are considered as creditors of the company. Hence they have no voting rights. Debenture holders cannot have the control over the performance of the business concern.
5. **Fixed rate of interest:** Debentures yield fixed rate of interest till the maturity period. Hence the business will not affect the yield of the debenture.

Advantages of Debenture

Debenture is one of the major parts of the long-term sources of finance which of consists the following important advantages:

1. **Long-term sources:** Debenture is one of the long-term sources of finance to the company. Normally the maturity period is longer than the other sources of finance.
2. **Fixed rate of interest:** Fixed rate of interest is payable to debenture holders, hence it is most suitable of the companies earn higher profit. Generally, the rate of interest is lower than the other sources of long-term finance.
3. **Trade on equity:** A company can trade on equity by mixing debentures in its capital structure and thereby increase its earning per share. When the company apply the trade on equity concept, cost of capital will reduce and value of the company will increase.
4. **Income tax deduction:** Interest payable to debentures can be deducted from the total profit of the company. So it helps to reduce the tax burden of the company.
5. **Protection:** Various provisions of the debenture trust deed and the guidelines issued by the SEB1 protect the interest of debenture holders.

Disadvantages of Debenture

Debenture finance consists of the following major disadvantages:

1. **Fixed rate of interest:** Debenture consists of fixed rate of interest payable to securities. Even though the company is unable to earn profit, they have to pay the fixed rate of interest to debenture holders, hence, it is not suitable to those company earnings which fluctuate considerably.

2. **No voting rights:** Debenture holders do not have any voting rights. Hence, they cannot have the control over the management of the company.
3. **Creditors of the company:** Debenture holders are merely creditors and not the owners of the company. They do not have any claim in the surplus profits of the company.
4. **High risk:** Every additional issue of debentures becomes more risky and costly on account of higher expectation of debenture holders. This enhanced financial risk increases the cost of equity capital and the cost of raising finance through debentures which is also high because of high stamp duty.
5. **Restrictions of further issues:** The company cannot raise further finance through debentures as the debentures are under the part of security of the assets already mortgaged to debenture holders.

INTERNAL FINANCE

A company can mobilize finance through external and internal sources. A new company may not raise internal sources of finance and they can raise finance only external sources such as shares, debentures and loans but an existing company can raise both internal and external sources of finance for their financial requirements. Internal finance is also one of the important sources of finance and it consists of cost of capital while compared to other sources of finance.

Internal source of finance may be broadly classified into two categories:

A. Depreciation Funds
B. Retained earnings

Depreciation Funds

Depreciation funds are the major part of internal sources of finance, which is used to meet the working capital requirements of the business concern. Depreciation means decrease in the value of asset due to wear and tear, lapse of time, obsolescence, exhaustion and accident. Generally depreciation is changed against fixed assets of the company at fixed rate for every year. The purpose of depreciation is replacement of the assets after the expired period. It is one kind of provision of fund, which is needed to reduce the tax burden and overall profitability of the company.

Retained Earnings

Retained earnings are another method of internal sources of finance. Actually is not a method of raising finance, but it is called as accumulation of profits by a company for its expansion and diversification activities.

Retained earnings are called under different names such as; self finance, inter finance, and plugging back of profits. According to the Companies Act 1956 certain percentage, as prescribed by the central government (not exceeding 10%) of the net profits after tax of a

financial year have to be compulsorily transferred to reserve by a company before declaring dividends for the year.

Under the retained earnings sources of finance, a part of the total profits is transferred to various reserves such as general reserve, replacement fund, reserve for repairs and renewals, reserve funds and secrete reserves, etc.

Advantages of Retained Earnings

Retained earnings consist of the following important advantages:

1. **Useful for expansion and diversification**: Retained earnings are most useful to expansion and diversification of the business activities.
2. **Economical sources of finance:** Retained earnings are one of the least costly sources of finance since it does not involve any floatation cost as in the case of raising of funds by issuing different types of securities.
3. **No fixed obligation:** If the companies use equity finance they have to pay dividend and if the companies use debt finance, they have to pay interest. But if the company uses retained earnings as sources of finance, they need not pay any fixed obligation regarding the payment of dividend or interest.
4. **Flexible sources:** Retained earnings allow the financial structure to remain completely flexible. The company need not raise loans for further requirements, if it has retained earnings.
5. **Increase the share value:** When the company uses the retained earnings as the sources of finance for their financial requirements, the cost of capital is very cheaper than the other sources of finance; Hence the value of the share will increase.
6. **Avoid excessive tax:** Retained earnings provide opportunities for evasion of excessive tax in a company when it has small number of shareholders.
7. **Increase earning capacity:** Retained earnings consist of least cost of capital and also it is most suitable to those companies which go for diversification and expansion.

Disadvantages of Retained Earnings

Retained earnings also have certain disadvantages:

1. **Misuses:** The management by manipulating the value of the shares in the stock market can misuse the retained earnings.
2. **Leads to monopolies:** Excessive use of retained earnings leads to monopolistic attitude of the company.
3. **Over capitalization:** Retained earnings lead to over capitalization, because if the company uses more and more retained earnings, it leads to insufficient source of finance.
4. **Tax evasion:** Retained earnings lead to tax evasion. Since, the company reduces tax burden through the retained earnings.

5. **Dissatisfaction:** If the company uses retained earnings as sources of finance, the shareholder can't get more dividends. So, the shareholder does not like to use the retained earnings as source of finance in all situations.

LOAN FINANCING

Loan financing is the important mode of finance raised by the company. Loan finance may be divided into two types:

(a) Long-Term Sources
(b) Short-Term Sources

Loan finance can be raised through the following important institutions.

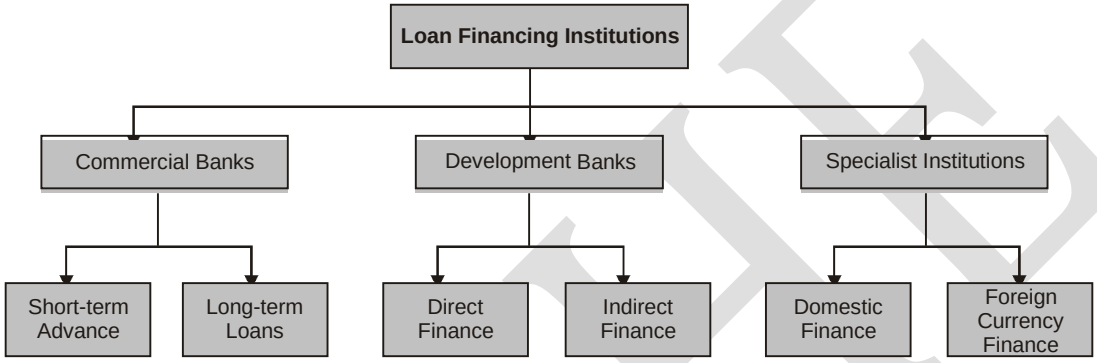

Fig. 3.1 *Loan Financing*

Financial Institutions

With the effect of the industrial revaluation, the government established nation wide and state wise financial industries to provide long-term financial assistance to industrial concerns in the country. Financial institutions play a key role in the field of industrial development and they are meeting the financial requirements of the business concern. IFCI, ICICI, IDBI, SFC, EXIM Bank, ECGC are the famous financial institutions in the country.

Commercial Banks

Commercial Banks normally provide short-term finance which is repayable within a year. The major finance of commercial banks is as follows:

Short-term advance: Commercial banks provide advance to their customers with or without securities. It is one of the most common and widely used short-term sources of finance, which are needed to meet the working capital requirement of the company.

It is a cheap source of finance, which is in the form of pledge, mortgage, hypothecation and bills discounted and rediscounted.

Short-term Loans

Commercial banks also provide loans to the business concern to meet the short-term financial requirements. When a bank makes an advance in lump sum against some security it is termed as loan. Loan may be in the following form:

(a) **Cash credit**: A cash credit is an arrangement by which a bank allows his customer to borrow money up to certain limit against the security of the commodity.

(b) **Overdraft**: Overdraft is an arrangement with a bank by which a current account holder is allowed to withdraw more than the balance to his credit up to a certain limit without any securities.

Development Banks

Development banks were established mainly for the purpose of promotion and development the industrial sector in the country. Presently, large number of development banks are functioning with multidimensional activities. Development banks are also called as financial institutions or statutory financial institutions or statutory non-banking institutions. Development banks provide two important types of finance:

(a) Direct Finance

(b) Indirect Finance/Refinance

Some of the important development banks are discussed in Chapter 11.

Presently the commercial banks are providing all kinds of financial services including development-banking services. And also nowadays development banks and specialisted financial institutions are providing all kinds of financial services including commercial banking services. Diversified and global financial services are unavoidable to the present day economics. Hence, we can classify the financial institutions only by the structure and set up and not by the services provided by them.

MODEL QUESTIONS

1. Explain the various sources of financing.
2. What is meant by security financing?
3. What is debt financing?
4. Critically examine the advantages and disadvantages of equity shares.
5. Discuss the features of equity shares.
6. What are the merits of the deferred shares?
7. Explain the merits and demerits of preference shares?
8. List out the types of debentures.

9. Evaluate the overall view of debentures.
10. How internal sources of finance is used in the industrial concern?
11. What is retained earnings?
12. Evaluate the advantages and disadvantages of retained earnings.
13. How does depreciation funds help the industrial concern as sources of finance?
14. Evaluate the overall structure of the loan financing?
15. Explain the Commercial Bank financing?
16. Enumerate the major development banks.
17. Explain the role of UTI and LIC in industrial financing?
18. What is cash credit?
19. Mention the functions of IFCI.

UNIT II Time value of money and its applications.

Time value of money: Present value, future value, Annuity, Annuity Due, Perpetuity, Amortization schedule, Principles of capital budgeting – method of investment analysis – payback, APR, NPV, IRR discounted cash flow – risk and return decision – profitability index

INTRODUCTION

The word Capital refers to be the total investment of a company of firm in money, tangible and intangible assets. Whereas budgeting defined by the "**Rowland** and **William**" it may be said to be the art of building budgets. Budgets are a blue print of a plan and action expressed in quantities and manners.

The examples of capital expenditure:

1. Purchase of fixed assets such as land and building, plant and machinery, good will, etc.
2. The expenditure relating to addition, expansion, improvement and alteration to the fixed assets.
3. The replacement of fixed assets.
4. Research and development project.

Definitions

According to the definition of **Charles T. Hrongreen,** "capital budgeting is a long-term planning for making and financing proposed capital out lays.

According to the definition of **G.C. Philippatos,** "capital budgeting is concerned with the allocation of the firms source financial resources among the available opportunities. The consideration of investment opportunities involves the comparison of the expected future streams of earnings from a project with the immediate and subsequent streams of earning from a project, with the immediate and subsequent streams of expenditure".

According to the definition of **Richard and Green law,** "capital budgeting is acquiring inputs with long-term return".

According to the definition of **Lyrich,** "capital budgeting consists in planning development of available capital for the purpose of maximizing the long-term profitability of the concern".

It is clearly explained in the above definitions that a firm's scarce financial resources are utilizing the available opportunities. The overall objectives of the company from is to maximize the profits and minimize the expenditure of cost.

Need and Importance of Capital Budgeting

1. **Huge investments:** Capital budgeting requires huge investments of funds, but the available funds are limited, therefore the firm before investing projects, plan are control its capital expenditure.
2. **Long-term:** Capital expenditure is long-term in nature or permanent in nature. Therefore financial risks involved in the investment decision are more. If higher risks are involved, it needs careful planning of capital budgeting.
3. **Irreversible:** The capital investment decisions are irreversible, are not changed back. Once the decision is taken for purchasing a permanent asset, it is very difficult to dispose off those assets without involving huge losses.
4. **Long-term effect:** Capital budgeting not only reduces the cost but also increases the revenue in long-term and will bring significant changes in the profit of the company by avoiding over or more investment or under investment. Over investments leads to be unable to utilize assets or over utilization of fixed assets. Therefore before making the investment, it is required carefully planning and analysis of the project thoroughly.

CAPITAL BUDGETING PROCESS

Capital budgeting is a difficult process to the investment of available funds. The benefit will attained only in the near future but, the future is uncertain. However, the following steps followed for capital budgeting, then the process may be easier are.

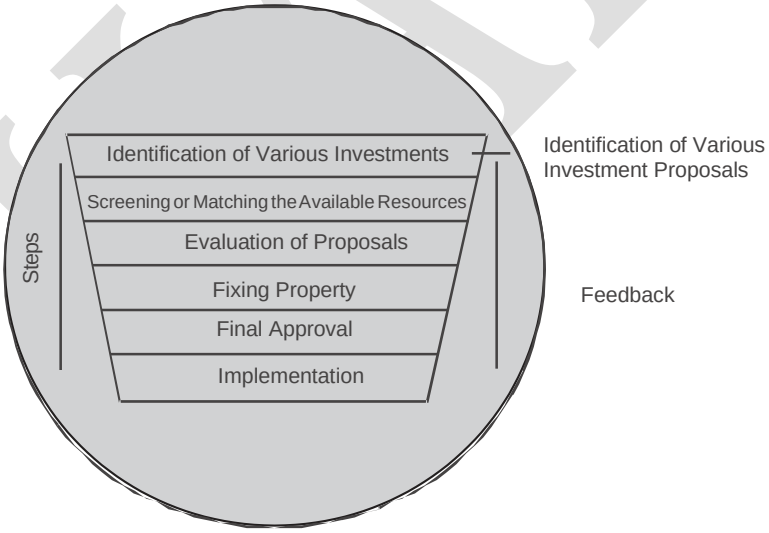

***Fig. 9.1** Capital Budgeting Process*

1. **Identification of various investments proposals:** The capital budgeting may have various investment proposals. The proposal for the investment opportunities may be defined from the top management or may be even from the lower rank. The heads of various department analyse the various investment decisions, and will select proposals submitted to the planning committee of competent authority.
2. **Screening or matching the proposals:** The planning committee will analyse the various proposals and screenings. The selected proposals are considered with the available resources of the concern. Here resources referred as the financial part of the proposal. This reduces the gap between the resources and the investment cost.
3. **Evaluation:** After screening, the proposals are evaluated with the help of various methods, such as pay back period proposal, net discovered present value method, accounting rate of return and risk analysis. Each method of evaluation used in detail in the later part of this chapter. The proposals are evaluated by.
   (a) Independent proposals
   (b) Contingent of dependent proposals
   (c) Partially exclusive proposals.

   Independent proposals are not compared with another proposals and the same may be accepted or rejected. Whereas higher proposals acceptance depends upon the other one or more proposals. For example, the expansion of plant machinery leads to constructing of new building, additional manpower etc. Mutually exclusive projects are those which competed with other proposals and to implement the proposals after considering the risk and return, market demand etc.
4. **Fixing property:** After the evolution, the planning committee will predict which proposals will give more profit or economic consideration. If the projects or proposals are not suitable for the concern's financial condition, the projects are rejected without considering other nature of the proposals.
5. **Final approval:** The planning committee approves the final proposals, with the help of the following:
   (a) Profitability
   (b) Economic constituents
   (c) Financial violability
   (d) Market conditions.

   The planning committee prepares the cost estimation and submits to the management.
6. **Implementing:** The competent autherity spends the money and implements the proposals. While implementing the proposals, assign responsibilities to the proposals, assign responsibilities for completing it, within the time allotted and reduce the cost for this purpose. The network techniques used such as PERT and CPM. It helps the management for monitoring and containing the implementation of the proposals.

7. **Performance review of feedback:** The final stage of capital budgeting is actual results compared with the standard results. The adverse or unfavourable results identified and removing the various difficulties of the project. This is helpful for the future of the proposals.

KINDS OF CAPITAL BUDGETING DECISIONS

The overall objective of capital budgeting is to maximize the profitability. If a firm concentrates return on investment, this objective can be achieved either by increasing the revenues or reducing the costs. The increasing revenues can be achieved by expansion or the size of operations by adding a new product line. Reducing costs mean representing obsolete return on assets.

METHODS OF CAPITAL BUDGETING OF EVALUATION

By matching the available resources and projects it can be invested. The funds available are always living funds. There are many considerations taken for investment decision process such as environment and economic conditions.

The methods of evaluations are classified as follows:

(A) Traditional methods (or Non-discount methods)

(i) Pay-back Period Methods
(ii) Post Pay-back Methods
(iii) Accounts Rate of Return

(B) Modern methods (or Discount methods)

(i) Net Present Value Method
(ii) Internal Rate of Return Method
(iii) Profitability Index Method

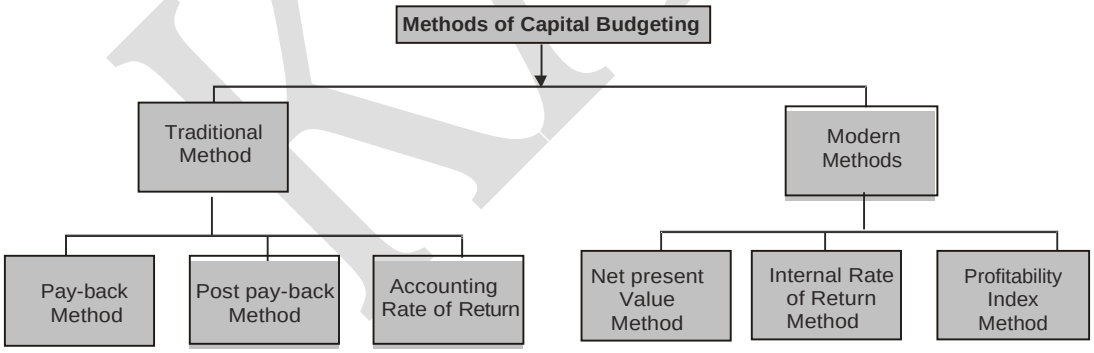

***Fig. 9.2** Capital Budgeting Methods*

Pay-back Period

Pay-back period is the time required to recover the initial investment in a project.

(It is one of the non-discounted cash flow methods of capital budgeting).

$$\text{Pay-back period} = \frac{\text{Initial investment}}{\text{Annual cash inflows}}$$

Merits of Pay-back method

The following are the important merits of the pay-back method:

1. It is easy to calculate and simple to understand.
2. Pay-back method provides further improvement over the accounting rate return.
3. Pay-back method reduces the possibility of loss on account of obsolescence.

Demerits

1. It ignores the time value of money.
2. It ignores all cash inflows after the pay-back period.
3. It is one of the misleading evaluations of capital budgeting.

Accept /Reject criteria

If the actual pay-back period is less than the predetermined pay-back period, the project would be accepted. If not, it would be rejected.

Exercise 1

Project cost is Rs. 30,000 and the cash inflows are Rs. 10,000, the life of the project is 5 years. Calculate the pay-back period.

Solution

$$= \frac{\text{Rs. } 30{,}000}{\text{Rs. } 10{,}000} = 3 \text{ Years}$$

The annual cash inflow is calculated by considering the amount of net income on the amount of depreciation project (Asset) before taxation but after taxation. The income precision earned is expressed as a percentage of initial investment, is called unadjusted rate of return. The above problem will be calculated as below:

$$\text{Unadjusted rate of return} = \frac{\text{Annual Return}}{\text{Investment}} \times 100$$

$$= \frac{\text{Rs. } 10{,}000}{\text{Rs. } 30{,}000} \times 100$$

$$= 33.33\%$$

Exercise 2

A project costs Rs. 20,00,000 and yields annually a profit of Rs. 3,00,000 after depreciation @ 12½% but before tax at 50%. Calculate the pay-back period.

Profit after depreciation	3,00,000
	1,50,000
Tax 50%	1,50,000
Add depreciation	
20,00,000 $12\frac{1}{2}\%$	2,50,000
Cash in flow	4,00,000

Solution

$$\text{Pay-back period} = \frac{\text{Investment}}{\text{Cash flow}}$$

$$= \frac{20,00,000}{4,00,000} = 5 \text{ years.}$$

Uneven Cash Inflows

Normally the projects are not having uniform cash inflows. In those cases the pay-back period is calculated, cumulative cash inflows will be calculated and then interpreted.

Exercise 3

Certain projects require an initial cash outflow of Rs. 25,000. The cash inflows for 6 years are Rs. 5,000, Rs. 8,000, Rs. 10,000, Rs. 12,000, Rs. 7,000 and Rs. 3,000.

Solution

Year	Cash Inflows (Rs.)	Cumulative Cash Inflows(Rs.)
1	5,000	5,000
2	8,000	13,000
3	10,000	23,000
4	12,000	35,000
5	7,000	42,000
6	3,000	45,000

The above calculation shows that in 3 years Rs. 23,000 has been recovered Rs. 2,000, is balance out of cash outflow. In the 4th year the cash inflow is Rs. 12,000. It means the pay-back period is three to four years, calculated as follows

$$\text{Pay-back period} = 3 \text{ years} + 2000/12000 \times 12 \text{ months}$$

$$= 3 \text{ years } 2 \text{ months.}$$

Post Pay-back Profitability Method

One of the major limitations of pay-back period method is that it does not consider the cash inflows earned after pay-back period and if the real profitability of the project cannot be assessed. To improve over this method, it can be made by considering the receivable after the pay-back period. These returns are called post pay-back profits.

Exercise 4

From the following particulars, compute:

1. Payback period.
2. Post pay-back profitability and post pay-back profitability index.

(a)	Cash outflow	Rs. 1,00,000
	Annual cash inflow (After tax before depreciation)	Rs. 25,000
	Estimate Life	6 years
(b)	Cash outflow	Rs. 1,00,000
	Annual cash inflow (After tax depreciation)	
	First five years	Rs. 20,000
	Next five years	Rs. 8,000
	Estimated life	10 Years
	Salvage value	Rs. 16,000

Solution

(a) (i) Pay-back period

$$= \frac{\text{Initial investment}}{\text{Annual cash inflows}}$$

$$= \frac{1,00,000}{25,000} = 4 \text{ Years}$$

(ii) Post pay-back profitability

=Cash inflow (Estimated life – Pay-back period)

=25,000 (6 – 4)

=Rs. 50,000

(iii) Post pay-back profitability index

$$= \frac{50,000}{1,00,000} \times 100 = 50\%$$

(b) Cash inflows are equal, therefore pay back period is calculated as follows:

(i)

Year	Cash Inflows (Rs.)	Cumulative Cash Inflows (Rs.)
1	20,000	20,000
2	20,000	40,000
3	20,000	60,000
4	20,000	80,000

Contd....

5	20,000	1,00,000
6	8,000	1,08,000
7	8,000	1,16,000
8	8,000	1,24,000
9	8,000	1,32,000
10	8,000	1,40,000

(ii) Post pay-back profitability.

$$= \text{Cash inflow (estimated life – pay-back period)}$$
$$= 8{,}000\ (10-5)$$
$$= 8000 \times 5 = 40{,}000$$

(iii) Post pay-back profitability index

$$= \frac{40{,}000}{1{,}00{,}000} \times 100 = 40\%$$

Accounting Rate of Return or Average Rate of Return

Average rate of return means the average rate of return or profit taken for considering the project evaluation. This method is one of the traditional methods for evaluating the project proposals:

Merits

1. It is easy to calculate and simple to understand.
2. It is based on the accounting information rather than cash inflow.
3. It is not based on the time value of money.
4. It considers the total benefits associated with the project.

Demerits

1. It ignores the time value of money.
2. It ignores the reinvestment potential of a project.
3. Different methods are used for accounting profit. So, it leads to some difficulties in the calculation of the project.

Accept/Reject criteria

If the actual accounting rate of return is more than the predetermined required rate of return, the project would be accepted. If not it would be rejected.

Exercise 5

A company has two alternative proposals. The details are as follows:

	Proposal I	Proposal II
	Automatic Machine	Ordinary Machine
Cost of the machine	Rs. 2,20,000	Rs. 60,000
Estimated life	5½ years	8 years
Estimated sales p.a.	Rs. 1,50,000	Rs. 1,50,000
Costs : Material	50,000	50,000
Labour	12,000	60,000
Variable Overheads	24,000	20,000

Compute the profitability of the proposals under the return on investment method.

(M.Com., Madras and Bharathidasan)

Solution

Profitability Statement

	Automatic Machine	Ordinary Machine
Cost of the machine	Rs. 2,20,000	Rs. 60,000
Life of the machine	5½ years	8 years
	Rs.	**Rs.**
Estimated Sales	(A) 1,50,000	1,50,000
Less : Cost : Material	50,000	50,000
Labour	12,000	60,000
Variable overheads	24,000	20,000
Depreciation (1)	40,000	7,000
Total Cost	(B) 1,26,000	1,37,000
Profit (A) – (B)	24,000	12,500

Working:

(1) Depreciation = Cost ÷ Life

Automatic machine = 2,20,000 ÷ 5½ = 40,000

Ordinary machine = 60,000 ÷ 8 = 7,500

$$\text{Return on investment} = \frac{\text{Average profit}}{\text{Original investment}} \times 100$$

$$= \frac{24,000}{2,20,000} \times 100 \qquad \frac{12,500}{60,000} \times 100$$

10.9% 20.8%

Automatic machine is more profitable than the ordinary machine.

Net Present Value

Net present value method is one of the modern methods for evaluating the project proposals. In this method cash inflows are considered with the time value of the money. Net present value describes as the summation of the present value of cash inflow and present value of cash outflow. Net present value is the difference between the total present value of future cash inflows and the total present value of future cash outflows.

Merits

1. It recognizes the time value of money.
2. It considers the total benefits arising out of the proposal.
3. It is the best method for the selection of mutually exclusive projects.
4. It helps to achieve the maximization of shareholders' wealth.

Demerits

1. It is difficult to understand and calculate.
2. It needs the discount factors for calculation of present values.
3. It is not suitable for the projects having different effective lives.

Accept/Reject criteria

If the present value of cash inflows is more than the present value of cash outflows, it would be accepted. If not, it would be rejected.

Exercise 6

From the following information, calculate the net present value of the two project and suggest which of the two projects should be accepted a discount rate of the two.

	Project X	Project Y
Initial Investment	Rs. 20,000	Rs. 30,000
Estimated Life	5 years	5 years
Scrap Value	Rs. 1,000	Rs. 2,000

The profits before depreciation and after taxation (cash flows) are as follows:

	Year 1	Year 2	Year 3	Year 4	Year 5
	Rs.	Rs.	Rs.	Rs.	Rs.
Project x	5,000	10,000	10,000	3,000	2,000
Project y	20,000	10,000	5,000	3,000	2,000

Note : The following are the present value factors @ 10% p.a.

Year	1	2	3	4	5	6
Factor	0.909	0.826	0.751	0.683	0.621	0.564

(MBA, Madurai-Kamaraj University, May 2005)

Solution

Year	Cash Inflows		Present Value of Rs. 1 @ 10%	Present Value of Net Cash Inflow	
	Project X Rs.	Project Y Rs.		Project X Rs.	Project Y Rs.
1	5,000	20,000	0.909	4,545	18,180
2	10,000	10,000	0.826	8,260	8,260
3	10,000	5,000	0.751	7,510	3,755
4	3,000	3,000	0.683	2,049	2,049
5	2,000	2,000	0.621	1,242	1,242
Scrap Value	1,000	2,000	0.621	621	1,245
Total present value				24,227	34,728
Initial investments				20,000	30,000
Net present value				4,227	4,728

Project Y should be selected as net present value of project Y is higher.

Exercise 7

The following are the cash inflows and outflows of a certain project.

Year	Outflows	Inflows
0	1,75,000	-
1	5,50,000	35,000
2		45,000
3		65,000
4		85,000
5		50,000

The salvage value at the end of 5 years is Rs. 50,000. Taking the cutoff rate as 10%, calculate net present value.

Year	1	2	3	4	5
P.V.	0.909	0.826	0.751	0.683	0.621

Solution

3	65000	0.751	48815
4	85000	0.683	58055
5	50000	0.621	31050
5(Salvage)	50000	0.621	31050
		Total present value of cash inflows	237955

Less : Total present value of outflows

Cash outflow at the beginning	1,75,000
Cash outflow at the end of first Year 50000×0.909	45,450
Total value of outflows	2,20,450
Net Present Value	17,505

If the cash inflows are not given in that cases the calculation of cash inflows are Net profit after tax+Depreciation. In this type of situation first find out the Net profit after depreciation and deducting the tax and then add the deprecation. It gives the cash inflow.

Exercise 8 From the following information you can learn after tex and depreciation concept.

Initial Outlay	**Rs. 1,00,000**
Estimated life	5 Years
Scrap Value	Rs. 10,000
Profit after tax :	
End of year 1	Rs. 6,000
2	Rs. 14,000
3	Rs. 24,000
4	16,000
5	Nil

Solution Depreciation has been calculated under straight line method. The cost of capital may be taken at 10%. P.a. is given below.

Year	1	2	3	4	5
PV factor @ 10%	0.909	0.826	0.751	0.683	0.621

$$\text{Depreciation} = \frac{\text{Initial cash outflow} - \text{scrap value}}{\text{Estimated Life of the project}}$$

$$= \frac{1,00,000 - 10,000}{5}$$

$$= \frac{90,000}{5} = \text{Rs.}18,000$$

Year	Profit after Tax	Depreciation	Cash Inflow
1	6,000	18,000	24,000
2	14,000	18,000	32,000
3	24,000	18,000	42,000
4	16,000	18,000	34,000
5	Nil	18,000	18,000

Net Present Value

Year	Cash Inflow	Discount factor @ 10%	Present value (Rs.)
1	24,000	0.909	21,816
2	32,000	0.826	26,432
3	42,000	0.751	31,542
4	34,000	0.683	23,222
5	18,000	0.621	11,178

Total present value of cash inflows	1,14,190
Less : Initial cash investment	1,00,000
Net present value	1,41,90

Internal Rate of Return

Internal rate of return is time adjusted technique and covers the disadvantages of the traditional techniques. In other words it is a rate at which discount cash flows to zero. It is expected by the following ratio:

$$\frac{\text{Cash inflow}}{\text{Investment initial}}$$

Steps to be followed:

Step1. find out factor

Factor is calculated as follows:

$$F=\frac{\text{Cash outlay (or) initial investment}}{\text{Cash inflow}}$$

Step 2. Find out positive net present value

Step 3. Find out negative net present value

Step 4. Find out formula net present value

Formula

$$\text{IRR} = \text{Base factor} + \frac{\text{Positive net present value}}{\text{Difference in positive and Negative net present value}} \times \text{DP}$$

Base factor = Positivediscount rate

DP = Difference in percentage

Merits

1. It consider the time value of money.
2. It takes into account the total cash inflow and outflow.
3. It does not use the concept of the required rate of return.
4. It gives the approximate/nearest rate of return.

Demerits

1. It involves complicated computational method.
2. It produces multiple rates which may be confusing for taking decisions.
3. It is assume that all intermediate cash flows are reinvested at the internal rate of return.

Accept/ Reject criteria

If the present value of the sum total of the compounded reinvested cash flows is greater than the present value of the outflows, the proposed project is accepted. If not it would be rejected.

Exercise 9

A company has to select one of the following two projects:

	Project A	Project B
Cost	Rs.22,000	20,000
Cash inflows:		
Year 1	12,000	2,000
Year 2	4,000	2,000
Year 3	2,000	4,000
Year 4	10,000	20,000

Using the Internal Rate of Return method suggest which is Preferable.

Solution

$$F = \frac{\text{Cash outlay}}{\text{Cash inflow}}$$

Project A

$$\text{Cash Inflow} = \frac{\text{Total cash inflow}}{\text{No. of years}}$$

$$= \frac{28{,}000}{4} = 7000$$

$$= \frac{22000}{7000} = 3.14$$

The factor thus calculated will be located in table II below. This would give the estimated rate of return to be applied discounting the cash for the internal rate of returns. In this of project A the rate comes to 10% while in case of project B it comes to15%.

Project A

Year	Cash Inflows Rs.	Discounting Factor at 10%	Present Value Rs.
1	12000	0.909	10908
2	4000	0.826	3304
3	2000	0.751	1502
4	10000	0.683	6830
			22544
Less: Initial Investment.			22000
Net Present Value			544

The present value at 10% comes to Rs. 22,544. The initial investment is Rs. 22,000. Interest rate of return may be taken approximately at 10%.

In the case more exactness is required another trial which is slightly higher than 10%(since at this rate the present value is more than initial investment) may be taken. Taking a rate of 12% the following results would emerge.

Year	Cash Inflows Rs.	Discounting Factor at 12.6%	Present Value Rs.
1	12,000	0.893	10,716
2	4,000	0.794	3,188
3	2,000	0.712	1,424
4	10,000	0.636	6,380
			21,688
Less:	Initial Investment Value		22,000
	Net Present Value		(–)312

$$\text{IRR} = \text{Base factor} + \frac{\text{Positive net present value}}{\text{Difference in positive and Negative net present value}} \times \text{DP}$$

Base factor= 10%

$$\text{DP} = 2\%$$

$$= 10\% + \frac{544}{544 - (-312)} \times 2\%$$

$$= 10\% + \frac{544}{856} \times 2$$

$$= 10+1.27$$

$$= 11.27\%$$

Project B

Year	Cash Inflows Rs.	Discount Factor at 15%	Present value Rs.
1	2,000	0.909#	1,818
2	2,000	0.826	1,652
3	4,000	0.751	3,004
4	20,000	0.683	13,660
		Total present value	20,134
Less:		Initial investment	20,000
		Net present value	134

$$\text{IRR} = 10\% \frac{134}{134-(2676)} \times 5\%$$

$$= 10\% + 0.24\% \qquad \text{IRR} = 10.24\%$$

Thus, internal rate of return in project 'A' is higher as compared to project 'B'. Therefore project 'A' is preferable.

Exercise 10

A project costs Rs. 16,000 and is expected to generate cash inflows of Rs. 4,000 each 5 years. Calculate the Interest Rate of Return.

Solution

$$F = \frac{16{,}000}{4{,}000} = 4$$

Facts may lays between 6% to 8%

4.221 for 6%

3.993 for 8%

$4000 \times 4.21 =$	16,840
$4000 \times 3.99 =$	15,960
6% present value	16,840
Less: Investment	16,000
Net present value	840

8% present value 15,960

Less: Investment 16,000

−40

$$IRR = 6\% + \frac{840}{840 - (-40)} \times 2\%$$

$$= 6\% + 1.91\%$$

$$= 7.91\%.$$

Excess Present Value Index

Excess present value is calculated on basis of net present value. It gives the results in percentage.

Exercise 11

The initial of an equipment is Rs. 10,000. Cash inflow for 5 years are estimated to be Rs. 3,500 per year. The management is desired minimum rate of excess present value index.

Solution

Present value of Rs. 1 received annually for 5 years can be had form the annuity table.

Present value of 3,500 received annually for 5 years.

$$\text{Excesspresent value index} = \frac{\text{Total presentvalue ofcashinflows}}{\text{Total present value of cash outflows}}$$

$$= \frac{11,732}{10,000} \times 100$$

$$= 117,32\%$$

Capital Rationing

In the rationing the company has only limited investment the project are selected according to the profitability. The project has selected the combination of proposal that will yield the greatest portability.

Exercise 12 Let us assume that a firm has only Rs. 20 lakhs to invest and funds cannot be provided. The various proposals along with the cost and profitability index are as follows.

Proposal	Pool of the project	Profitability Index
1	6,00,000	1.46
2	2,00,000	.098
3	10,00,000	2.31
4	4,00,000	1.32
5	3,00,000	1.25

Solution

In this example all proposals expect number 2 give profitability exceeding one and are profitable investments. The total outlay required to be invested in all other (profitable) project is Rs. 25,00,000(1+2+3+4+5) but total funds available with the firm are Rs. 20 lakhs and hence the firm has to do capital combination of project within a total which has the lowest profitability index along with the profitable proposals cannot be taken.

RISK AND UNCERTAINLY IN CAPITAL BUDGETING

Capital budgeting requires the projection of cash inflow and outflow of the future. The future in always uncertain, estimate of demand, production, selling price, cost etc., cannot be exact.

For example: The product at any time it become obsolete therefore, the future in unexpected. The following methods for considering the accounting of risk in capital budgeting. Various evaluation methods are used for risk and uncertainty in capital budgeting are as follows:

(i) Risk-adjusted cut off rate (or method of varying discount rate)
(ii) Certainly equivalent method.
(iii) Sensitivity technique.
(iv) Probability technique
(v) Standard deviation method.
(vi) Co-efficient of variation method.
(vii) Decision tree analysis.

(i) Risk-adjusted cutoff rate (or Method of varying)

This is one of the simplest method while calculating the risk in capital budgeting increase cut of rate or discount factor by certain percentage an account of risk. **Exercise 13**

The Ramakrishna Ltd., in considering the purchase of a new investment. Two alternative investments are available (X and Y) each costing Rs. 150000. Cash inflows are expected to be as follows:

Cash Inflows

Year	Investment X Rs.	Investment Y Rs.
1	60,000	65,000
2	45,000	55,000
3	35,000	40,000
4	30,000	40,000

The company has a target return on capital of 10%. Risk premium rate are 2% and 8% respectively for investment X and Y.Which investment should be preferred?

Solution

The profitability of the two investments can be compared on the basis of net present values cash inflows adjusted for risk premium rates as follows:

Investment X				Investment Y		
Year	Discount Factor10% + 2% = 12%	Cash Inflow Rs.	Present Value Rs.	Discount Factor 10% + 8%=18%	Cash Inflow Rs.	Present Values
1	0.893	60,000	53,580	0.847	85,000	71,995
2	0.797	45,000	35,865	0.718	55,000	39,490
3	0.712	35,000	24,920	0.609	40,000	24,360
4	0.635	30,000	19,050	0.516	40,000	20,640
			1,33,415			1,56,485

Investment X

Net present value = 133415 – 150000

= – Rs. 16585

Investment Y

Net present value = 156485 – 150000

= Rs. 6485

As even at a higher discount rate investment Y gives a higher net present value, investment Y should be preferred.

(ii) Certainly equivalent method

It is also another simplest method for calculating risk in capital budgeting info reduceds expected cash inflows by certain amounts it can be employed by multiplying the expected cash inflows by certainly equivalent co-efficient in order the uncertain cash inflow to certain cash inflows.

Exercise 14

There are two projects A and B. Each involves an investment of Rs. 50,000. The expected cash inflows and the certainly co-efficient are as under:

Year	Project A		Project B	
	Cash inflows	Certainly co-efficient	Cash inflows	Certainly Co-efficient
1	35,000	.8	25,000	.9
2	30,000	.7	35,000	.8
3	20,000	.9	20,000	.7

Risk-free cutoff rate is 10%. Suggest which of the two projects. Should be preferred.

Solution

Calculations of cash Inflows with certainly:

Year	Project A			Project B		
	Cash Inflow	Certainly Co-efficient	Certain Cash Inflow	Cash Inflow	Certainly Co-efficient	Certain Cash Inflow
1	35,000	.8	28,000	25,000	.9	22,500
2	30,000	.7	21,000	35,000	.8	28,000
3	20,000	.9	18,000	20,000	.7	14,000

Calculation of present values of cash inflows:

Year	Project A		Project B		
	Discount Factor @ 10%	Cash Inflows	Present Values	Cash Inflows	Present Value
1	0.909	28,000	25,452	22,500	20,453
2	0.826	21,000	17,346	28,000	23,128
3	0.751	18,000	13,518	14,000	10,514
Total			56,316		54,095

	Project A	Project B
Net present value	= Rs. 56,316 – 50,000	54,095 – 50,000
	= Rs. 6,316	Rs. 4,095

As the net present value of project A in more than that of project B. Project A should be preferred:

(iii) Sensitivity technique

When cash inflows are sensitive under different circumstances more than one forecast of the future cash inflows may be made. These inflows may be regarded on 'Optimistic', 'most likely' and 'pessimistic'. Further cash inflows may be discounted to find out the net present values under these three different situations. If the net present values under the three situations differ widely it implies that there is a great risk in the project and the investor's is decision to accept or reject a project will depend upon his risk bearing activities.

Exercise 15

Mr. Selva is considering two mutually exclusive project 'X' and 'Y'. You are required to advise him about the acceptability of the projects from the following information.

	Project X Rs.	Projects Y Rs.
Cost of the investment	1,0,0000	1,00,000
Forecast cash inflows per annum for 5 years		
Optimistic	60,000	55,000
Most likely	35,000	30,000
Pessimistic	20,000	20,000

(The cut-off rate may be assumed to be 15%).

Solution

Calculation of net present value of cash inflows at a discount rate of 15%.

(Annuity of Re. 1 for 5 years).

For Project X

Event	Annual cash Inflow Rs.	Discount factor @ 15 %	Present value Rs.	Net Present value Rs.
Optimistic	60,000	3.3522	2,01,132	1,01,132
Most likely	35,000	3.3522	1,17,327	17,327
Pessimistic	20,000	3.3522	67,105	(32,895)

For Project Y

Event	Annual cash Inflow Rs.	Discount factor @ 15 %	Present value Rs.	Net Present value Rs.
Optimistic	55,000	3.3522	1,84,371	84,371
Most likely	30,000	3.3522	1,00,566	566
Pessimistic	20,000	3.3522	67,105	(32,895)

The net present values on calculated above indicate that project Y is more risky as compared to project X. But at the same time during favourable condition, it is more profitable also. The acceptability of the project will depend upon Mr. Selva's attitude towards risk. If he could afford to take higher risk, project Y may be more profitable.

(iv) Probability technique

Probability technique refers to the each event of future happenings are assigned with relative frequency probability. Probability means the likelihood of future event. The cash inflows of the future years further discounted with the probability. The higher present value may be accepted.

Exercise 16

Two mutually exclusive investment proposals are being considered. The following information in available.

	Project A (Rs.)	Project B (Rs.)
Cost	10,000	10,000

Cash inflows Year	Rs.	Probability	Rs.	Probability
1	10,000	.2	12,000	.2
2	18,000	.6	16,000	.6
3	8,000	.2	14,000	.2

Assuming cost of capital at (or) advise the selection of the project:

Solution

Calculation of net project values of the two projects.

Project A

Year	P.V. Factor @ 10 %	Cash Inflow	Probability	Monetary Value	Present Value Rs.
1	0.909	10,000	.2	2,000	1,818
2	0.826	18,000	.6	10,800	8,921
3	0.751	8,000	.2	1,600	1,202
			Total Present value		11,941
			Cost of Investment		10,000
			Net present value		1,941

Project B

Year	P.V. Factor @ 10 %	Cash Inflow	Probability	Monetary Value	Present Value Rs.
1	0.909	12,000	.2	2,400	2,182
2	0.826	14,000	.6	8,400	6,938
3	0.751	14,000	.2	2,800	2,103
			Total present value		11,223
			Cost of investment		10,000
			Net present value		1,223

As net present value of project A is more than that of project B after taking into consideration the probabilities of cash inflows project A is more profitable one.

(v) Standard deviation method

Two Projects have the same cash outflow and their net values are also the same, standard durations of the expected cash inflows of the two Projects may be calculated to measure the comparative and risk of the Projects. The project having a higher standard deviation in said to be more risky as compared to the other.

Exercise 17

From the following information, ascertain which project should be selected on the basis of standard deviation.

Project X		Project Y	
Cash inflow	**Probability**	**Cash inflow**	**Probability**
Rs.		**Rs.**	
3,200	.2	32,000	.1
5,500	.3	5,500	.4
7,400	.3	7,400	.4
8,900	.2	8,900	.1

Solution

Project X

Cash inflow	Deviation from Mean (d)	Square Deviations d^2	Probability	Weighted Deviations (td^2)
1	2	3	4	5
3,200	(–) 6,250	9,30,25,000	.2	18,60,500
5,500	(–) 750	56,2,500	.3	1,68,750
7,400	(+) 1,150	13,22,500	.3	3,96,750
8,900	(+) 2,650	70,22,500	.2	14,04,500

n= 1 Σfd^2 = 38,30,500

$$\text{Standard Deviation (6)} = \sqrt{\frac{\Sigma fd^2}{n}}$$

$$= \sqrt{\frac{3830500}{1}}$$

$$= 1957.2$$

Project Y

1	2	3	4	5
3,200	(–) 3,050	9,30,25,000	.1	9,30,250
5,500	(–) 750	5,62,500	.4	2,25,000
7,400	(+) 1,150	13,22,500	.4	5,29,000
8,900	(+) 2,650	70,22,500	.1	7,02,250

n= 1 Σfd^2 = 3830500

$$\text{Standard deviation(6)} = \sqrt{\frac{\Sigma fd^2}{n}}$$

$$= \sqrt{\frac{2386500}{1}}$$

$$= 1544.8$$

As the standard deviation of project X is more then that of project Y, A is more risky.

(vi) Co-efficient of variation method

Co-efficient of variation is a relative measure of dispersion. It the projects here the same cost but different net present values, relatives measure, i.e., Co-efficient of variation should be risk induced. It can be calculated as:

$$\text{Co-efficient of variation} = \frac{\text{Standarddeviation}}{\text{mean}} \times 100$$

Exercise 18

Using figure of previous example compute co-efficient of variation and suggest which proposal should be accepted:

Solution

$$\textbf{For project X} = \frac{1957.2}{6250} \times 100$$

$$= 31.31\%$$

$$\textbf{For project Y} = \frac{1544.8}{6250} \times 100$$

$$= 29.52\%$$

As the co-efficient of variation of project 'X' in more then that 'Y' project X in more risk. Hence, project Y should be selected.

(vii) Decision tree analysis

In the modern business world, putting the investments are become more complex and taking decisions in the risky situations. So, the decision tree analysis helpful for taking risky and complex decisions, because it consider all the possible event's and each possible events are assigned with the probability.

Construction of Decision Tree

1. Defined the problem
2. Evaluate the different alternatives
3. Indicating the decision points
4. Assign the probabilities of the monetary values
5. Analysis the alternatives.

Accept/Reject criteria

If the net present values are in positive the project may be accepted otherwise it is rejected.

Exercise 19

Mr. Kumar in considering an investment proposal of Rs.40,000. The expected returns during the left of the investment are as under:

Year I

Event	Cash Inflow	Probability
(i)	16,000	.3
(ii)	24,000	.5
(iii)	20,000	.2

Year II

Cash inflows in **year1** are:

	16,000		24,000		20,000	
	Cash Inflows (Rs.)	Prob	Cash Inflows (Rs.)	Prob	Cash Inflows (Rs.)	Prob
(i)	30,000	.2	40,000	.1	5,000	.2
(ii)	40,000	.6	60,000	.8	8,000	.5
(iii)	50,000	.2	80,000	.1	12,000	.3

using 10% as the cost of capital, advise about the acceptability of the proposal:

Solution

Calculation of net present values of cash inflows

Year	Year I Prob. Cash Inflow		Year II Prob. Cash Inflow	Net Present Value of Inflow	Joint Prob.	Expected Net Present value
		2	30,000	(–) 676	.06	(–) 40.56
	.3 1,6000	.6	40,000	7,584	.18	1,365.12
		.2	50,000	15,844	.06	950.64
Cash outflow Rs.40,000		.1	20,000	14,856	.04	742.80
	.5 24,000	.8	60,000	31,376	.10	2,550.40
		.1	80,000	47,896	.06	2,394.80
		.2	50,000	19,480	.04	779.20
	.2 20,000	.5	80,000	44,260	.10	4,426.00
		.3	1,20,000	77,300	.06	4,638.00
					1.00	27,806.40

UNIT III Capital structure and cost of capital

Capital Structure: forms – importance – optimal capital structure – theories – Factors determining capital structure – changes in capital structure – capital gearing. Cost of Capital: Cost of capital – meaning – significance – classification of cost – determination – problems – computation of cost of specific

INTRODUCTION

Capital is the major part of all kinds of business activities, which are decided by the size, and nature of the business concern. Capital may be raised with the help of various sources. If the company maintains proper and adequate level of capital, it will earn high profit and they can provide more dividends to its shareholders.

Meaning of Capital Structure

Capital structure refers to the kinds of securities and the proportionate amounts that make up capitalization. It is the mix of different sources of long-term sources such as equity shares, preference shares, debentures, long-term loans and retained earnings.

The term capital structure refers to the relationship between the various long-term source financing such as equity capital, preference share capital and debt capital. Deciding the suitable capital structure is the important decision of the financial management because it is closely related to the value of the firm.

Capital structure is the permanent financing of the company represented primarily by long-term debt and equity.

Definition of Capital Structure

The following definitions clearly initiate, the meaning and objective of the capital structures.

According to the definition of **Gerestenbeg,** "Capital Structure of a company refers to the composition or make up of its capitalization and it includes all long-term capital resources".

According to the definition of **James C. Van Horne,** "The mix of a firm's permanent long-term financing represented by debt, preferred stock, and common stock equity".

According to the definition of **Presana Chandra,** "The composition of a firm's financing consists of equity, preference, and debt".

According to the definition of **R.H. Wessel,** "The long term sources of fund employed in a business enterprise".

FINANCIAL STRUCTURE

The term financial structure is different from the capital structure. Financial structure shows the pattern total financing. It measures the extent to which total funds are available to finance the total assets of the business.

Financial Structure = Total liabilities

Or

Financial Structure = Capital Structure + Current liabilities.

The following points indicate the difference between the financial structure and capital structure.

Financial Structures	Capital Structures
1. It includes both long-term and short-term sources of funds	1. It includes only the long-term sources of funds.
2. It means the entire liabilities side of the balance sheet.	2. It means only the long-term liabilities of the company.
3. Financial structures consist of all sources of capital.	3. It consist of equity, preference and retained earning capital.
4. It will not be more important while determining the value of the firm.	4. It is one of the major determinations of the value of the firm.

Example

From the following information, calculate the capitalization, capital structure and financial structures.

Balance Sheet

Liabilities		Assets	
Equity share capital	50,000	Fixed assets	25,000
Preference share capital	5,000	Good will	10,000
Debentures	6,000	Stock	15,000
Retained earnings	4,000	Bills receivable	5,000
Bills payable	2,000	Debtors	5,000
Creditors	3,000	Cash and bank	10,000
	70,000		70,000

(i) Calculation of Capitalization

S. No.	Sources	Amount
1.	Equity share capital	50,000
2.	Preference share capital	5,000
3.	Debentures	6,000
	Capitalization	**61,000**

(ii) Calculation of Capital Structures

S. No.	Sources	Amount	Proportion
1.	Equity share capital	50,000	76.92
2.	Preference share capital	5,000	7.69
3.	Debentures	6,000	9.23
4.	Retained earnings	4,000	6.16
		65,000	**100%**

(iii) Calculation of Financial Structure

S. No.	Sources	Amount	Proportion
1.	Equity share capital	50,000	71.42
2.	Preference share capital	5,000	7.14
3.	Debentures	6,000	8.58
4 .	Retained earnings	4,000	5.72
5.	Bills payable	2,000	2.85
6.	Creditors	3,000	4.29
		70,000	**100%**

OPTIMUM CAPITAL STRUCTURE

Optimum capital structure is the capital structure at which the weighted average cost of capital is minimum and thereby the value of the firm is maximum.

Optimum capital structure may be defined as the capital structure or combination of debt and equity, that leads to the maximum value of the firm.

Objectives of Capital Structure

Decision of capital structure aims at the following two important objectives:

1. Maximize the value of the firm.
2. Minimize the overall cost of capital.

Forms of Capital Structure

Capital structure pattern varies from company to company and the availability of finance. Normally the following forms of capital structure are popular in practice.

- Equity shares only.
- Equity and preference shares only.
- Equity and Debentures only.
- Equity shares, preference shares and debentures.

FACTORS DETERMINING CAPITAL STRUCTURE

The following factors are considered while deciding the capital structure of the firm.

Leverage

It is the basic and important factor, which affect the capital structure. It uses the fixed cost financing such as debt, equity and preference share capital. It is closely related to the overall cost ofcapital.

Cost of Capital

Cost of capital constitutes the major part for deciding the capital structure of a firm. Normally long- term finance such as equity and debt consist of fixed cost while mobilization. When the cost of capital increases, value of the firm will also decrease. Hence the firm must take careful steps to reduce the cost of capital.

(a) Nature of the business: Use of fixed interest/dividend bearing finance depends upon the nature of the business. If the business consists of long period of operation, it will apply for equity than debt, and it will reduce the cost of capital.

(b) Size of the company: It also affects the capital structure of a firm. If the firm belongs to large scale, it can manage the financial requirements with the help of internal sources. But if it is small size, they will go for external finance. It consists of high cost of capital.

(c) Legal requirements: Legal requirements are also one of the considerations while dividing the capital structure of a firm. For example, banking companies are restricted to raise funds from some sources.

(d) Requirement of investors: In order to collect funds from different type of investors, it will be appropriate for the companies to issue different sources of securities.

Government policy

Promoter contribution is fixed by the company Act. It restricts to mobilize large, long-term funds from external sources. Hence the company must consider government policy regarding the capital structure.

CAPITAL STRUCTURE THEORIES

Capital structure is the major part of the firm's financial decision which affects the value of the firm and it leads to change EBIT and market value of the shares. There is a relationship among the capital structure, cost of capital and value of the firm. The aim of effective capital structure is to maximize the value of the firm and to reduce the cost of capital.

There are two major theories explaining the relationship between capital structure, cost of capital and value of the firm.

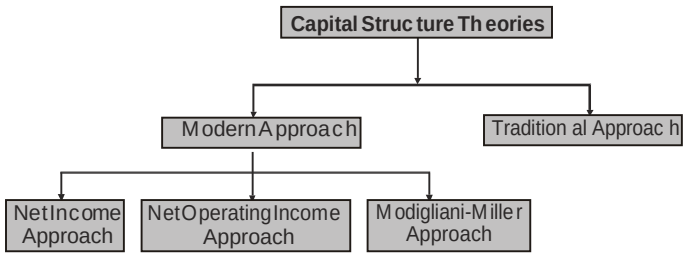

Fig. 5.1 *Capital Structure Theories*

Traditional Approach

It is the mix of Net Income approach and Net Operating Income approach. Hence, it is also called as intermediate approach. According to the traditional approach, mix of debt and equity capital can increase the value of the firm by reducing overall cost of capital up to certain level of debt. Traditional approach states that the K_o decreases only within the responsible limit of financial leverage and when reaching the minimum level, it starts increasing with financial leverage.

Assumptions

Capital structure theories are based on certain assumption to analysis in a single and convenient manner:

- There are only two sources of funds used by a firm; debt and shares.
- The firm pays 100% of its earning as dividend.
- The total assets are given and do not change.
- The total finance remains constant.
- The operating profits (EBIT) are not expected to grow.
- The business risk remains constant.
- The firm has a perpetual life.
- The investors behave rationally.

Exercise 1

ABC Ltd., needs Rs. 30,00,000 for the installation of a new factory. The new factory expects to yield annual earnings before interest and tax (EBIT) of Rs.5,00,000. In choosing a financial plan, ABC Ltd., has an objective of maximizing earnings per share (EPS). The company proposes to issuing ordinary shares and raising debit of Rs. 3,00,000 and Rs. 10,00,000 of Rs. 15,00,000. The current market price per share is Rs. 250 and is expected to drop to Rs. 200 if the funds are borrowed in excess of Rs. 12,00,000. Funds can be raised at the following rates.

–up to Rs. 3,00,000 at 8%

–over Rs. 3,00,000 to Rs. 15,000,00 at 10%

–over Rs. 15,00,000 at 15%

Assuming a tax rate of 50% advise the company.

Solution

Earnings Before Interest and Tax (BIT) less Interest Earnings Before Tax less: Tax@50%.

Alternatives		
I (Rs. 3,00,000 debt)	II Rs. 10,00,000 debt)	III (Rs. 15,00,000 debt)
5,00,000 24,000	5,00,000 1,00,000	5,00,000 2,25,000
4,76,000 2,38,000	4,00,000 2,00,000	2,75,000 1,37,500
2,38,000 27,00,000 250 10800 2,38,000	2,00,000 20,00,000 250 8,000 2,00,000	1,37,500 15,00,000 200 7,500 1,37,500
No. of shares 10,800 Earnings per share 22.03	8,000 25	7,500 18.33

The secure alternative which gives the highest earnings per share is the best. Therefore the company is advised to revise Rs. 10,00,000 through debt amount Rs. 20,00,000 through ordinary shares.

Exercise 2

Compute the market value of the firm, value of shares and the average cost of capital from the following information.

Net operating income Rs. 1,00,000

Total investment Rs. 5,00,000

Equity capitalization Rate:

(a) If the firm uses no debt 10%

(b) If the firm uses Rs. 25,000 debentures 11%

(c) If the firm uses Rs. 4,00,000 debentures 13%

Assume that Rs. 5,00,000 debentures can be raised at 6% rate of interest whereas Rs. 4,00,000 debentures can be raised at 7%rate of interest.

Solution

Computation of market value of firm value of shares and the average cost of capital.

Particulars	(a) No Debt	(b) Rs. 2,50,000 6% debentures	(c) Rs. 4,00,000 7% debentures
Net operating system	1,00,000	1,00,000	1,00,000
(–) Interest (i.e.) Cost of debt	–	15,000	28,000
Earnings available to Equity shareholders	1,00,000	85,000	72,000
Equity Capitalization Rate	10%	11%	13%
Market value of shares	$10,000 \times \frac{10}{100}$	$85,000 \times \frac{100}{11}$	$72,000 \times \frac{100}{13}$
Market Value of firm	Rs. 10,00,000/- 10,00,000	Rs.772727/- 10,22,727	Rs.553846/- 9,53,846
	1,00,000	1,00,000	1,00,000
Average cost of capital Earnings Value of the firm $\frac{EBIT}{V}$	$\frac{1,00,000}{10,00,000} \times 100$ =10%	$\frac{1,00,000}{10,22,727} \times 100$ =9.78%	$\frac{1,00,000}{9,53,846} \times 100$ =10.48%

Comments

From the above data, if debt of Rs. 2,50,000 is used, the value of the firm increases and the overall cost of capital decreases. But, if more debt is used to finance in place of equity i.e., Rs. 4,00,000 debentures, the value of the firm decreases and the overall cost of capital increases.

Net Income (NI) Approach

Net income approach suggested by the Durand. According to this approach, the capital structure decision is relevant to the valuation of the firm. In other words, a change in the capital structure leads to a corresponding change in the overall cost of capital as well as the total value of the firm.

According to this approach, use more debt finance to reduce the overall cost of capital and increase the value of firm.

Net income approach is based on the following three important assumptions:

1. There are no corporate taxes.
2. The cost debt is less than the cost of equity.
3. The use of debt does not change the risk perception of the investor.

where

$V = S+B$

V = Value of firm

S = Market value of equity

B = Market value of debt

Market value of the equity can be ascertained by the following formula:

$$S = \frac{NI}{K_e}$$

where

NI= Earnings available toequityshareholder

K_e = Cost of equity/equity capitalization rate

Format for calculating value of the firm on the basis of NI approach.

Particulars	Amount
Net operating income (EBIT)	XXX
Less: interest on debenture (i)	XXX
Earnings available to equity holder (NI)	XXX
Equity capitalization rate (K_e)	XXX
Market value of equity (S)	XXX
Market value of debt (B)	XXX
Total value of the firm (S+B)	XXX
Overall cost of capital = K_o = EBIT/V(%)	XXX%

Exercise 3

(a) A Company expects a net income of Rs. 1,00,000. It has Rs. 2,50,000, 8% debentures. The equality capitalization rate of the company is 10%. Calculate the value of the firm and overall capitalization rate according to the net income approach (ignoring income tax).

(b) If the debenture debts are increased to Rs. 4,00,000. What shall be the value of the firm and the overall capitalization rate?

Solution

(a) Capitalization of the value of the firm

	Rs.
Net income	1,00,000
Less: Interest on 8% Debentures of Rs. 2,50,000	20,000
Earnings available to equality shareholders	80,000
Equity capitalization rate	10%

$$= \frac{80,000}{10} \times 100$$

Market value of equity = 8,00,000
Market value of debentures = 2,50,000
Value of the firm = 10,50,000

Calculation of overall capitalization rate

$$\text{Overall cost of capital } (K_o) = \frac{\text{Earnings}}{\text{Value of the firm}} \quad \frac{\text{EBIT}}{V}$$

$$= \frac{1,00,000}{10,50,000} \times 100$$

$$= 9.52\%$$

(b) Calculation of value of the firm if debenture debt is raised to Rs. 3,00,000.

	Rs.
Net income	1,00,000
Less: Interest on 8% Debentures of Rs. 4,00,000	32,000
Equity Capitalization rate	68,000
	10%

$$\text{Market value of equity} = 68,000 \times \frac{100}{10} = 6,80,000$$

$$= 6,80,000$$

Market value of Debentures = 4,00,000
Value of firm = 10,80,000

$$\text{Overall cost of capital} = \frac{1,00,000}{10,80,000} \times 10$$

$$= 9.26\%$$

Thus, it is evident that with the increase in debt financing, the value of the firm has increased and the overall cost of capital has increased.

Net Operating Income (NOI) Approach

Another modern theory of capital structure, suggested by **Durand**. This is just the opposite to the Net Income approach. According to this approach, Capital Structure decision is irrelevant to the valuation of the firm. The market value of the firm is not at all affected by the capital structure changes.

According to this approach, the change in capital structure will not lead to any change in the total value of the firm and market price of shares as well as the overall cost of capital.

NI approach is based on the following important assumptions;

The overall cost of capital remains constant;

There are no corporate taxes;

The market capitalizes the value of the firm as a whole;

Value of the firm (V) can be calculated with the help of the following formula

$$V = \frac{EBIT}{K_o}$$

Where,

V = Value of the firm

EBIT = Earnings before interest and tax

K_o = Overall cost of capital

Exercise 4

XYZ expects a net operating income of Rs. 2,00,000. It has 8,00,000, 6% debentures. The overall capitalization rate is 10%. Calculate the value of the firm and the equity capitalization rate (Cost of Equity) according to the net operating income approach.

If the debentures debt is increased to Rs. 10,00,000. What will be the effect on volume of the firm and the equity capitalization rate?

Solution

Net operating income = Rs. 2,00,000

Overall cost of capital = 10%

Market value of the firm (V)

$$= \frac{EBIT}{K_o}$$

$$= 2,00,000 \times \frac{100}{10} = \text{Rs. } 20,00,000$$

Market value of the firm = Rs. 20,00,000

Less: market value of Debentures = Rs. 8,00,000

12,00,000

Equity capitalization rate (or) cost of equity (K_e)

$$= \frac{EBIT - I}{V - D}$$

Where, V = value of the firm

D = value of the debt capital

$$= \frac{2,00,000 - 48,000}{20,00,000 - 8,00,000} \times 100$$

$$= 12.67\%$$

If the debentures debt is increased to Rs. 10,00,000, the value of the firm shall remain changed to Rs. 20,00,000. The equity capitalization rate will increase as follows:

$$= \frac{EBIT - I}{V - D}$$

$$= \frac{2,00,000 - 60,000}{20,00,000 - 10,00,000} \times 100$$

$$= \frac{1,40,000}{10,00,000} \times 100$$

$$= 14\%.$$

Exercise 5

Abinaya company Ltd. expresses a net operating income of Rs. 2,00,000. It has Rs. 8,00,000 to 7% debentures. The overall capitalization rate is 10%.

(a) Calculate the value of the firm and the equity captialization rate (or) cost of equity according to the net operating income approach.

(b) If the debenture debt is increasesd to Rs. 12,00,000. What will be the effect on the value of the firm, the equity capitalization rate?

Solution

(a) Net operating income = Rs. 2,00,000

Over all cost of capital = 10%

Market value of the firm (V)

$$\frac{NOI(EBIT)}{\text{Overall cost of capital}(OK)}$$

$$= 2,00,000 \times 100/10$$

$$= \text{Rs. } 20,00,000$$

Market value of firm = Rs. 20,00,000

Less Market value of debentures = Rs. 8,00,000

Total marketing value of equity = Rs. 12,00,000

Equity capitalization rate (or) cost of equity (K_e)

$$= \frac{EBIT - I}{V - D}$$

$$= \frac{2,00,000 - 56,000}{20,00,000 - 8,00,000} \times 100$$

$$= \frac{1,44,000}{12,00,000} \times 100$$

$$= 12\%$$

where I = Interest of debt

V = Value of the firm

D = Value of debt capital

I = 8,00,000×7%=56,000

V = 20,00,000

D = 8,00,000

(b) If the debenture debt is increased at Rs. 12,00,000, the value of the firm shall changed to Rs. 20,00,000.

Equity Capitalization Rate (K_e)

$$= \frac{EBIT - I}{V - D}$$

$$= \frac{2,00,000 - 84,000}{20,00,000 - 12,00,000}$$

$$= 14.5\%$$

where I= 12,00,000 at 7% = 84,000

Modigliani and Miller Approach

Modigliani and Miller approach states that the financing decision of a firm does not affect the market value of a firm in a perfect capital market. In other words MM approach maintains that the average cost of capital does not change with change in the debt weighted equity mix or capital structures of the firm.

Modigliani and Miller approach is based on the following important assumptions:

- There is a perfect capital market.
- There are no retained earnings.
- There are no corporate taxes.
- The investors act rationally.
- The dividend payout ratio is 100%.
- The business consists of the same level of business risk.

Value of the firm can be calculated with the help of the following formula:

$$\frac{EBIT}{K_o}(1 - t)$$

Where

EBIT = Earnings before interest and tax

K_o = Overall cost of capital

t = Tax rate

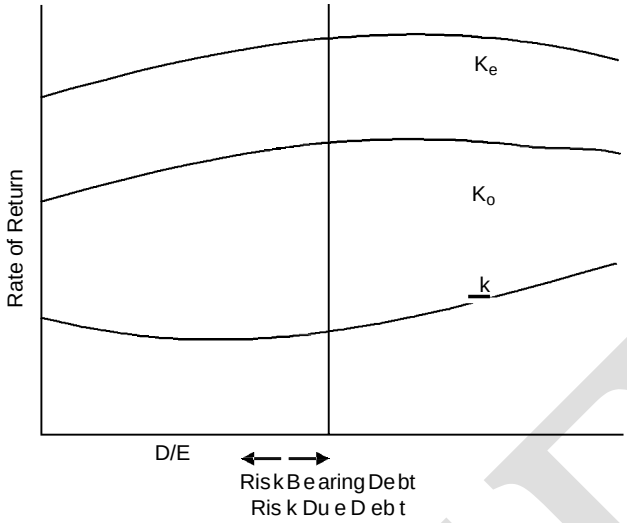

Fig. 5.2 *Modigliani and Miller Approach*

Exercise 6

There are two firms 'A' and 'B' which are exactly identical except that A does not use any debt in its financing, while B has Rs. 2,50,000 , 6% Debentures in its financing. Both the firms have earnings before interest and tax of Rs. 75,000 and the equity capitalization rate is 10%. Assuming the corporation tax is 50%, calculate the value of the firm.

Solution

The market value of firm A which does not use any debt.

$$V_u = \frac{EBIT}{K_o}$$

$$= \frac{75,000}{10/100} = 75,000 \times 100/10$$

$$= \text{Rs. } 7,50,000$$

The market value of firm B which uses debt financing of Rs. 2,50,000

$$V_t = V_u + t$$

V_u = 7,50,000, t = 50% of Rs. 2,50,000

$$= 7,50,000 + 1,25,000$$

$$= \text{Rs. } 8,75,000$$

Exercise 7

The following data regarding the two companies 'X' and 'Y' belonging to the same equivalent class:

	Company 'X'	Company 'Y'
Number of ordinary shares	75,000	1,25,000
5% debentures	40,000	–
Market price per shares	Rs. 1.25	Rs. 1.00
Profit before interest	Rs. 25,000	Rs. 25,000

All profits after paying debenture interest are distributed as dividends.

Youare required to explain how under Modiglianiand Millerapproach, an investorholding 10% of shares in company 'X' will be better off in switching his holding to company 'Y'.

Solution

As per the opinion of Modigliani and Miller, two similar firms in all respects except their capital structure cannot have different market values because of arbitrage process. In case two similar firms except for their capital structure have different market values, arbitrage will take place and the investors will engage in 'personal leverage' as against the corporate leverage. In the given problem, the arbitrage will work out as below.

1. The investor will sell in the market 10% of shares in company 'X' for

$$75{,}000\times 10/100\times 1.25=\text{Rs. } 9375$$

2. He will raise a loan of Rs. $40{,}000\times 10/100=\text{Rs. } 4000$

To take advantage of personal leverage as against the corporate leverage the company 'Y' does not use debt content in its capital structure. He will put 13375 shares in company 'Y' with the total amount realized from 1 and 2 i.e., Rs. 9375 plus Rs. 4000. Thus he will have 10.7% of shares in company 'Y'.

The investor will gain by switching his holding as below:

Present income of the investor in company 'X'	**Rs.**
Profit before Interest of the Company	25,000
Less: Interest on Debentures 5%	2,000
Profit after Interest	23,000

Share of the investor = 10% of Rs. 23,000 i.e., Rs. 2300

Income of the investor after switching holding to company

Profit before Interest of the company	Rs. 25,000
Less Interest	——
Profit after Interest	25,000
Share of the investor : $25{,}000\times\frac{13{,}375}{1{,}25{,}000}$	= Rs. 2,675
Interest paid on loan taken $4000\times 5/100$	200
Net Income of the Investor	**2,475**

As the net income of the investor in company 'Y' is higher than the cost of income from company 'X' due to switching the holding, the investor will gain in switching his holdings to company 'Y'.

Exercise 8

Paramount Products Ltd. wants to raise Rs. 100 lakh for diversification project. Current estimates of EBIT from the new project is Rs. 22 lakh p.a.

Cost of debt will be 15% for amounts up to and including Rs. 40 lakh, 16% for additional amounts up to and including Rs. 50 lakh and 18% for additional amounts above Rs. 50 lakh. The equity shares (face value of Rs. 10) of the company have a current market value of Rs. 40. This is expected to fall to Rs. 32 if debts exceeding Rs. 50 lakh are raised. The following options are under consideration of the company.

Option	Debt	Equity
I	50%	50%
II	40%	60%
III	60%	40%

Determine EPS for each option and state which option should the Company adopt. Tax rate is 50%. **(ICWA Inter Dec. 1997)**

Solution

	I	II	III
Equity	50,00,000	60,00,000	40,00,000
Debt	50,00,000	40,00,000	60,00,000
Amount to be raised	1,00,00,000	1,00,00,000	1,00,00,000
EBIT	22,00,000	22,00,000	22,00,000
Less: Interest of Debt	7,60,000	6,00,000	9,40,000
PBT	14,40,000	16,00,000	12,60,000
Less : Tax @ 50%	7,20,000	8,00,000	6,30,000
PAT	7,20,000	8,00,000	6,30,000
No. of equity shares	1,25,000	1,50,000	1,25,000
	Rs. 5.76	Rs. 5.33	Rs. 5.04

Working Notes

Calculation of Interest on Debt

Total Debt	I	II	III
Interest on:	50,00,000	40,00,000	60,00,000
Ist Rs. 40,00,000 @ 15%	6,00,000	6,00,000	6,00,000
Next Rs.10,00,000 @ 16%	1,60,000	–	1,60,000
Balance Rs. 10,00,000 @ 18%	–	–	1,80,000
	7,60,000	6,00,000	9,40,000

Exercise 9

The following is the data regarding two Company's. X and Y belonging to the same risk class.

	X	Y
No. of ordinary shares	90,000	1,50,000
Market price/share (Rs.)	1.2	1.0
6% debentures	60,000	–
Profit before interest	18,000	18,000

All profits after interest are distributed as dividend.

Explain how under Modigliani & Miller Approach an investor holding 10% of shares in Company X will be better off in switching his holding to Company Y.

(CA Final Nov. 1993)

Solution

Both the firms have EBIT of Rs. 18,000. Company X has to pay interest of Rs. 3600 (i.e., 6% on Rs. 60,000) and the remaining profit of Rs. 14,400 is being distributed among the shareholders. The Company Y on the other hand has no interest liability and therefore is distributing Rs.18,000 among the shareholders.

The investor will be well off under MM Model by selling the shares of X and shifting to shares of Y company through the arbitrage process as follows. If he sells shares of X Company He gets Rs. 10,800 (9,000 shares @ Rs.1.2 per share). He now takes a 6% loan of Rs.6,000

(*i.e.* 105 of Rs. 60,000) and out of the total cash of Rs. 16,800 he purchases 10% of shares of Company Y for Rs. 15,000; his position with regard to Company Y would be as follows:

	X	Y
Dividends (10% of Profits)	1,440	1,800
Less:Interest (6% on Rs. 6,000)	–	360
Net Income	1,440	1,440

Thus by shifting from Company Y the investor is able to get the same income of Rs. 1,440 and still having funds of Rs. 1,800 (i.e., Rs. 16,800 – 15,000) at his disposal. He is better off not in terms of income but in terms of having capital of Rs. 1,800 with him which he can invest elsewhere.

Exercise 10

Gentry Motors Ltd., a producer of turbine generators, is in this situation; EBIT = Rs. 40 lac. rate =35%, dept. outstanding = D = Rs. 20 lac., rate of Interest =10%, K_e = 15%, shares of stock outstanding = No. = Rs. 6,00,000 and book value per share = Rs. 10. Since Gentry's product market is stable and the Company expects no growth, all earnings are paid out as dividends. The debt consists of perpetual bonds. What are the Gentry's EBS and its price per share, P_o? **(CS Final Dec. 1998)**

Solution

(a) EBIT	40,00,000
interest @ 10%	2,00,000
	38,00,000
Tax @ 35%	13,30,000
	24,70,000
No. of shares	6,00,000
EPS (or Dividend)	Rs. 4.12
K_e (given)	15%
P_o (*i.e.*, D/K_e)	4.12/.15
	$\Rightarrow$ Rs. 27.47

In the same question if the Company increases its debt by Rs. 80 lakh to a total of Rs. 1 crore using the new debt to buy and retire of its shares at current price, its interest rate on debt will be 12% and its cost of equity will rise from 15% to 17%. EBIT will remain constant, should this Company change its capital structure.

If Company decides to increase its debt by Rs. 80 lacs, the Company may buy back 80,00,000 ÷ 27.47 = 2,91,226 shares. Thereafter the remaining no. of shares would be 3,08,774 (*i.e.*, 6,00,000 – 2,91,226).

The market price of the share may be ascertained as follows:

EBIT	40,00,000
Interest @ 12% on Rs. 1 crore	12,00,000
	28,00,000
Tax @ 35%	9,80,000
	18,20,000
No. of equity shares	3,08,774
EPS	Rs. 5.89
K_e	17%
P_o (*i.e.*, D/K_e)	5.89
	.17
	= Rs. 34.64

As the price is expected to rise from 27.47 to Rs 34.64, the Company may change its capital structure by raising debt and retaining some number of shares.

MODEL QUESTIONS

1. Define capital structure.
2. Differentiate the capital structure and financial structure.
3. What is optimum capital structure?
4. Discuss the various factors affecting the capital structure.
5. Explain the capital structure theories.
6. XYZ Ltd., expects a net income of Rs. 1,50,000. The company has 10% of 5,00,000 Debentures. The equity capitalization rate of the company is 10%.
   (a) Calculate the value of the firm and overall capitalization rate according to the net income approach (ignoring income tax).
   (b) If the debenture debt is increased to Rs. 7,50,000 and interest of debt is change to 9%. What is the value of the firm and overall capitalization rate?

   (**Ans.** (a) Rs. 15,00,000, 10% (b) Rs. 15,75,000 and 9.52%)
7. A Company Ltd., projected net operating income of Rs. 75,000. It has Rs. 3,00,000, 8% debentures.
   (a) Calculate the value of the firm according to 10 net opening income and overall capitalization rate is 10%.
   (b) If debenture debt is increased to Rs. 5,00,000. What is the value of the firm and the equity capitalization rate? (**Ans.** (a) Rs. 7,50,000, (b) 11.33%, 14%)
8. According to Traditional approach, compute the market value of the firm, value of shares and the average cost of capital from the following information:

   Net Operating Income 1,00,000

   Total Investment 7,00,000

   Equity capitalization Rate:

   (a) if the firms uses no debt 7%.

   (b) if the firm uses Rs. 2,00,000 debentures 8%

   (c) if the firm uses Rs. 4,00,000 debentures 9%

   Assume that Rs 2,00,000 debentures at 6% rate of interest whereas Rs. 4,00,000 debentures at 6% rate of interest whereas Rs. 4,00,000 debentures at 7% rate of interest. (**Ans.** 7%, 7.69%, 8.33)

Chapter

6

Cost of Capital

INTRODUCTION

Cost of capital is an integral part of investment decision as it is used to measure the worth of investment proposal provided by the business concern. It is used as a discount rate in determining the present value of future cash flows associated with capital projects. Cost of capital is also called as cut-off rate, target rate, hurdle rate and required rate of return. When the firms are using different sources of finance, the finance manager must take careful decision with regard to the cost of capital; because it is closely associated with the value of the firm and the earning capacity of the firm.

Meaning of Cost of Capital

Cost of capital is the rate of return that a firm must earn on its project investments to maintain its market value and attract funds.

Cost of capital is the required rate of return on its investments which belongs to equity, debt and retained earnings. If a firm fails to earn return at the expected rate, the market value of the shares will fall and it will result in the reduction of overall wealth of the shareholders.

Definitions

The following important definitions are commonly used to understand the meaning and concept of the cost of capital.

According to the definition of **John J. Hampton** " Cost of capital is the rate of return the firm required from investment in order to increase the value of the firm in the market place".

According to the definition of **Solomon Ezra,** "Cost of capital is the minimum required rate of earnings or the cut-off rate of capital expenditure".

According to the definition of James **C. Van Horne**, Cost of capital is "A cut-off rate for the allocation of capital to investment of projects. It is the rate of return on a project that will leave unchanged the market price of the stock".

According to the definition of **William and Donaldson**, "Cost of capital may be defined as the rate that must be earned on the net proceeds to provide the cost elements of the burden at the time they are due".

Assumption of Cost of Capital

Cost of capital is based on certain assumptions which are closely associated while calculating and measuring the cost of capital. It is to be considered that there are three basic concepts:

1. It is not a cost as such. It is merely a hurdle rate.
2. It is the minimum rate of return.
3. It consis of three important risks such as zero risk level, business risk and financial risk.

Cost of capital can be measured with the help of the following equation.

$$K = r_j + b + f.$$

Where,

K = Cost of capital.

r_j = The riskless cost of the particular type of finance.

b = The business risk premium.

f = The financial risk premium.

CLASSIFICATION OF COST OF CAPITAL

Cost of capital may be classified into the following types on the basis of nature and usage:

- Explicit and Implicit Cost.
- Average and Marginal Cost.
- Historical and Future Cost.
- Specific and Combined Cost.

Explicit and Implicit Cost

The cost of capital may be explicit or implicit cost on the basis of the computation of cost of capital.

Explicit cost is the rate that the firm pays to procure financing. This may be calculated with the help of the following equation;

$$CI_o = \sum_{t=1}^{n} \frac{CO_t}{(t + C)_t}$$

Where,

CI_o = initial cash inflow

C = outflow in the period concerned

N = duration for which the funds are provided

T = tax rate

Implicit cost is the rate of return associated with the best investment opportunity for the firm and its shareholders that will be forgone if the projects presently under consideration by the firm were accepted.

Average and Marginal Cost

Average cost of capital is the weighted average cost of each component of capital employed by the company. It considers weighted average cost of all kinds of financing such as equity, debt, retained earnings etc.

Marginal cost is the weighted average cost of new finance raised by the company. It is the additional cost of capital when the company goes for further raising of finance.

Historical and Future Cost

Historical cost is the cost which as already been incurred for financing a particular project. It is based on the actual cost incurred in the previous project.

Future cost is the expected cost of financing in the proposed project. Expected cost is calculated on the basis of previous experience.

Specific and Combine Cost

The cost of each sources of capital such as equity, debt, retained earnings and loans is called as specific cost of capital. It is very useful to determine the each and every specific source of capital.

The composite or combined cost of capital is the combination of all sources of capital. It is also called as overall cost of capital. It is used to understand the total cost associated with the total finance of the firm.

IMPORTANCE OF COST OF CAPITAL

Computation of cost of capital is a very important part of the financial management to decide the capital structure of the business concern.

Importance to Capital Budgeting Decision

Capital budget decision largely depends on the cost of capital of each source. According to net present value method, present value of cash inflow must be more than the present value of cash outflow. Hence, cost of capital is used to capital budgeting decision.

Importance to Structure Decision

Capital structure is the mix or proportion of the different kinds of long term securities. A firm uses particular type of sources if the cost of capital is suitable. Hence, cost of capital helps to take decision regarding structure.

Importance to Evolution of Financial Performance

Cost of capital is one of the important determine which affects the capital budgeting, capital structure and value of the firm. Hence, it helps to evaluate the financial performance of the firm.

Importance to Other Financial Decisions

Apart from the above points, cost of capital is also used in some other areas such as, market value of share, earning capacity of securities etc. hence, it plays a major part in the financial management.

COMPUTATION OF COST OF CAPITAL

Computation of cost of capital consists of two important parts:

1. Measurement of specific costs
2. Measurement of overall cost of capital

Measurement of Cost of Capital

It refers to the cost of each specific sources of finance like:

- Cost of equity
- Cost of debt
- Cost of preference share
- Cost of retainedearnings

Cost of Equity

Cost of equity capital is the rate at which investors discount the expected dividends of the firm to determine its share value.

Conceptually the cost of equity capital (K_e) defined as the "Minimum rate of return that a firm must earn on the equity financed portion of an investment project in order to leave unchanged the market price of the shares".

Cost of equity can be calculated from the following approach:

- Dividend price (D/P) approach
- Dividend price plus growth (D/P + g) approach
- Earning price (E/P) approach
- Realized yield approach.

Dividend Price Approach

The cost of equity capital will be that rate of expected dividend which will maintain the present market price of equity shares.

Dividend price approach can be measured with the help of the following formula:

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

Where,

K_e = Cost of equity capital

D = Dividend per equity share

N_p = Net proceeds of an equity share

Exercise 1

A company issues 10,000 equity shares of Rs. 100 each at a premium of 10%. The company has been paying 25% dividend to equity shareholders for the past five years and expects to maintain the same in the future also. Compute the cost of equity capital. Will it make any difference if the market price of equity share is Rs. 175?

Solution

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

$$= \frac{25}{100} \times 100$$

$$= 22.72\%$$

If the market price of a equity share is Rs. 175.

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

$$= \frac{25}{175} \times 100$$

$$= 14.28\%$$

Dividend Price Plus Growth Approach

The cost of equity is calculated on the basis of the expected dividend rate per share plus growth in dividend. It can be measured with the help of the following formula:

$$K_e = \frac{D}{N_p} + g$$

Where,

K_e = Cost of equity capital

D = Dividend per equity share

g = Growth in expected dividend

N_p = Net proceeds of an equity share

Exercise 2

(a) A company plans to issue 10000 new shares of Rs. 100 each at a par. The floatation costs are expected to be 4% of the share price. The company pays a dividend of Rs. 12 per share initially and growth in dividends is expected to be 5%. Compute the cost of new issue of equity shares.

(b) If the current market price of an equity share is Rs. 120. Calculate the cost of existing equity share capital

Solution

(a) $$K_e = \frac{D}{N_p} + g$$

$$= \frac{12}{100 - 4} + 5 = 17.5\%$$

(b) $$K_e = \frac{D}{N_p} + g$$

$$= \frac{12}{120} + 5\% = 15\%$$

Exercise 3

The current market price of the shares of A Ltd. is Rs. 95. The floatation costs are Rs. 5 per share amounts to Rs. 4.50 and is expected to grow at a rate of 7%. You are required to calculate the cost of equity share capital.

Solution

Market price Rs. 95

Dividend Rs. 4.50

Growth 7%.

$$K_e = \frac{D}{N_p} + g$$

$$= \frac{4.50}{95} \times 100 + 7\%$$

$$= 4.73\% + 7\% = 11.73\%$$

Earning Price Approach

Cost of equity determines the market price of the shares. It is based on the future earning prospects of the equity. The formula for calculating the cost of equity according to this approach is as follows.

$$\boxed{K_e = \frac{E}{N_p}}$$

Where,

K_e = Cost of equity capital

E = Earning per share

N_p = Net proceeds of an equity share

Exercise 4

A firm is considering an expenditure of Rs. 75 lakhs for expanding its operations. The relevant information is as follows :

Number of existing equity shares =10 lakhs

Market value of existing share =Rs.100

Net earnings =Rs.100 lakhs

Compute the cost of existing equity share capital and of new equity capital assuming that new shares will be issued at a price of Rs. 92 per share and the costs of new issue will be Rs. 2 per share.

Solution

Cost of existing equity share capital:

$$K_e = \frac{E}{N_p}$$

$$\text{Earnings Per Share (EPS)} = \frac{100 \text{ lakhs}}{10 \text{ lakhs}} = Rs.10$$

$$K_e = \frac{10}{100} \times 10$$

$$= 10\%$$

Cost of Equity Capital

$$K_e = \frac{E}{N_P}$$

$$= \frac{10}{92 - 2} \times 100$$

$$= 11.11\%$$

Realized Yield Approach

It is the easy method for calculating cost of equity capital. Under this method, cost of equity is calculated on the basis of return actually realized by the investor in a company on their equity capital.

$$K_e = PVf \times D$$

Where,

K_e = Cost of equity capital.

PVf = Present value of discount factor.

D = Dividend per share.

Cost of Debt

Cost of debt is the after tax cost of long-term funds through borrowing. Debt may be issued at par, at premium or at discount and also it may be perpetual or redeemable.

Debt Issued at Par

Debt issued at par means, debt is issued at the face value of the debt. It may be calculated with the help of the following formula.

$$K_d = (1 - t)\, R$$

Where,

K_d = Cost of debt capital

t = Tax rate

R = Debenture interest rate

Debt Issued at Premium or Discount

If the debt is issued at premium or discount, the cost of debt is calculated with the help of the following formula.

$$K_d = \frac{I}{N_p}(1 - t)$$

Where,

K_d = Cost of debt capital

I = Annual interest payable

N_p = Net proceeds of debenture

t = Tax rate

Exercise 5

(a) A Ltd. issues Rs. 10,00,000, 8% debentures at par. The tax rate applicable to the company is 50%. Compute the cost of debt capital.

(b) B Ltd. issues Rs. 1,00,000, 8% debentures at a premium of 10%. The tax rate applicable to the company is 60%. Compute the cost of debt capital.

(c) A Ltd. issues Rs. 1,00,000, 8% debentures at a discount of 5%. The tax rate is 60%, compute the cost of debt capital.

(d) B Ltd. issues Rs. 10,00,000, 9% debentures at a premium of 10%. The costs of floatation are 2%. The tax rate applicable is 50%. Compute the cost of debt-capital.

In all cases, we have computed the after-tax cost of debt as the firm saves on account of tax by using debt as a source of finance.

Solution

(a) $$K_{da} = \frac{I}{N_p}(1-t)$$

$$= \frac{8,000}{1,00,000} \times (1 - 0.5)$$

$$= \frac{8,000}{1,00,000} \times 0.5$$

$$= 4\%$$

$$K_{da} = \frac{I}{N_p}(1 - t)$$

(b) N_p = Face Value + Premium = 1,00,000+10,000=1,10,000

$$= \frac{8,000}{1,10,000} \times (1 - 0.6)$$

$$= \frac{8,000}{1,10,000} \times 0.6$$

$$= 2.91\%$$

(c) $$K_{da} = \frac{I}{N_p}(1 - t)$$

$$= \frac{8,000}{95,000} \times (1 - t)$$

$$= 3.37\%$$

(d) $$K_{da} = \frac{I}{N_p}(1 - t), N = Rs.\ (10,00,000 + 1,00,000) \times \frac{2}{100}$$

$$= \frac{90,000}{10,78,000} \times (1 - 0.5)$$

$$= 4.17\% = 11,00,000 - 22,000 = Rs.\ 10,78,000$$

Cost of Perpetual Debt and Redeemable Debt

It is the rate of return which the lenders expect. The debt carries a certain rate of interest.

$$K_{db} = \boxed{\frac{I + 1/n(P - N_p)n}{1/n(P + N_p)/2}}$$

Where,

I = Annual interest payable

P = Par value of debt

N_p = Net proceeds of the debenture

n = Number of years to maturity

K_{db} = Cost of debt before tax.

Cost of debt after tax can be calculated with the help of the following formula:

$$K_{da} = K_{db} \times (1-t)$$

Where,

K_{da} = Cost of debt after tax

K_{db} = Cost of debt before tax

t = Tax rate

Exercise 6

A company issues Rs. 20,00,000, 10% redeemable debentures at a discount of 5%. The costs of floatation amount to Rs. 50,000. The debentures are redeemable after 8 years. Calculate before tax and after tax. Cost of debt assuring a tax rate of 55%.

Solution

$$K_{db} = \frac{I = 1/n\,(P - N_p)}{1/2(P + N_p)}$$

$$= \frac{20,00,000 + 1/8(20,00,000 + 18,50,000)}{1/2(20,00,000 + 18,50,000)}$$

Note N_p = 20,00,000 – 10,00,000 – 50,000

$$= \frac{2,00,000 + 18750}{19,25,000}$$

$$= 11.36\%.$$

After Tax Cost of Debt K_{db}

$$= K_{da}\,(1 - t)$$

$$=11.36\,(1- 0.55)$$

$$=5.11\%.$$

Cost of Preference Share Capital

Cost of preference share capital is the annual preference share dividend by the net proceeds from the sale of preference share.

There are two types of preference shares irredeemable and redeemable. Cost of redeemable preference share capital is calculated with the help of the following formula:

$$K_p = \frac{D_p}{N_p}$$

Where,

K_p = Cost of preference share

D_p = Fixed preference dividend

N_p = Net proceeds of an equity share

Cost of irredeemable preference share is calculated with the help of the following formula:

$$K_p = \frac{D_p + (P - N_p)/n}{(P + N_p)/2}$$

Where,

K_p = Cost of preference share

D_p = Fixed preference share

P = Par value of debt

N_p = Net proceeds of the preference share

n = Number of maturity period.

Exercise 7

XYZ Ltd. issues 20,000, 8% preference shares of Rs. 100 each. Cost of issue is Rs. 2 per share. Calculate cost of preference share capital if these shares are issued (a) at par, (b) at a premium of 10% and (c) of a debentures of 6%.

Solution

Cost of preference share capital $K_p = \frac{D_p}{N_p}$

(a) $$K_p = \frac{1,60,000}{20,00,000 - 40,000} \times 100$$

$$= 8.16\%$$

(b) $$K_p = \frac{1,60,000}{2,00,000 - 40,000} \times 100$$

$$= 7.40\%$$

$$I\ K_p = \frac{1,60,000}{20,00,000 - 1,20,000 - 40,000} \times 100$$

$$= \frac{1,60,000}{18,40,000} \times 100$$

$$= 8.69\%$$

Exercise 8

ABC Ltd. issues 20,000, 8% preference shares of Rs. 100 each. Redeemable after 8 years at a premium of 10%. The cost of issue is Rs. 2 per share. Calculate the cost of preference share capital.

$$K_p = \frac{D_p + (P - N_p)/n}{(P + N_p)/2}$$

$$= \frac{1,60,000 + 1/8\ (22,00,000 - 19,60,000)}{1/\ 2(22,00,000 + 19,60,000)}$$

$$= \frac{1,60,000 + 30,000}{20,80,000}$$

$$= 9.13\%$$

where $D_p = 20,000 \times 100 \times 8\% = 1,60,000$

$P = 20,00,000 + 2,00,000 = 22,00,00$

$N_p = 20,00,000 - 40,000 = 19,60,000$

$n = 8$ years

Exercise 9

ABC Ltd. issues 20,000, 8% preference shares of Rs. 100 each at a premium of 5% redeemable after 8 years at par. The cost of issue is Rs. 2 per share. Calculate the cost of preference share capital.

Solution

$$K_p = \frac{D_p + (P - N_p)/n}{(P + N_p)/2}$$

$$= \frac{1,60,000 + 1/8\ (20,00,000 - 20,60,000)}{1/2\ (20,00,000 + 20,60,000)}$$

$$= \frac{1,60,000 - 7,500}{20,30,000}$$

$$= 7.51\%$$

where $D_p = 20,000 \times 100 \times 8\% = 1,60,000$

$P = 20,00,000$

$n = 8$ years

$N_p = 20,00,000 + 10,00,000 - 40,000 = 20,60,000$

Cost of Retained Earnings

Retained earnings is one of the sources of finance for investment proposal; it is different from other sources like debt, equity and preference shares. Cost of retained earnings is the same as the cost of an equivalent fully subscripted issue of additional shares, which is measured by the cost of equity capital. Cost of retained earnings can be calculated with the help of the following formula:

$$K_r = K_e\ (1 - t)\ (1 - b)$$

Where,

K_r =Cost of retained earnings

K_e = Cost of equity

t = Tax rate

b = Brokerage cost

Exercise 10

A firm's K_e (return available to shareholders) is 10%, the average tax rate of shareholders is 30% and it is expected that 2% is brokerage cost that shareholders will have to pay while investing their dividends in alternative securities. What is the cost of retained earnings?

Solution

Cost of Retained Earnings, $K_r = K_e (1 - t) (1 - b)$

Where,

K_e = rate of return available to shareholders

t = tax rate

b = brokerage cost

So, $K_r = 10\% (1 - 0.5) (1 - 0.02)$

$= 10\% \times 0.5 \times 0.98$

$= 4.9\%$

Measurement of Overall Cost of Capital

It is also called as weighted average cost of capital and composite cost of capital. Weighted average cost of capital is the expected average future cost of funds over the long run found by weighting the cost of each specific type of capital by its proportion in the firms capital structure.

The computation of the overall cost of capital (K_o) involves the following steps.

(a) Assigning weights to specific costs.

(b) Multiplying the cost of each of the sources by the appropriate weights.

(c) Dividing the total weighted cost by the total weights.

The overall cost of capital can be calculated with the help of the following formula;

$$K_o = K_d W_d + K_p W_p + K_e W_e + K_r W_r$$

Where,

K_o = Overall cost of capital

K_d = Cost of debt

K_p = Cost of preference share

K_e = Cost of equity

K_r = Cost of retained earnings

W_d = Percentage of debt of total capital

W_p = Percentage of preferenceshare tototalcapital

W_e = Percentage of equity to total capital

W_r = Percentage of retained earnings

Weighted average cost of capital is calculated in the following formula also:

$$K_w \frac{\Sigma XW}{\Sigma W}$$

Where,

K_w = Weighted average cost of capital

X = Cost of specific sources of finance

W = Weight, proportion of specific sources of finance.

Exercise 11

A firm has the following capital structure and after-tax costs for the different sources of funds used :

Source of Funds	Amount Rs.	Proportion %	After-tax cost %
Debt	12,000	20	4
Preference Shares	15,000	25	8
Equity Shares	18,000	30	12
Retained Earnings	15,000	25	11
Total	60,000	100	

You are required to compute the weighted average cost of capital.

Exercise 12

A company has on its books the following amounts and specific costs of each type of capital.

Type of Capital	Book Value Rs.	Market Value Rs.	Specific Costs (%)
Debt	4,00,000	3,80,000	5
Preference	1,00,000	1,10,000	8
Equity	6,00,000	9,00,000	15
Retained Earnings	2,00,000	3,00,000	13
	13,00,000	16,90,000	

Determine the weighted average cost of capital using:

(a) Book value weights, and

(b) Market value weights.

How are they different? Can you think of a situation where the weighted average cost of capital would be the same using either of the weights? **(MBA – P.U. Nov. 2005)**

Solution

Computation of Weighted Average Cost of Capital

A. Book Value

Source of Funds	Amount	Cost % (X)	Weighted Cost Proportion X Cost (XW)
Debt	4,00,000	5	20,000
Preference Shares	1,00,000	8	8,000
Equity Shares	6,00,000	15	90,000
Retained Earnings	2,00,000	13	26,000
	ΣW = 13,00,000		ΣXW = 1,44,000

$$K_w = \frac{\Sigma XW}{\Sigma W}$$

$$K_w = \frac{1,44,000}{13,00,000} \times 100 = 11.1\%$$

Computation Weighted Average Cost of Capital

B. Market Value

Source of Funds	Amount	Cost % (X)	Weighted Cost Proportion X Cost (XW)
Debt	3,80,000	5	19,000
Preference Shares	1,10,000	8	8,800
Equity Shares	9,00,000	15	13,500
Retained Earnings	3,00,000	13	39,000
	ΣW = 16,90,000		ΣXW = 2,01,800

$$K_w = \frac{\Sigma XW}{\Sigma W}$$

$$K_w = \frac{2,01,800}{16,90,000} \times 100 = 11.9\%$$

Exercise 13

ABC Ltd. has the following capital structure.

	Rs.
Equity (expected dividend 12%)	10,00,000
10% preference	5,00,000
8% loan	15,00,000

You are required to calculate the weighted average cost of capital, assuming 50% as the rate of income-tax, before and after tax.

Solution

Solution showing weighted average cost of capital:

Particulars	Rs.	After	Weights	Cost
Equity	10,00,000	12%	33.33%	3.99
Preference	5,00,000	10%	16.67	1.67
8% Loan	15,00,000	4%	50.00	2.00
				7.66%

Weight average cost of capital = 7.66%

MODEL QUESTIONS

1. What is cost of capital?
2. Define cost of capital.
3. Cost of capital computation based on certain assumptions. Discuss.
4. Explain the classification of cost.
5. Mention the importance of cost of capital.
6. Explain the computation of specific sources of cost of capital.
7. How over all cost of capital is calculated?
8. Explain various approaches for calculation of cost of equity.
9. Rama company issues 120000 10% debentures of Rs. 10 each at a premium of 10%. The costs of floatation are 4%. The rate of tax applicable to the company is 55%. Complete the cost of debt capital. (**Ans.** 4.26%)
10. Siva Ltd., issues 8000 8% debentures for Rs. 100 each at a discount of 5%. The commission payable to underwriters and brokers is Rs. 40000. The debentures are redeemable after 5 years. Compute the after tax cost of debt assuming a tax rate of 60%. (**Ans.** 3.69%)
11. Bharathi Ltd., issues 4000 12% preference shares of Rs. 100 each at a discount of 5%. Costs of raising capital are Rs. 8000. Compute the cost of preference capital. (**Ans.** 12.90%)