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SCHOOL OF MANAGEMENT STUDIES

UNIT – I -FINANCIAL MANAGEMENT– SBAA1307

1. INTRODUCTION

Finance is the life blood of business. Finance may be defined as the art and science of managing money. 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 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. 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.

Financial management is that activity of management which is concerned with the planning, procuring and controlling of the firm's financial resources. It means applying general management principles to financial resources of the institutions. Financial activities of an institutions is one of the most important and complex activities of a firm. Therefore in order to take care of these activities a financial manager performs all the requisite financial activities. A financial manager is a person who takes care of all the important financial functions of an organization. The person in charge should maintain a far sightedness in order to ensure that the funds are utilized in the most efficient manner. His actions directly affect the Profitability, growth and goodwill of the firm.

The scope and coverage of financial management have undergone fundamental changes over the last half a century. During 1930s and 1940s, it was concerned of raising adequate funds and maintaining liquidity and sound financial structure. This is known as the 'Traditional Approach' to procurement and utilization of funds required by a firm. Thus, it was regarded as an art and science of raising and spending of funds. The traditional approach emphasized the acquisition of funds and ignored efficient allocation and constructive use of funds. It does not give sufficient attention to the management of working capital.

During 1950s, the need for most profitable allocation of scarce capital resources was recognized. During 1960s and 1970s many analytical tools and concepts like funds flow statement, ratio analysis, cost of capital, earning per share, optimum capital structure, portfolio theory etc. were emphasized. As a result, a broader concept of finance began to be used. Thus, the modern approach to finance emphasizes the proper allocation and utilization of funds in addition to their economical procurement. Thus, business finance is defined as"

the activity concerned with the planning, raising, controlling and administering of funds used in the business."

Modern business finance includes –

(i) Determining the capital requirements of the firm.

(ii) Raising of sufficient funds to make an ideal or optimum capital structure

(iii) Allocating the funds among various types of assets

(iv) Financial control so as to ensure efficient use of funds.

1.2 DEFINITION OF FINANCIAL MANAGEMENT

"Financial management is the activity concerned with planning, raising, controlling and administering of funds used in the business." – Guthman and Dougal

"Financial management is that area of business management devoted to a judicious use of capital and a careful selection of the source of capital in order to enable a spending unit to move in the direction of reaching the goals." – J.F. Brandley

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

1.3 NATURE OF FINANCIAL MANAGEMENT

1. Financial Management is an integral part of overall management. Financial considerations are involved in all business decisions. So financial management is pervasive throughout the organisation.
2. In most of the organizations, financial operations are centralized. This results in economies.
3. Financial management involves with data analysis for use in decision making.
4. The central focus of financial management is valuation of the firm. That is financial decisions are directed at increasing/maximization/ optimizing the value of the firm.
5. Financial management essentially involves risk-return trade-off Decisions on investment involve choosing of types of assets which generate returns accompanied by risks. Generally higher the risk, returns might be higher and vice versa. So, the financial manager has to decide the level of risk the firm can assume and satisfy with the accompanying return.
6. Financial management affects the survival, growth and vitality of the firm. Finance is said to be the life blood of business. It is to business, what blood is to us. The amount,

type, sources, conditions and cost of finance squarely influence the functioning of the unit.

7. Finance functions, i.e., investment, rising of capital, distribution of profit, are performed in all firms - business or non-business, big or small, proprietary or corporate undertakings.
8. Financial management is a sub-system of the business system which has other subsystems like production, marketing, etc. In systems arrangement financial sub-system is to be well-coordinated with others and other sub-systems.
9. Financial Management is the activity concerned with the control and planning of financial resources.
10. Financial management is multi-disciplinary in approach. It depends on other disciplines, like Economics, Accounting etc., for a better procurement and utilisation of finances.

1.4 FINANCE AND OTHER RELATED DISCIPLINES :

Financial management is an integral part of the overall management, on other disciplines and fields of study like economics, accounting, production, marketing, personnel and quantitative methods. The relationship of financial management with other fields of study is explained below

(i) Finance and Economics

Finance is a branch of economics. Economics deals with supply and demand, costs and profits, production and consumption and so on. The relevance of economics to financial management can be described in two broad areas of economics i.e., micro economics and macroeconomics. Micro economics deals with the economic decisions of individuals and firms. It concerns itself with the determination of optimal operating strategies of a business firm. These strategies include profit maximization strategies, product pricing strategies, strategies for valuation of firm and assets etc. The basic principle of micro economics that applies in financial management is marginal analysis. Most of the financial decisions should be made taken into account the marginal revenue and marginal cost. So, every financial manager must be familiar with the basic concepts of micro economics. Macroeconomics deals with the aggregates of the economy in which the firm operates. Macroeconomics is concerned with the institutional structure of the banking system, money and capital markets, monetary, credit and fiscal policies etc. So, the financial manager must be aware of the broad economic environment and their impact on the decision making areas of the business firm.

(ii) Finance and Accounting

Accounting and finance are closely related. Accounting is an important input in financial decision making process. Accounting is concerned with recording of business transactions. It generates information relating to business transactions and reporting them to the concerned parties. The end product of accounting is financial statements namely profit and loss account, balance sheet and the statements of changes in financial position. The information contained in these statements assists the financial managers in evaluating the past performance and future direction of the firm (decisions) in meeting certain obligations like payment of taxes and so on. Thus, accounting and finance are closely related.

(iii) Finance and Production

Finance and production are also functionally related. Any changes in production process may necessitate additional funds which the financial managers must evaluate and finance. Thus, the production processes, capacity of the firm are closely related to finance.

(iv) Finance and Marketing

Marketing and finance are functionally related. New product development, sales promotion plans, new channels of distribution, advertising campaign etc. in the area of marketing will require additional funds and have an impact on the expected cash flows of the business firm. Thus, the financial manager must be familiar with the basic concept of ideas of marketing.

(v) Finance and Quantitative Methods

Financial management and Quantitative methods are closely related such as linear programming, probability, discounting techniques, present value techniques etc. are useful in analyzing complex financial management problems. Thus, the financial manager should be familiar with the tools of quantitative methods. In other way, the quantitative methods are indirectly related to the day-to-day decision making by financial managers.

(vi) Finance and Costing

Cost efficiency is a major strategic advantage to a firm, and will greatly contribute towards its competitiveness, sustainability and profitability. A finance manager has to understand, plan and manage cost, through appropriate tools and techniques including Budgeting and Activity Based Costing.

(vii) Finance and Law

A sound knowledge of legal environment, corporate laws, business laws, Import Export guidelines, international laws, trade and patent laws, commercial contracts, etc. are again important for a finance executive in a globalized business scenario. For example the guidelines of Securities and Exchange Board of India [SEBI] for raising money from the capital markets. Similarly, now many Indian corporate are sourcing from international capital markets and get their shares listed in the international exchanges. This calls for sound knowledge of Securities Exchange Commission guidelines, dealing in the listing requirements of various international stock exchanges operating in different countries.

(viii) Finance and Taxation

A sound knowledge in taxation, both direct and indirect, is expected of a finance manager, as all financial decisions are likely to have tax implications. Tax planning is an important function of a finance manager. Some of the major business decisions are based on the economics of taxation. A finance manager should be able to assess the tax benefits before committing funds. Present value of the tax shield is the yardstick always applied by a finance manager in investment decisions.

(ix) Finance and Treasury Management

Treasury has become an important function and discipline, not only in every organization. Every finance manager should be well grounded in treasury operations, which is considered as a profit center. It deals with optimal management of cash flows, judiciously investing surplus cash in the most appropriate investment avenues, anticipating and meeting emerging cash requirements and maximizing the overall returns.

(x) Finance and Banking

Banking has completely undergone a change in today's context. The type of financial assistance provided to corporate has become very customized and innovative. Banks provides both long term and short term finance, besides a number of innovative corporate and retail banking products, which enable corporate to choose between them and reduce their cost of borrowings. It is imperative for every finance manager to be up-to date on the changes in services & products offered by banking sector including several foreign players in the field.

(xi) Finance and Insurance

Evaluating and determining the commercial insurance requirements, choice of products and insurers, analyzing their applicability to the needs and cost effectiveness, techniques, ensuring appropriate and optimum coverage, claims handling, etc. fall within the ambit of a finance manager's scope of work & responsibilities.

(xii) International Finance

Capital markets have become globally integrated. Indian companies raise equity and debt funds from international markets, in the form of Global Depository Receipts (GDRs), American Depository Receipts (ADRs) or External Commercial Borrowings (ECBs) and a number of hybrid instruments like the convertible bonds, participatory notes etc. Finance managers are expected to have a thorough knowledge on international sources of finance, merger implications with foreign companies, Leveraged Buy Outs (LBOs), acquisitions abroad and international transfer pricing. This is an essential aspect of finance manager's expertise. Similarly, protecting the value of foreign exchange earned, through instruments like derivatives, is vital for a finance manager as the volatility in exchange rate movements can erode in no time, all the profits earned over a period of time.

(xiii) Finance and Information Technology

Information technology is the order of the day and is now driving all businesses. It is all pervading. A finance manager needs to know how to integrate finance and costing with operations through software packages including ERP. The finance manager takes an active part in assessment of various available options, identifying the right one and in the implementation of such packages to suit the requirement.

1.5 OBJECTIVES OF FINANCIAL MANAGEMENT

1. Profit maximization

It is commonly believed that a shareholders objective is to maximise profit. To achieve the goal of profit maximisation, the financial manager takes only those actions that are expected to make a major contribution to the firm's overall profits. The total earnings available for the firm's shareholders is commonly measured in terms of earnings per share (EPS). Hence the decisions and actions of finance managers should result in higher earnings per share for shareholders.

Points in favour of profit maximisation:

- It is a parameter to measure the performance of a business
- It ensures maximum welfare to the shareholders, employees and prompt payment to the creditors
- Increase the confidence of management in expansion and diversification.
- It indicates the efficient use of funds for different requirements.

Points against profit maximisation:

- It is not a clear term like accounting profit, before tax or after tax or net profit or gross profit.
- It encourage corrupt practices
- It does not consider the element of risk
- Time value of money is not reflected
- Attracts cut –throat competition
- Huge profits attracts government intervention
- It invites problem from workers.
- It affects the long run liquidity of a company.

2. Wealth Maximisation

The goal of the finance function is to maximise the wealth of the owners for whom the firm is being carried on. The wealth of corporate owners is measured by the share prices of the stock, which is turn is based on the timing of return, cash flows and risk. While taking decisions, only that action that is expected to increase share price should be taken.

It considers :

(a) Time value of money on investment decision

(b) The risk or uncertainty of future earnings and

(c) effects of dividend policy on the market price of shares.

Points In favour of Wealth Maximisation

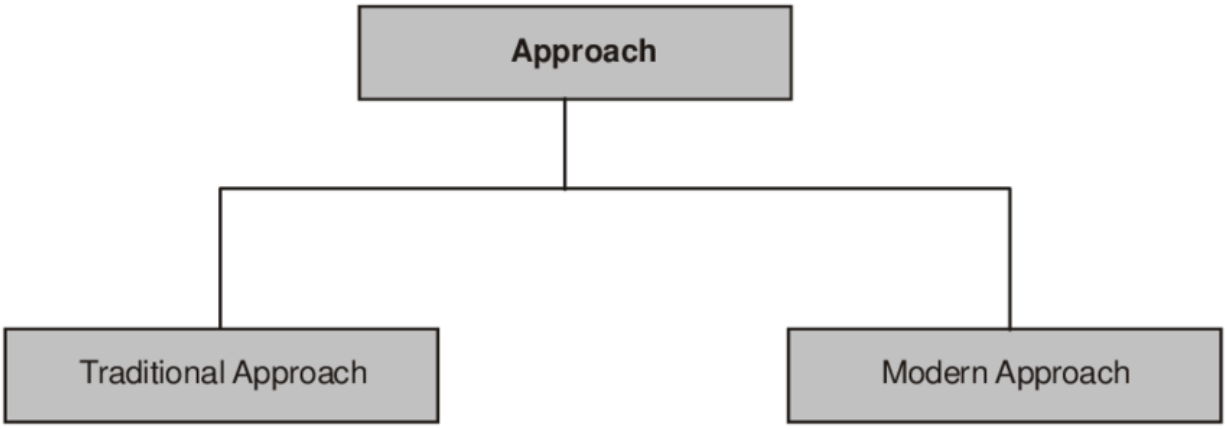
- It is a clear term
- Net effect of investment and benefits can be measured clearly.
- It considers the time value for money.
- It should be accepted universally
- It guides the management in framing a consistent strong dividend policy to reach maximum return to the equity holders

.**Points against wealth maximisation:**

- This concept is useful for equity share holders not for debenture holders
- The expectations of workers, consumers and various interest groups create a greater influence that must be respected to achieve long run wealth maximization and also for their survival.

Basis	Wealth Maximization	Profit Maximization
Definition	It is defined as the management of financial resources aimed at increasing the value of the stakeholders of the company.	It is defined as the management of financial resources aimed at increasing the profit of the company.
Focus	Focuses on increasing the value of the stakeholders of the company in the long term.	Focuses on increasing the profit of the company in the short term.
Risk	It considers the risks and uncertainty inherent in the business model of the company.	It does not consider the risks and uncertainty inherent in the business model of the company.
Usage	It helps in achieving a larger value of a company's worth which may reflect in the increased market share of the company.	It helps in achieving efficiency in the company's day-to-day operations to make the business profitable.

1.6 SCOPE OF FINANCIAL MANAGEMENT



1. The Traditional Approach:

The traditional approach to the finance function relates to the initial stages of its evolution during 1920s and 1930s . According to this approach, the scope, of finance function was confined to only procurement of funds needed by a business on most suitable terms.

The utilisation of funds was considered beyond the purview of finance function. It was felt that decisions regarding the application of funds are taken somewhere else in the organisation. However, institutions and instruments for raising funds were considered to be a part of finance function.

The traditional approach suffers from many serious limitations:

(i) It is outsider-looking in approach that completely ignores internal decision making as to the proper utilisation of funds.

(ii) The focus of traditional approach was on procurement of long-term funds. Thus, it ignored the important issue of working capital finance and management.

(iii) The issue of allocation of funds, which is so important today, is completely ignored.

2. The Modern Approach:

The modern approach views finance function in broader sense. It includes both rising of funds as well as their effective utilisation under the purview of finance. The finance function does not stop only by finding out sources of raising enough funds; their proper utilisation is also to be considered. The cost of raising funds and the returns from their use should be compared.

The funds raised should be able to give more returns than the costs involved in procuring them. The utilisation of funds requires decision making. Finance has to be considered as an integral part of overall management. So finance functions, according to this approach, covers financial planning, rising of funds, allocation of funds, financial control etc.

The modern approach considers the three basic management decisions, i.e., investment decisions, financing decisions and dividend decisions within the scope of finance function.

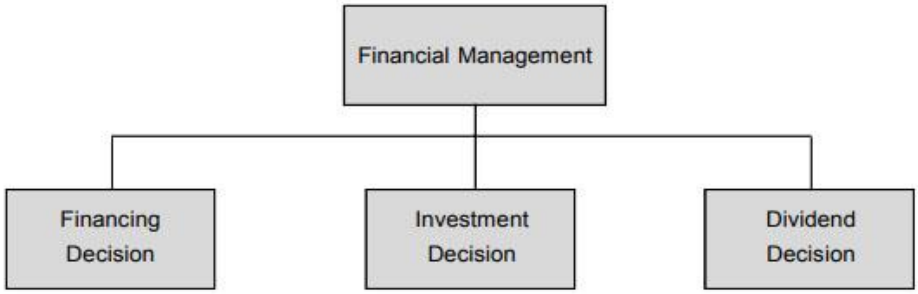
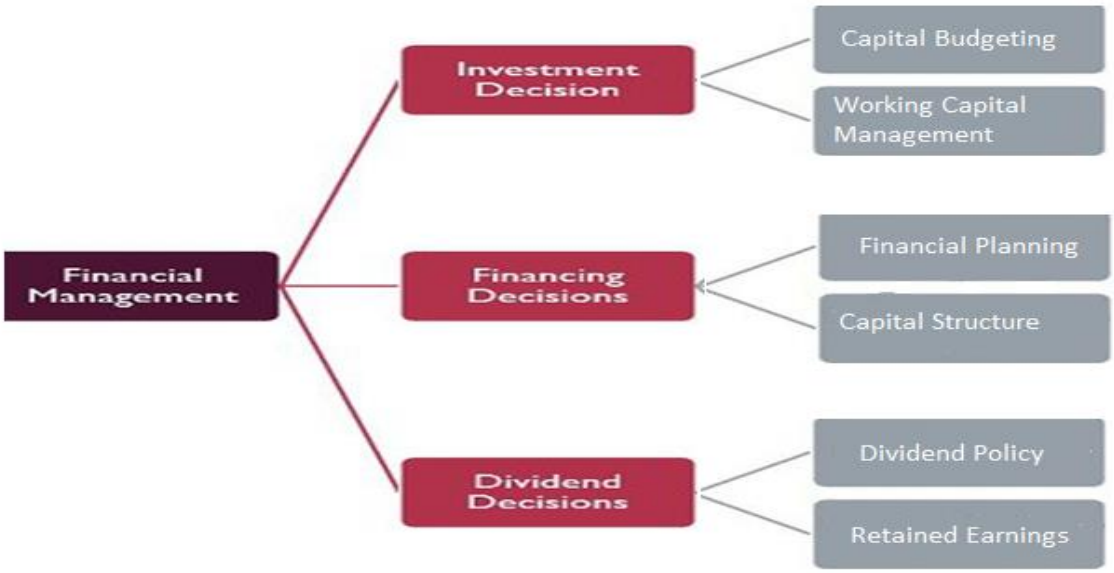


Fig. 1 - The scope of Financial Management



In organizations, managers in an effort to minimize the costs of procuring finance and using it in the most profitable manner, take the following decisions:

Investment Decisions: Managers need to decide on the amount of investment available out of the existing finance, on a long-term and short-term basis. They are of two types:

Long-term investment decisions or Capital Budgeting mean committing funds for a long period of time like fixed assets. These decisions are irreversible and usually include the ones pertaining to investing in a building and/or land, acquiring new plants/machinery or replacing the old ones, etc. These decisions determine the financial pursuits and performance of a business.

Short-term investment decisions or Working Capital Management means committing funds for a short period of time like current assets. These involve decisions pertaining to the investment of funds in the inventory, cash, bank deposits, and other short-term investments. They directly affect the liquidity and performance of the business.

Financing Decisions: Managers also make decisions pertaining to raising finance from long-term sources and short-term sources. They are of two types:

Financial Planning decisions which relate to estimating the sources and application of funds. It means pre-estimating financial needs of an organization to ensure the availability of adequate finance. The primary objective of financial planning is to plan and ensure that the funds are available as and when required.

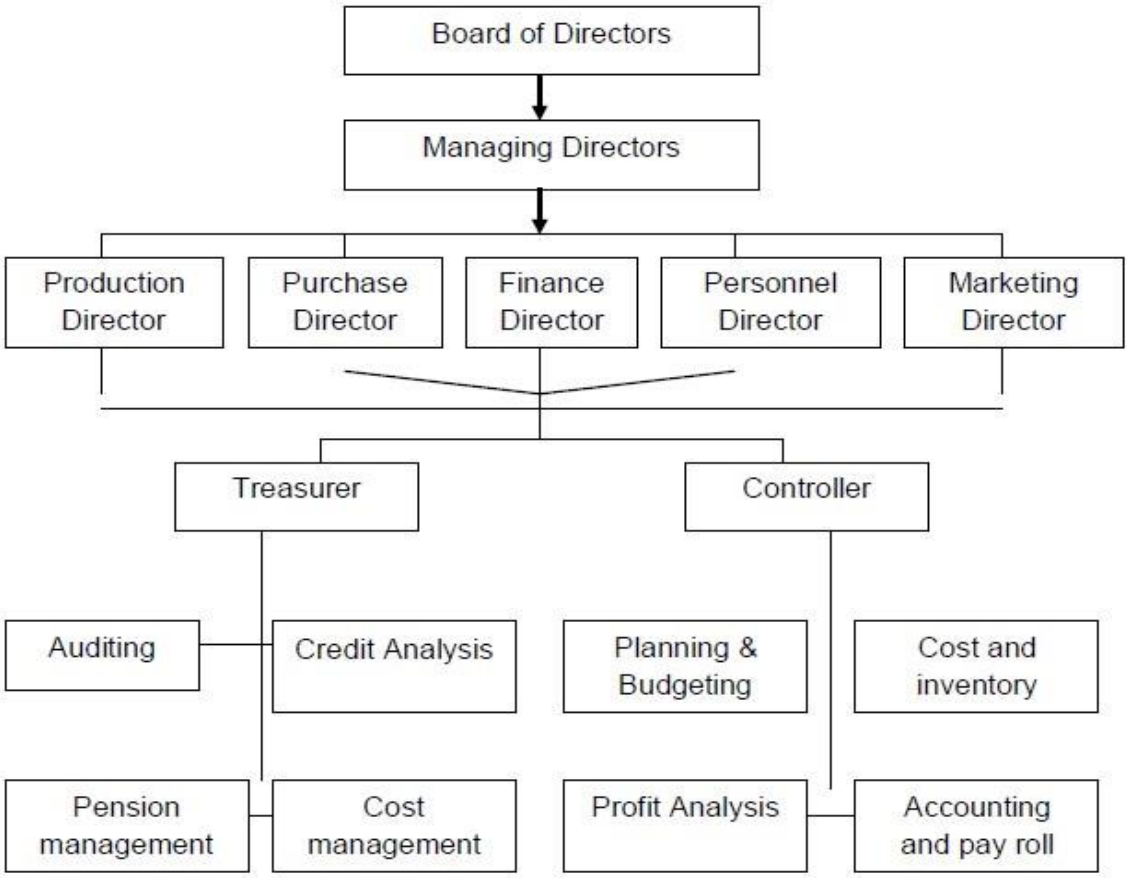
Capital Structure decisions which involve identifying sources of funds. They also involve decisions with respect to choosing external sources like issuing shares, bonds, borrowing from banks or internal sources like retained earnings for raising funds. The decisions are made in the light of the cost of capital, risk factor involved and returns to the shareholders.

Dividend Decisions: These involve decisions related to the portion of profits that will be distributed as dividend. Dividend is that portion of divisible profits that is distributed to the owners i.e. the shareholders. Retained earnings is the proportion of profits kept in, that is, reinvested in the business for the business. Shareholders always demand a higher dividend, while the management would want to retain profits for business needs. Dividend decision is to whether to distribute earnings to shareholder as dividends or retain earnings to finance long-term profits of the firm. It must be done keeping in mind the firms overall objective of maximizing the shareholders wealth.

1.7 ORGANIZATION OF FINANCE FUNCTION

Finance, being an important portfolio, the finance functions is entrusted to top management. The Board of Directors, who are at the helm of affairs, normally constitutes a 'Finance Committee' to review and formulate financial policies. Two more officers, namely 'treasurer' and 'controller' – may be appointed under the direct supervision of CFO to assist him/her. In larger companies with modern management, there may be Vice-President or Director of finance, usually with both controller and treasurer. The organization of finance function is portrayed below

Organization of Finance Function



The terms 'controller' and 'treasurer' are in fact used in USA. This pattern is not popular in Indian corporate sector. Practically, the controller / financial controller in India carried out the functions of a Chief Accountant or Finance Officer of an organization. Financial controller who has been a person of executive rank does not control the finance, but monitors whether funds so augmented are properly utilized.

The function of the treasurer of an organization is to raise funds and manage funds. The treasures functions include forecasting the financial requirements, administering the flow of cash, managing credit, flotation of securities, maintaining relations with financial institutions and protecting funds and securities. The controller's functions include providing information to formulate accounting and costing policies, preparation of financial reports, direction of internal auditing, budgeting, inventory control payment of taxes, etc.

1.8 DUTIES AND RESPONSIBILITIES OF FINANCIAL MANAGER (OR) FUNCTIONS OF FINANCIAL MANAGER (OR) ROLE OF FINANCIAL MANAGER.

Finance manager is an integral part of corporate management of an organization. With his profession experience, expertise knowledge and competence, he has to play a key role in optimal utilization of financial resources of the organization. With the growth in the size of the organization, degree of specialization of finance function increases. In large undertakings, the finance manager is a top management executive who participants in various decision making functions.

A) Determining financial needs:-

One of the most important functions of the financial manager is to ensure the availability of adequate financing, financial needs have to be assessed for different purposes. Money may be required for initial promotional expenses, fixed capital and working capital needs. Promotional expenditure includes expenditure incurred in the process of company formation.

B) Determining sources of funds:-

The financial manager has to choose source of funds. He may issue different types of securities and debenture, may borrow form a number of finance institutional and the public. The financial manager must definitely know what he is doing, workout strategies to ensure good financial health of the firm.

C) Financial analysis:-

It is the evaluation & interpretation of a firm's financial position and operation and involves a comparison and interpretation of accounting data. The financial manager has to interpret different statements.

D) Optimal capital structure:-

The financial manager has to establish an optimum capital structure and ensure the maximum rate of return on investment and the liabilities carrying – fixed charges has to be defined.

E) Cost –volume profit analysis;-

This is popularly known as the CVP relationship for this purpose are fixed cost, variable cost and semi-variable cost have to be analyzed.

F) Profit planning and control:-

Profit planning and control have assumed great importance in the financial activities of

morden business. Profit planning ensures the attainment of stability and growth. The break even analysis and cost volume profit it analysis are important tools in profit planning and control of the firms.

G) Fixed assets management:-

A firms fixed assets are land, building, machinery and equipment, furniture and such intangibles as patents, copy rights and goodwill. These fixed assets are justified to the extent of the utility or their production capacity.

H) Capital budgeting:-

It refers to the long-term planning for (1) investment in projects and fixed assets and (2)methods of financing the approved projects. It includes the methods of mobilization of long-terms funds and their deployments in profitable projects. Capital budgeting is considered as the process of making investment decisions on capital expenditure.

I) Dividend policies:-

The dividend policy of a firm determines the magnitude of the earnings distributed to share holders. The net operating profit or profit after tax (PAT) has to be intelligently apportioned between divided payments, and investments. The dividend policy determines the amount of dividend payment to be made to the shareholders, the date of payments of dividends and the effect of the dividend policy on the value of the firm.

J) Acquisition and mergers:-

A merger is a transaction where two firms agree to integrate their operations on a relatively equal basis because they have resources and capabilities that together may create a stronger competitive advantage. Two or more companies combine to form either a new company or one of the combining companies survives, which is generally the acquirer.

1.9 SOURCES OF FINANCE

A] LONG TERM FINANCE

Financing means providing money for investment in the form of fixed assets and also in the form of working capital needed for day to day operations

(I)EXTERNAL SOURCES:

1. Owned capital (Preference and Equity Capital)
2. Debentures
3. Public Deposits
4. Lease Financing

5. Hire Purchase
6. Institutional Assistance
7. Government subsidies
8. Mortgage Bonds
9. Venture Capital

(II) INTERNAL SOURCES:

1. Retained earnings
2. Provision for Depreciation

EXTERNAL SOURCES:

1. **Preference Shares:**

Preference shares have two preferential rights. One at the time of payment of dividend and second repayment of capital at the time of liquidation of the company

The company has the following advantages by this way of source:

- No voting rights and normally has no control over the policies.
- Finance through preference shares is less costly as compared to the equity shares.

The disadvantages of raising funds by way of preference capital are:

- Compared to equity capital it is a very expensive source of financing.
- Though there is no legal obligation to pay preference dividends, skipping them can adversely affect the image of the firm in the capital market.

2. **Equity Shares:**

The equity shares are the main sources of finance and the owners of the company contribute it. It is the source of permanent capital since it does not have a maturity date. The holders of equity shares have a control over the working of the company. These shares are issued without creating any charge over the assets of the company.

The major advantage to raise funds through equity shares is that it does not involve any fixed obligation for payment of dividends. The disadvantage of raising funds by way of equity capital is high cost of capital. The rate of return required by equity shareholders is generally higher than the rate of return required by other investors.

3. **Debentures:**

Debentures are certificates issued by the company acknowledging the debt due by to its

holders with or without a charge on the assets of the company. A fixed interest has to be paid regularly till the principal has been fully repaid by the company.

4. **Institutional Assistance:**

The Government has set up certain special financial corporation with the object of stimulating industrial development in the country. These include IFC, SFC, ICICI, IDBI etc

5. **Public Deposits:**

Public deposits are the another important source for the firms. Companies prefer public deposits because, these deposits carry lower rate of interest

6. **Lease Finance:**

Lease financing involves the acquisition of the economic use of an asset through a contractual commitment to make periodic payments called lease rentals to the person who owns the asset. Thus this is a mode of financing to acquire the use of assets.

7. **Hire Purchase:**

Assets involving huge amounts if other sources of long-term finance are too costly may be acquired through hire purchase.

8. **Government Assistance**:

The government provides finance to companies in cash grants and other forms of direct assistance, as part of its policy of helping to develop the national economy, especially in high technology industries and in areas of high unemployment. Government subsidies and concessions are other modes of financing long-term requirement. Subject to the government regulations, subsidies and concessions are granted to business enterprises.

9. **Mortgage Bonds:**

It is a written promise given by the company to the investor to repay a specified sum of money at a specified rate of interest at a specified time

10. **Venture capital**

Venture capital is the Money provided by investors to startup firms and small businesses with perceived long-term growth potential. This is a very important source of funding for startups that do not have access to capital markets. It typically entails high risk for the investor, but it has the potential for above-average returns.

INTERNAL SOURCES

1. Retained Earnings :

A company out of its profits, a certain percentage is retained that amount is reinvested into the business for its development. This is also known ploughing back of profits

2. Provision for depreciation:

Depreciation means decrease in the value of the asset due to wear and tear, lapse of time and accident. Provision for depreciation considered as one of the source of financing to business.

B] SHORT TERM SOURCES

The sources of short-term funds used for financing variable part of working capital mainly include the following:

1. Loans from Commercial Banks:

Small-scale enterprises can raise loans from the commercial banks with or without security. This method of financing does not require any legal formality except that of creating a mortgage on the assets. Loan can be paid in lump sum or in parts

2. Public Deposits:

Often companies find it easy and convenient to raise short- term funds by inviting shareholders, employees and the general public to deposit their savings with the company. It is a simple method of raising funds from public for which the company has only to advertise and inform the public that it is authorised by the Companies Act 1956, to accept public deposits.

3. Trade Credit:

Just as the companies sell goods on credit, they also buy raw materials, components and other goods on credit from their suppliers. Thus, outstanding amounts payable to the suppliers i.e., trade creditors for credit purchases are regarded as sources of finance. Generally, suppliers grant credit to their clients for a period of 3 to 6 months. Thus, they provide, in a way, short-term finance to the purchasing company.

4. Discounting Bills of Exchange:

When goods are sold on credit, bills of exchange are generally drawn for acceptance by the buyers of goods. The bills are generally drawn for a period of 3 to 6 months. In practice, the writer of the bill, instead of holding the bill till the date of maturity, prefers to discount them with commercial banks on payment of a charge known as discount.

5. Factoring:

Factoring is a financial service designed to help firms in managing their book debts and receivables in a better manner. The book debts and receivables are assigned to a bank called the 'factor' and cash is realised in advance from the bank. For rendering these services, the fee or commission charged is usually a percentage of the value of the book debts/receivables factored. This is a method of raising short-term capital and known as 'factoring'.

6. Bank Overdraft

Overdraft is a facility extended by the banks to their current account holders for a short-period generally a week. A current account holder is allowed to withdraw from its current deposit account up to a certain limit over the balance with the bank. The interest is charged only on the amount actually overdrawn. The overdraft facility is also granted against securities.

7. Cash Credit:

Cash credit is an arrangement whereby the commercial banks allow borrowing money up to a specified-limit known as 'cash credit limit.' The cash credit facility is allowed against the security. The cash credit limit can be revised from time to time according to the value of securities. The money so drawn can be repaid as and when possible. The interest is charged on the actual amount drawn during the period rather on limit sanctioned.

Arranging overdraft and cash credit with the commercial banks has become a common method adopted by companies for meeting their short- term financial, or say, working capital requirements.

8. Advances from Customers:

One way of raising funds for short-term requirement is to demand for advance from one's own customers. Examples of advances from the customers are advance paid at the time of booking a car, a telephone connection, a flat, etc. This has become an increasingly popular

source of short-term finance among the small business enterprises mainly due to two reasons. The enterprises do not pay any interest on advances from their customers. Thus, advances from customers become one of the cheapest sources of raising funds for meeting working capital requirements of companies.

9. Accrual Accounts:

Generally, there is a certain amount of time gap between incomes is earned and is actually received or expenditure becomes due and is actually paid. Salaries, wages and taxes, for example, become due at the end of the month but are usually paid in the first week of the next month. Thus, the outstanding salaries and wages as expenses for a week helps the enterprise in meeting their working capital requirements. This source of raising funds does not involve any cost.

1.10 TIME VALUE OF MONEY

Let's start a discussion on Time Value of Money by taking a very simple scenario. If you are offered the choice between having Rs 10,000 today and having Rs 10,000 at a future date, you will usually prefer to have Rs 10,000 now. Similarly, if the choice is between paying Rs 10,000 now or paying the same Rs 10,000 at a future date, you will usually prefer to pay Rs 10,000 later. It is simple common sense. In the first case by accepting Rs 10,000 early, you can simply put the money in the bank and earn some interest. Similarly in the second case by deferring the payment, you can earn interest by keeping the money in the bank.

The idea that money available at the present time is worth more than the same amount in the future due to its potential earning capacity is called the time value of money. This core principle of finance holds that, provided money can earn interest, any amount of money is worth more the sooner it is received. Thus, at the most basic level, the time value of money demonstrates that, all things being equal, it is better to have money now rather than later.

Reasons Why Money Can Be More Valuable Today Than In The Future

There are three reasons why money can be more valuable today than in the future.

(i) Preference for Present Consumption: Individuals have a preference for current consumption in comparison to future consumption. In order to forego the present consumption for a future one, they need a strong incentive. Say for example, if the individual's present preference is very strong then he has to be offered a very high

incentive to forego it like a higher rate of interest and vice versa.

(ii) Inflation: Inflation means when prices of things rise faster than they actually should. When there is inflation, the value of currency decreases over time. If the inflation is more, then the gap between the value of money today to the value of money in future is more. So, greater the inflation, greater is the gap and vice versa.

(iii) Risk: Risk of uncertainty in the future lowers the value of money. Say for example, non-receipt of payment, uncertainty of investor's life or any other contingency which may result in non-payment or reduction in payment.

Discounting is the process of determining the present value of a future payment or stream of payments. A Rupee is always worth more today than it would be worth tomorrow, according to the concept of the time value of money. The present value formula shows you how much once single cash payment (FV) received in a future time period (t) is worth in today's terms (PV). The present value of a sum is the current value of the amount that would be received in the future. Computing the present value of a sum is known as discounting.

1.11 RISK AND RETURNS

Risk : A person making an investment expects to get some returns from the investment in the future. However, as future is uncertain, the future expected returns too are uncertain. It is the uncertainty associated with the returns from an investment that introduces a risk into a project. Risk is defined as the chance that an outcome or investment's actual returns will differ from an expected return

Return: It can be defined as the actual income from a project as well as appreciation in the value of capital. Thus there are two components in return—the basic component or the periodic cash flows from the investment, either in the form of interest or dividends; and the change in the price of the asset, commonly called as the capital gain or loss.

Total Return = Cash payments received + Price change in assets over the period /Purchase price of the asset.

The risk-return tradeoff is an investment principle that indicates that the higher the risk, the higher the potential reward. To calculate an appropriate risk-return tradeoff, investors must consider many factors, including overall risk tolerance, the potential to replace lost funds and more. Investors consider the risk-return tradeoff on individual investments and across portfolios when making investment decisions. The risk-return tradeoff states that the potential return rises with an increase in risk. Using this principle, individuals associate low levels of

uncertainty with low potential returns, and high levels of uncertainty or risk with high potential returns. According to the risk-return tradeoff, invested money can render higher profits only if the investor will accept a higher possibility of losses.

Fig 1.3 Showing Risk and Return trade off

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SCHOOL OF MANAGEMENT STUDIES

UNIT – II -FINANCIAL MANAGEMENT– SBAA1307

2. INVESTMENT DECISION

2.1 CAPITAL BUDGETING

The term capital budgeting or investment decision means planning for capital assets. Capital budgeting decision means the decision as to whether or not to invest in long-term projects such as setting up of a factory or installing a machinery etc. It includes the financial analysis of the various proposals regarding capital expenditure to evaluate their impact on the financial condition of the company for the purpose to choose the best out of the various alternatives.

Capital expenditure is the expenditure is incurred at one point of time where as the benefits of the expenditure are realized over a period of time. Capital budgeting can be defined as the process of deciding whether or not to commit resources to projects whose cost and benefits are spread over time periods.

2.1.1 DEFINITION OF CAPITAL BUDGETING

According to Charles T. Horngren, "Capital Budgeting is long-term planning for making and financing proposed capital outlays."

According to L.J. Gitman, "Capital Budgeting refers to the total process of generating, evaluating, selecting and following up on capital expenditure alternatives."

2.2 NATURE OF CAPITAL BUDGETING

- It is a long-term investment decision.
- It is irreversible in nature.
- It requires a large amount of funds.
- It is most critical and complicated decision for a finance manager.
- It involves an element of risk as the investment is to be recovered in future.

2.3 IMPORTANCE OF CAPITAL BUDGETING

All capital expenditure projects involve heavy investment of funds ,the firm from various external and internal sources raises these funds .hence it is important for a firm to plan its capital expenditure.

1. **Permanent commitment of funds**

The funds capital expenditure projects are not only huge but more or less permanently blocked These are long term decision .The longer the time the greater the risk is involved Hence careful planning is essential

2. **Irreversible in nature**

In most cases, capital budgeting decision are irreversible .once the decision for acquiring a permanent assets is taken ,it is very difficult to reverse the decision .This is because it is difficult to dispose the assets without incurring heavy losses.

3. **Growth and Expansion**

Business firm grow, expand, diversify and acquire stature in the industry through their capital budgeting activities. The success of mobilization and deployment of funds determines .the future of a firm

4. **Multiplicity of variables**

Large number of factors affect the decision on capital expenditure ,They make the capital expenditure decision the most difficult to make

5. **Top management activity**

The net result of capital expenditure' decisions automatically trusts them on the top management. Only senior managerial personnel can take these decisions and boar responsibility for them.

2.6 FACTORS (Criteria) INFLUENCING CAPITAL EXPENDITURE DECISIONS:

1. **Availability of funds:**

This is the crucial factor affecting all capital expenditure decisions However attractive, some projects cannot be taken up if they are too big for a firm to mobilize the needed funds.

2. **Future earnings:**

Every project has to result in cash inflows. The extent of the revenue's anticipated is the most significant factor which affects the choice of a project.

3. **Degree of uncertainty or risk:**

This level of risk involved in a project is vital for deciding its desirability.

4. **Urgency :**

Projects which are to be immediately taken up for firm's survival have to be treated differently from optional projects.

5. **Obsolescence:**

It obsolete machinery and plant exist in a firm, their replacement becomes a compulsion.

6. **Competitors activities**

When competitors perform certain activities, they compel a firm to undertake similar activities to withstand competition.

7. **Intangible Factors:**

Firm's prestige, workers' safety, social welfare etc, influence Capital budgeting which may be deemed as emotional factors.

2.7 ADVANTAGES OF CAPITAL BUDGETING

1. **Evaluates Investment Plans**

Capital budgeting is a key tool used by management for the evaluation of investment projects. It assists in taking decisions regarding long term investments by properly analyzing investment opportunities. Using the capital budgeting techniques-risk, return and investment amount of each project is examined.

2. **Identify Risk**

It enables in identifying the risk associated with investment plans. Capital budgeting examines the project from different aspects to find out all possible losses and risks. It studies how these risks affect the return and growth of the business which are helpful in making an appropriate decision.

3. **Chooses Investment Wisely**

Capital budgeting plays an effective role in selecting a profitable investment project for the business. It is the one that decides whether a particular project is beneficial to take or not. This technique considers cash flows of investment proposal during its entire life for finding out its profitability. Companies are able to choose investment wisely by analyzing different factors in a competitive market using capital budgeting techniques.

4. **Avoid Over and Under Investment**

Managers use capital budgeting techniques to determine the appropriate investment amount for the business. The right amount of investment is a must for every business for earning better returns and avoiding losses. Capital budgeting analyses the firm capability and objectives for determining the right investment accordingly.

5. **Maximize Shareholder's Wealth**

Capital budgeting assists in maximizing the overall value of shareholders. It is a tool that enables companies to deploy their funds in the most effective way possible thereby earning huge profits. Companies are able to select investments with higher returns and lower costs which eventually raises the shareholder's wealth.

6. **Control Project Expenditure**

Capital budgeting focuses on minimizing the expenditure of investment projects. While examining the investment proposals, it ensures that the project has an adequate amount of inflows for meeting out its expenses and provide an anticipated return. The selection of effective investment projects helps companies in controlling their expenditure and earning better profits.

2.8 DISADVANTAGES OR LIMITATIONS OF CAPITAL BUDGETING

1. **Irreversible Decisions**

The major limitation with capital budgeting is that the decisions taken through this process are long-term and irreversible in nature. Decisions have an impact on the long term durability of the company and require the utmost care while taking them. Any wrong capital budgeting decision would have an adverse effect on profitability and continuity of business.

2. **Rely on Assumptions and Estimations**

Capital budgeting techniques rely on different assumptions and estimations for analyzing investment projects. Annual cash flow and life of project estimated is not always true and may increase or decrease than the anticipated values. Decisions taken on the basis of these untrue estimations may lead businesses to losses.

3. Higher Risk

Capital budgeting decisions are riskier in nature as it involves a large amount of capital expenditure. These decisions require the utmost care as it affects the success or failure of every business. Any wrong decisions regarding allotment of funds may lead the business to substantial losses or eventually cause a complete shutdown.

4. Uncertainty

This process is dependent upon futuristic data which is uncertain for analyzing the investment proposals. Capital budgeting anticipates the future cash inflows and outflows of the project for determining its profitability. The future is always uncertain and data may prove untrue which leads to wrong decisions.

5. Ignores Non-Financial Aspects

Capital budgeting technique considers only financial aspects and ignores all non-financial aspects while analyzing the investment plans. Non-financial factors have an efficient role in the success and profitability of the project. The real profitability of the project cannot be determined by ignoring these factors

2.9 CAPITAL BUDGETING TECHNIQUES

The capital budgeting appraisal methods are techniques of evaluation of investment proposal will help the company to decide upon the desirability of an investment proposal depending upon their; relative income generating capacity and rank them in order of their desirability. These methods provide the company a set of norms on the basis of which either it has to accept or reject the investment proposal. The most widely accepted techniques used in estimating the cost-returns of investment projects can be grouped under two categories.

I. Traditional methods
II. Discounted Cash flow methods

I. Traditional methods

These methods are based on the principles to determine the desirability of an investment project on the basis of its useful life and expected returns. These will not take into account the concept of ‘time value of money’, which is a significant factor to determine the desirability of a project in terms of present value.

A) PAY-BACK PERIOD METHOD:

It is the most popular and widely recognized traditional method of evaluating the investment proposals. It can be defined, as 'the number of years required to recover the original cash out lay invested in a project'. According to Weston & Brigham, "The pay back period is the number of years it takes the firm to recover its original investment by net returns before depreciation, but after taxes".According to James. C. Vanhorne, "The payback period is the number of years required to recover initial cash investment.

If the annual cash Inflows are constant or uniform, the pay back period can be computed by dividing cash outlay by annual cash Inflows.

$$\text{Payback Period} = \frac{\text{Initial Investment or Original Cost of the Asset}}{\text{Cash Inflows}}$$

If the cash Inflows are not uniform: Pay back period is calculated by computing cumulative cash inflows . Payback period is the period when net cash Inflows is equal to initial investment

Merits:

- It is one of the earliest methods of evaluating the investment projects.
- It is simple to understand and to compute.
- It is one of the widely used methods in small scale industry sector
- It can be computed on the basis of accounting information available from the books.

Demerits

- It does not take into account the life of the project, depreciation, scrap value Interest factor etc.
- It completely ignores cash inflows after the pay back period.
- The profitability of the project is completely ignored
- It ignores the time value of money; cash Inflows deceived in different years are treated equally.

B) ACCOUNTING OR AVERAGE RATE OF RETURN

Accounting Rate of Return (ARR) is the average net income an asset is expected to generate divided by its average capital cost, expressed as an annual percentage. They typically include situations where companies are deciding on whether or not to proceed with a specific

investment (a project, an acquisition, etc.) based on the future net earnings expected compared to the capital cost. This method called accounting rate of return method because it fees the accounting concept of profit. i.e. income after depreciation and tax as the criterion for calculation of return.

According to 'Soloman', accounting rate of return on an investment can be calculated as the ratio of accounting net income to the initial investment.

Accounting Rate of return (on Original Investment)

ARR = Average Annual Profit / Initial Investment

Average Annual Profit = $\frac{Total\ Profit\ after\ Depreciation\ and\ Tax}{No\ of\ Years}$

Accounting Rate of return (on Average Investment)

ARR = Average Annual Profit / Average Investment

Average Investment = Initial Investment/2

In terms of decision making, if the ARR is equal to or greater than the required rate of return, accept the project. If the ARR is less than the required rate of return, the project should be rejected. Higher ARR indicates higher profitability.

Merits:

- This method is easy to understand and simple to calculate.
- This method takes into account the earnings over the entire economic life of the project.
- It is really a profitability concept since it considers net earnings after depreciation.
- This method is in consistent with the conventional accounting system and easy to comprehend as it based on percentages.

Demerits:

- It ignores time value of money.
- This method ignores the risk and uncertainty factors
- It uses accounting profits and not the cash inflows in appraising the project.
- It considers only the rate of return and not the life of the project.

- Two formulas are used to compute this method. Each method gives different results. This reduces the reliability of the method.

II: Discounted cash flow methods:

The traditional method does not take into consideration the time value of money. They give equal weight age to the present and future flow of incomes. The DCF methods are based on the concept that a rupee earned today is more worth than a rupee earned tomorrow. These methods take into consideration the profitability and also time value of money. Discounted Cash flow techniques includes

- Net present value method
- Profitability Index method
- Net Terminal Value method
- Internal rate of return method

A) NET PRESENT VALUE METHOD:

The NPV takes into consideration the time value of money. The cash flows of different years and valued differently and made comparable in terms of present values for this the net cash inflows of various period are discounted using required rate of return which is predetermined.

According to Ezra Solomon, "It is a present value of future returns, discounted at the required rate of return minus the present value of the cost of the investment." NPV is the difference between the present value of cash inflows of a project and the initial cost of the project. If NPV is positive (i.e.greater than 0) Accept the project. If NPV is negative (i.e less than 0) Reject the project . When comparing NPV values of two or more projects always select a project with greater NPV. While comparing different NPV values a high NPV value indicates higher profitability.

$$\mathbf{NPV} = \Sigma \frac{CF_n}{(1+i)^n} - \text{Initial Investment}$$

Merits:

- It recognizes the time value of money.
- It is based on the entire cash flows generated during the useful life of the asset
- It is consistent with the objective of maximization of wealth of the owners.

- The ranking of projects is independent of the discount rate used for determining the present value.

Demerits:

- It is different to understand and use.
- The NPV is calculated by using the cost of capital as a discount rate. But the concept of cost of capital. If self is difficult to understood and determine.
- It does not give solutions when the comparable projects are involved in different amounts of investment.

B) PROFITABILITY INDEX METHOD:

Profitability Index (PI) or Benefit-cost ratio (B/C) is similar to the NPV approach. PI approach measures the present value of returns per rupee invested. It is observed in shortcoming of NPV that, being an absolute measure, it is not a reliable method to evaluate projects requiring different initial investments. The PI method provides solution to this kind of problem.

It can be defined as the ratio which is obtained by dividing the present value of future cash inflows by the present value of cash outlays

$$\text{Profitability Index} = \frac{\text{Present Value of Cash Inflows}}{\text{Present Value of Cash Outflows}}$$

Using the PI ratio, Accept the project when PI>1 Reject the project when PI<1

Merits:

- PI considers the time value of money as well as all the cash flows generated by the project.
- At times it is a better evaluation technique than NPV in a situation of capital rationing especially. For instance, two projects may have the same NPV of Rs. 20,000 but project A requires an initial investment of Rs. 1, 00,000 whereas B requires only Rs. 50,000. The NPV method will give identical ranking to both projects, whereas PI will suggest project B should be preferred. Thus PI is better than NPV method as former evaluate the worth of projects in terms of their relative rather than absolute magnitude.
- It is consistent with the shareholders' wealth maximization.

Demerits:

- Though PI is a sound method of project appraisal and it is just a variation of the NPV, it has all those limitation of NPV method too

C) NET TERMINAL VALUE METHOD:

The terminal value method is an improvement over the net present value method of making capital investment decisions This method is based on the assumption that operating savings (cash inflows) of each year is reinvested in another outlet at a certain rate of return from the moment of its receipt till the end of the economic life of the project. However, cash inflows of the last year of the project will not be reinvested. As such, the compounded values of cash inflows should be determined by the following formula-

$A = P (1 + i)^n$, where P = 1

The total sum of compounded cash inflows would be assumed to have been received at the end of the life of the project and hence should be discounted at present values on the basis of discounting rate. The present values of compounded cash inflows should be compared with present values of cash outflows.

If present values of compounded cash inflows are higher than present values of cash outflows (initial outlay) the project should be accepted, otherwise it should be rejected. The management will be indifferent, if both are equal. Like N.P.V., we can also calculate Net Terminal Value (N.T.V.) and if it comes positive, the project should be accepted.

Steps

- Note down the no of Years
- Note down the Cash Inflows
- Note down the Compounding Rate of Interest
- Calculate the available Years for Investment (Total Years -corresponding year)
- Compute Compounding Factor : Refer Compounding Table or Use the formula Compounding Factor = $(1+\frac{r}{100})n$
- Calculate Compounded Value of cash inflows:
- Compounded Value of cash Inflows= Cash Inflows * compounding Factor

- Determine Present Value of Total compounded Cash Inflows using the formula $\frac{\text{Compounded Value of Cash Inflows}}{(1+k)^n}$

Merits:

- This method incorporates the assumption about how the cash inflows are reinvested once they are received and thus avoids any influence of the cost of capital on cash inflows.
- It is mathematically easier and makes the evaluation procedure simple.
- It is easier to be understood by those business executives who are not trained in accounting or economics.
- It is more suitable where cash budget is in operation.

Demerits:

- The most limiting aspect of this method is related to the projection of rates of return at which cash inflows of different years may be reinvested.
- It fails to make comparative evaluation of two or more mutually exclusive proposals.

D) INTERNAL RATE OF RETURN METHOD:

The IRR for an investment proposal is that discount rate which equates the present value of cash inflows with the present value of cash out flows of an investment. The IRR is also known as cutoff or handle rate. It is usually the concern's cost of capital.

According to Weston and Brigham "The internal rate is the interest rate that equates the present value of the expected future receipts to the cost of the investment outlay. The IRR is not a predetermine rate, rather it is to be trial and error method. It implies that one has to start with a discounting rate to calculate the present value of cash inflows. If the obtained present value is higher than the initial cost of the project one has to try with a higher rate. Like wise if the present value of expected cash inflows obtained is lower than the present value of cash flow. Lower rate is to be taken up. The process is continued till the net present value becomes Zero. As this discount rate is determined internally, this method is called internal rate of return method.

Steps

Step 1: Select 2 discount rates for the calculation of NPVs

You can start by selecting any 2 discount rates on a random basis that will be used to calculate the net present values in Step 2.

Step 2: Calculate NPVs of the investment using the 2 discount rates

You shall now calculate the net present values of the investment on the basis of each discount rate selected in Step 1.

Step 3: Calculate the IRR

Using the 2 net present values derived in Step 2, you shall calculate the IRR by applying the IRR Formula

$$IRR = r_a + \frac{NPV_a}{NPV_a - NPV_b}(r_b - r_a)$$

r_a = lower discount rate chosen
r_b = higher discount rate chosen
N_a = NPV at r_a
N_b = NPV at r_b

Step 4: Interpretation

The decision rule for IRR is that an investment should only be selected where the cost of capital (WACC) is lower than the IRR.

Merits:

- It consider the time value of money
- It takes into account the cash flows over the entire useful life of the asset.
- It always suggests accepting to projects with maximum rate of return.
- It is inconformity with the firm's objective of maximum owner's welfare.

Demerits:

- It is very difficult to understand and use.
- It involves a very complicated computational work.
- It may not give unique answer in all situations.

Compare and contrast NPV and IRR methods:

Similarities Between NPV and IRR

• Both are the modern techniques of capital budgeting.

• Both are considering the time value for money.

• Both takes into consideration the cash flow throughout the life of the project.

Difference between NPV and IRR

• Concept : Net Present value (NPV) discounts the stream of expected cash flows associated with a proposed project to their current value, which presents a cash surplus or loss for the project. IRR where as, the Internal Rate of Return (IRR) calculates the percentage rate at which those same cash flows result in a Net Present Value of Zero.

• Purpose: The NPV Method focuses on project surpluses .While the IRR Method focuses on the breakeven cash flow of a project.

• Expressed in: NPV is expressed in Absolute terms. Whereas, IRR is expressed in percentage terms.

• Decision Making: Decision making is easy in Net present value but not in IRR.

2.10 CAPITAL RATIONING:

Capital rationing is a situation where a firm has more investment proposals than it can finance. Many concerns have limited funds. Therefore, all profitable investment proposals may not be accepted at a time. In such event the firm has to select from amongst the various competing proposals, those which give the highest benefits. There comes the problem of rationing them. Thus capital rationing may be define as a situation where the management has more profitable Investment proposal requiring more amount of finance than the funds available to firms. In such a situation the firm has not only to rank the project from the highest to lowest priority

CAPITAL BUDGETING- Exercise

PAYBACK PERIOD METHOD

1. Initial investment of a project is Rs.2,00,000. Annual cash inflow is Rs.40,000. Calculate Pay Back Period.
   (Ans. 5 years)

2. Initial project cost Rs.80000 and the net cash inflow after tax but before depreciation are estimated for the next six years are Rs.20,000, Rs.25,000, Rs.20,000, Rs.30,000, Rs.35,000 and Rs.15,000 respectively. Calculate Pay Back Period.
   (Ans. 3 years 6 months)

3. Evaluate the following two projects based on pay back period criterion

Particulars	Project X	Project Y
Original Investment	35,000	15,000
Annual cash inflow	15,000	7,500
Economic life of project	7 years	3 years

(PBP Project X 2.33 years and project Y 2 years)

4. The company has to choose one of the following two projects, both requires an initial investment of Rs.15,000

Year	Cash inflows	
	Project X (Rs.)	Project Y (Rs.)
1	4,200	4,200
2	4,800	4,500
3	7,000	4,000

4	7,000	5,000
5	2,000	10,000

Assess the project by Pay Back Period method.

ACCOUNTING RATE OF RETURN

5. A company is considering an investment of Rs.10,00,000 in a project. The following are the income forecast after depreciation and tax:

Year	I	II	III	IV	V
Cash inflows (Rs.)	-1,00,000	3,00,000	4,00,000	2,00,000	2,00,000

Calculate Accounting Rate of Return on original investment method and average investment method.

(Ans. Original investment 20% and Average investment 40%)

6. A company is under consideration of investing in a project costing Rs.2,00,000. The forecasted annual income are as follows:

Year	I	II	III	IV	V
Cash inflows (Rs.)	1,00,000	1,00,000	80,000	80,000	40,000

Assess the project by ARR method.

(Ans. Original investment 40% and Average investment 80%)

7. A company is in consideration of making an investment of Rs.10,00,000 in a project. The following are the forecasted income from the project:

Year	I	II	III	IV	V
Cash inflows (Rs.)	1,00,000	3,00,000	4,00,000	2,00,000	2,00,000

Evaluate the project by ARR method.

(Ans. Original investment 24% and Average investment 48%)

NET PRESENT VALUE METHOD

8. The Initial outlay of the project is Rs.50,000. The Discounting rate is 10%. Calculate NPV and comment on feasibility of the project. The cash inflows at the end of each year are as follows

Year	Machine A (Rs.)
1	20,000
2	30,000
3	35,000

9. Project X initially requires an investment of Rs.25,000. The expected annual inflow are as follows:

Year	Cash inflow (Rs.)	Present value of 1rupee at 10%
1	9,000	.909
2	8,000	.826
3	7,000	.751
4	6,000	.683
5	5,000	.621

Cut off rate is 10%. Suggest whether the project should be accepted.

(Ans. NPV Rs.2,284)

10. X ltd is considering to make an investment of Rs.2,00,000 in a machine. There are two machines are available in the market that is Machine A and Machine B. . The cash inflows of two machines are given below:

Year	Machine A (Rs.)	Machine B (Rs.)
1	20,000	40,000
2	60,000	80,000
3	80,000	1,00,000
4	1,20,000	60,000
5	80,000	40,000

Assess the investment proposal by NPV method by assuming the company's desired rate of return as 10%.

(Ans. NPV Machine A Rs.42,940 and Machine B Rs.26,840)

PROFITABILITY INDEX METHOD

11. Calculate Net Present Value and Profitability Index of Machine A and B from the following information:

Particulars	Project A	Project B
Initial investment	40,000	60,000
Expected life	5 years	5 years
Salvage value	2,000	3,000
Cash inflows: 1st year	10,000	40,000
2nd year	20,000	20,000
3rd year	20,000	10,000
4th year	5,000	6,000
5th year	5,000	4,000

The management has determined 10% as the desired rate of return for the proposed investment project.

(Ans. NPV Project A Rs.8,392 and Project B Rs.8,835)

(Ans. PI Project A 1.21 and Project B 1.15)

NET TERMINAL VALUE METHOD

12. Calculate Net Present Value under Net Terminal Value method for Project A from the following information:

Particulars	Project A
Initial investment	20,000
Expected life	4 years
Cash inflows	Rs10,000 PA for 4 years
Cost of Capital	12%
Expected Interest rate at which cash inflows will be reinvested	
End of the year	Percentage
1	7%
2	7%
3	9%
4	9%

(Ans. NPV Project A Rs.28,366)

13. Calculate Net Present Value under Net Terminal Value method for Project A from the following information:

Particulars	Project A
Initial investment	40,000
Expected life	4 years
Cash inflows	Rs20,000 PA for 4 years
Cost of Capital	10%
Expected Interest rate at which cash inflows will be reinvested	
End of the year	Percentage
1	6%
2	6%
3	8%
4	8%

INTERNAL RATE OF RETURN METHOD

14. The company is planning to invest Rs.60,000 in a project. Life of the project is 4 years. Estimated Net annual cash inflows are:

Year	Amount (Rs.)
1	15,000
2	20,000
3	30,000
4	20,000

Calculate IRR.

(Ans. IRR 14.5%)

15. Mr. A is considering investing 250,000 in a business. The cost of capital for the investment is 13%. Following cash flows are expected from the investment:

Year	Cash Inflows
1	50,000
2	100,000
3	200,000

Calculate the IRR for the proposed investment and interpret your answer.

Ans IRR = 15.5%.

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UNIT – III -FINANCIAL MANAGEMENT– SBAA1307

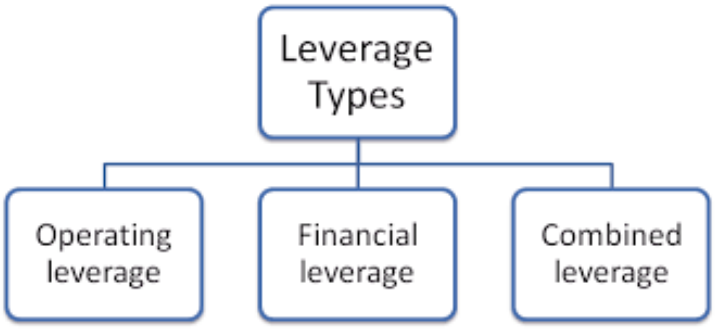
3. FINANCING DECISION - CAPITAL STRUCTURE

3.1 LEVERAGE

In general, leverage means to use something that you already have in order to achieve something new or better. In financial terms leverage means influence of one financial variable over the other financial variable. James Horne has defined leverage as "the employment of funds which the firm has to pay a fixed cost or fixed return". If a firm is not required to pay fixed cost or fixed return there will be no leverage. The use of various financial instruments or borrowed capital, to increase the potential return of an investment is known as leverage.

- Leverage refers to the use of debt (borrowed funds) to amplify returns from an investment or project.
- Leverage is an investment strategy of using borrowed money specifically, the use of various financial instruments or borrowed capital to increase the potential return of an investment.
- Leverage is the use of debt (borrowed capital) in order to undertake investment or project. The result is to multiply the potential returns from a project.
- At the same time, leverage will also multiply the potential downside risk in case the investment does not get adequate returns.
- The company has to pay fixed cost (interest) which could still decline the company's profit. In other words increasing leverage increases the size of the return and increases the risk

3.1.1 TYPES OF LEVERAGE



Operating Leverage:

Operating leverage arises from the existence of fixed operating expenses. So the degree of operating leverage depends upon the amount of fixed costs. If fixed costs are high even a small decline in sales can lead to a large decline in operating income. Operating leverage may be defined as the firm's ability to use fixed operating costs to magnify the effects of changes in Sales on its EBIT. Operating leverage is related with Investment activities. Operating leverage can be determined by means of cost volume analysis.

Significance of Operating Leverage:

1. It measures the sensitivity of EBIT to change in sales.
2. It is a measure of business risk.
3. It helps in studying the cost, volume and profit relationship.

Formula:

Operating leverage $= \frac{Contribution}{EBIT}$

Operating leverage also be defined as % of change in profits resulting from % change in sales.

Degree of Operating leverage $= \frac{\%\text{ of change in EBIT}}{\%\text{ of change in sales}}$

When Fixed and variable cost could not apportioned .The above formula could be used . This is a more practical formula

Financial Leverage:

Financial leverage refers to the use of funds obtained by fixed cost or fixed return securities (preference and debentures) in the hope of increasing the return to equity shareholders. It may be defined as % return on equity to the percentage on capitalization. Financial leverage may be defined as the firm's ability to use fixed financial costs to magnify the effects of changes in EBIT on its EPS.

Significance of Financial Leverage:

1. It measures the sensitivity of EPS to change in EBIT.
2. It is a measure of financial risk.

3. It helps in studying the relationship between operating profit and earnings per share of the firm.

Formula:

1. If Preference Share dividend does not exist:

Financial Leverage $= \frac{EBIT}{EBT}$

2. If Preference Share dividend exists:

Financial Leverage $= \frac{EBIT(1-T)}{\text{EBIT}-\text{I (l}-\text{Tax)} - \text{Dp}}$

Financial leverage also can be defined as % of change in EPS resulting from % change in EBIT.

Degree of Financial leverage $= \frac{\textbf{\% of change in EPS}}{\textbf{\% of change in EBIT}}$

Trading on Equity

Trading on Equity is a financial process that involves taking more debt to boost the return of the shareholders. Trading on Equity occurs when a company takes new debt, in the form of bonds, preferred stock, or loans etc. The company uses those funds to acquire assets to generate a return greater than the interest cost of new debt. Trading on equity is also known as financial leverage is considered successful if the company generates a profit and a higher return on investment for the shareholders.

Benefits of Financial Leverage

The financial leverage has various advantages to the company, management, investors and financial companies. The following are some such benefits:

- **Economies of Scale**: The financial leverage helps the organizations to expand its production unit and manufacture goods on a large scale, reducing the fixed cost drastically.
- **Improves Credit Rating**: If the company take debts and can pay off these debts on time by generating a good profit from the funds availed, it secures a high credit rating and considered reliable by the lenders.
- **Favourable Cash Flow Position**: This additional capital provides an opportunity to increase the earning power of the company and hence to improve the cash flow position of the company.

- **Increases Shareholders' Profitability**: As the company expands its business through financial leverage, the scope for profitability also increases.
- **Tax Relaxation**: When the debts and liabilities burden the company, the government allows tax exemptions and benefits to it.
- **Expansion of Business Ventures**: The need for financial leverage arises when the company plans for growth and development, which is a positive step.

Limitations of Financial Leverage

There are certain drawbacks of the financial leverage which are mainly related to borrowings through debts. These are as follows:

- **High Risk**: There is always a risk of loss or failure in generating the expected returns along with the burden of paying interest on debts.
- **Adverse Results**: The outcome of such borrowings may be harmful at times if the business plan goes wrong.
- **Restrictions from Financial Institutions**: The lending financial institution usually restricts and controls the business operations to some extent.
- **High Rate of Interest**: The interest rates on the borrowed sum is generally high, which creates a burden on the company.
- **Benefits Limited to Stable Companies**: The financial leverage is a suitable option for only those companies which are stable and possess a sound financial position.
- **May Lead to Bankruptcy**: In case of unexpected loss or poor returns and huge debts or liabilities, the company may face the situation of bankruptcy.

A company must be careful while analyzing its financial leverage position because high leverage means high debts. Also, giving ownership may prove to be hazardous for the organization and even result in huge loss and business failure.

Composite Leverage/ Combined Leverage:

Combined leverage thus expresses the relationship between revenue on account Of sales and the taxable income. It helps in finding out the resulting percentage change in taxable income on account of percentage change in sales.

Formula:

Composite leverage = Operating leverage * Financial leverage (or) $\frac{Contribution}{EBT}$

(or) Combined Leverage = $\frac{Contribution}{\text{EBIT}-\text{I}\ (\text{l}-\text{Tax})\ -\ \text{Dp}}$

(or) Combined Leverage = $\frac{Contribution(1-T)}{EBIT(1-T)Dp}$

(or) Degree of Combined Leverage = $\frac{\%\ \text{of change in EPS}}{\%\ \text{of change in sales}}$

Significance of Combined Leverage:

1. It measures the sensitivity of EPS to change in sales.
2. It is a measure of both business and financial risk.
3. It helps in studying the relationship between EPS and Sales of the firm.

Favourable and Unfavourable Leverage:

When Sales minus (-) Variable Cost exceeds Contribution (or) EBIT exceeds Fixed cost bearing funds requirement, it is referred as Favorable leverage, When they do not, it is referred as Unfavorable leverage.

3.1.2 BUSINESS RISK AND FINANCIAL RISK

Operating or Business Risk:

Risk that a business will not be able to cover its operating costs.

Operating risk is the risk associated with the operation of the firm. It refers to the chance a business's cash flows are not enough to cover its operating expenses like cost of goods sold, rent and wages. Operating cost is composed of fixed costs and variable costs. Existence of excessive fixed cost is disadvantageous to the firm. If the total revenue of a firm having a high fixed cost declines for any reason, the operating profit will reduce proportionately more.

Operating leverage refers to the percentage of fixed costs that a company has. If a business firm has more fixed costs as compared to variable costs, then the firm is said to have high operating leverage. Incurrence of fixed operating costs in the firm's income stream increases the business risk or operating risk. If a firm has high operating leverage, a small change in sales volume results in a large change in returns.

Financial Risk:

*Risk that business will not be able to cover its financial costs/financial obligations.*Financial risk is the risk associated with financing decisions of the firm i.e. how a company finances its operations. The presence of debt in the capital structure creates fixed payments in the form of interest, which is a compulsory payment to be made whether the firm makes a profit or not. It increases the variability of the returns to the shareholders

When debt is used by the firm, the rate of return on equity increases because debt capital is generally cheaper. Therefore use of the debt capital has a magnifying effect on the earnings of the equity shareholders but it also adds financial risk. The variability in earnings of the equity shareholders due to presence of debt in the capital structure of a company is referred to as financial risk. The higher the amount of leverage a company has, the higher the financial risk which exists to stockholders of the company.

3.1.3 EBIT EPS ANALYSIS

EBIT (earnings before interest and taxes) is a company's net income before income tax expense and interest expenses are deducted.

EPS – Earnings per share is calculated by dividing earnings available to equity share holders with number of equity shares.

EBIT-EPS analysis examines the effect of financial leverage on the EPS with varying levels of EBIT or under alternative financial plans. It examines the effect of financial leverage on the behavior of EPS under different financing alternatives and with varying levels of EBIT. EBIT-EPS analysis is used for making the choice of the combination and of the various sources. It helps select the alternative that yields the highest EPS.

A scientific basis for comparison among various financial plans and shows ways to maximize EPS. A tool of financial planning that evaluates various alternatives of financing a project under varying levels of EBIT and suggests the best alternative having highest EPS and determines the most profitable level of EBIT'.

A firm has various options regarding the combinations of various sources to finance its investment activities. The firms may opt to be an

i) all-equity firm (and having no borrowed funds) or

ii) equity-preference firm (having no borrowed funds) or

iii) any of the numerous possibility of combinations of equity, preference shares and borrowed funds.

Given a level of EBIT, a particular combination of different sources of finance will result in a particular EPS and therefore, for different financing patterns, there would be different levels of EPS.

Statement Showing EPS

Particulars		
Sales (SPU*No of Units)		
Less Variables Costs (VC per unit * no of units)		
Contribution		
Less – Fixed Costs		
Earnings Before Interest and Tax (EBIT)		
Less Interest(I)		
Earnings Before Tax (EBT)		
Less Tax		
Earnings after Tax (EAT)		
Less Preference Dividend (Dp)		
Earnings Available to Equity Share Holders(EATES)		
No of Shares		
Earnings per Share (EPS)= EATES/No of Shares		

Illustration

Suppose, ABC Ltd. which is expecting the EBIT of Rs.1,50,000 per annum on an investment Rs.5,00,000, is considering the finalization of the capital structure or the financial plan. The company has access to raise funds of varying amounts by issuing equity share capital, 12% preference share and 10% debenture or any combination thereof. Suppose, it analyzes the following four options to raise the required funds of Rs.5,00,000.

1. By issuing equity share capital at par.

2. 50% funds by equity share capital and 50% funds by preference shares.

3. 5% funds by equity share capital, 25% by preference shares and 25% by issue of 10% debentures.

4. 25% funds by equity share capital, 25% as preference share and 50% by the issue of 10% debentures.

Assuming that ABC Ltd. belongs to 50% tax bracket, the EPS under the above four options can be calculated as follows:

Equity share capital	Rs.5,00,0000	Rs.2,50,000	Rs.2,50,000	Rs.1,25,000
Preference share capital	---	2,50,000	1,25,000	1,25,000
10% Debentures	---	---	1,25,000	2,50,000
Total Funds	5,00,000	5,00,000	5,00,000	5,00,000
EBIT	1,50,000	1,50,000	1,50,000	1,50,000
- Interest	---	---	12,500	25,000
Profit before Tax	1,50,000	1,50,000	1,37,500	1,25,000
- Tax @ 50%	75,000	75,000	68,750	62,500
Profit after Tax	75,000	75,000	68,750	62,500
- Preference Dividend	---	30,000	15,000	15,000
Profit for Equity shares	75,000	45,000	53,750	47,500
No. of Equity shares (of Rs.100 each)	5000	2500	2500	1250
EPS (Rs.)	15	18	21.5	38

In this case, the financial plan under option 4 seems to be the best as it is giving the highest EPS of Rs.38.

Advantages

- Financial planning. Applying EBIT-EPS analysis allows earnings per share to be maximized for any given value of earnings before interest and taxes. It helps to choose the best financing plan.

- Comparative analysis. Such analysis is possible not only for a company as a whole but also for a specific product, project, department, or market.
- Determination of target capital structure. Depending on the expected EBIT, management of a company is able to determine the target capital structure for maximizing EPS.

Disadvantages

- Risk is not taken into account. EBIT-EPS analysis does not take into account the risks associated with debt financing. In other words, a higher EPS associated with using financial leverage implies a higher risk that has to be taken into account by management.
- Complexity. The more alternative financing plans are considered, the higher the complexity of the calculations.
- Limitations. The technique does not account for limitations in raising various sources of financing.

LEVERAGE -EBIT-EPS ANALYSIS PROBLEMS

1.The following are the details

Selling price per unit Rs. 20

Variable cost per unit Rs. 12

Actual sales 200 units

Fixed costs are Rs. 800

Calculated operating leverage

Solution : Statement showing computation of operating leverage

Particulars	**Rs**
Sales (20*200 units)	4,000
Less Variables Costs (12*200 units)	2400
Contribution	**1600**
Less – Fixed Costs	800
Earnings Before Interest and Tax(EBIT)	**800**

Operating leverage = $\frac{Contribution}{EBIT}$

Operating leverage = $\frac{1600}{800}$ = 2.

2. The following are the details: Selling price per unit Rs. 20, Variable cost per unit Rs. 10, Actual sales 30,000 units, Fixed costs are Rs. 1,50,000. Calculated operating leverage

Solution : Statement showing computation of operating leverage

Particulars	**Rs**
Sales (20*30000 units)	6,00,000
Less Variables Costs (10*30000 units)	3,00,000
Contribution	**3,00,000**
Less – Fixed Costs	1,50,000
Earnings Before Interest and Tax(EBIT)	**1,50,000**

Operating leverage = $\frac{Contribution}{EBIT}$

Operating leverage = $\frac{3,00,000}{1,50,000}$ = 2.

Operating leverage = 2

3. A firm has sales of Rs.10,00,000, Variable cost Rs.7,00,000, fixed cost Rs.2,00,000 . Calculate operating leverage.

Solution : EBIT 1,00,000 ; Operating leverage = 3 times

4. The following are the details

Selling Price per Unit Rs. 20

Variable Cost per unit Rs. 12

Actual Sales 200 units

Fixed cost 1000

Calculate degree of operating leverage when sales will be (i) 150 units and (ii) 250 Units

Solution :

Particulars	**200 units**	**150 units**	**250 units**
Sales (Rs 20 per unit)	4,000	3,000	5,000
Less Variables Costs (Rs 12 per unit)	2,400	1,800	3,000
Contribution	**1,600**	**1,200**	**2,000**
Less – Fixed Costs	1000	1,000	1,000
Earnings Before Interest and Tax (EBIT)	**600**	**200**	**1,000**

When the sales is 150 Units

Degree of operating leverage $= \frac{\%\text{ of change in EBIT}}{\%\text{ of change in sales}}$

% of change $= \frac{\text{Old value} - \text{New Value}}{\text{Old value}}$ X100

% of change in EBIT $= \frac{600-200}{600}$ X100 =66.67%

% of change in Sales $= \frac{4000-3000}{4000}$ X100 =25%

Degree of operating leverage $= \frac{66.67}{25}$ = 2.67 (Unfavorable)

When the sales is 250 Units

% of change in EBIT $= \frac{600-1000}{600}$ X100 =66.67%

% of change in Sales $= \frac{4000-5000}{4000}$ X100 =25%

Degree of operating leverage $= \frac{66.67}{25}$ = 2.67 (Favorable)

***Note: This formula is more suitable when you cannot classify fixed and variable cost.**

FINANCIAL LEVERAGE

5. If a firm is having EBIT of Rs. 10000 and it pays interest on loan of Rs.2000 (fixed financial charge). The total number of equity share of the firm is 1000 shares. Calculate financial leverage

Solution:

Particulars	**Rs**
Earnings Before Interest and Tax	10,000
Less Interest	2,000
Earnings Before Tax	8,000

If Preference Share dividend does not exist:

Financial Leverage $=\frac{EBIT}{EBT}$

Financial Leverage $=\frac{10,000}{8000} = 1.25$

6 A Ltd. has the following capital structure : Equity share capital (of Rs. 100 each) 1,00,000; 10% Preference share capital (of Rs. 100 each) 2,00,000; 10% debentures (of Rs. 100 each) 2,00,000; If EBIT is Rs. 1,00,000.Assume Tax rate as 50%. Determine Financial leverage.

Solution:

If Preference Share dividend exists:

Preference Dividend (Dp) = 2,00,000*10%= 20,000

Interest (I) = 2,00,000*10%= Rs 20,000

Financial Leverage $= \frac{EBIT(1-T)}{\text{EBIT}-\text{I (l}-\text{Tax)} - \text{Dp}}$

Financial Leverage $= \frac{1,00,000\ (1-0.5)}{1,00,000-20,000\ (\text{l}-0.5) - 20,000}$

$= \frac{50,000}{20,000} = 2.5$

COMBINED LEVERAGE

7. Given the data below: Selling price per unit Rs.15, Variable cost per unit Rs.10, Fixed cost Rs.1,000, Number of units sold 800, Debenture Value is Rs 5,000 issued at 12%. Calculate the operating leverage, financial leverage and Combined Leverage.

Solution:

Particulars	**Rs**
Sales (15*800)	12,000
Less Variables Costs (10*800)	8,000
Contribution	4,000
Less – Fixed Costs	1,000
Earnings Before Interest and Tax	3,000
Less Interest	600
Earnings Before Tax	2,400

Operating leverage = $\frac{Contribution}{EBIT}$

= $\frac{4000}{3000}$ = 1.33

Financial Leverage = $\frac{EBIT}{EBT}$

= $\frac{3000}{2400}$ = 1.25

Combined Leverage = $\frac{Contribution}{EBT}$

= $\frac{4000}{2400}$ = 1.67

Combined Leverage = Operating Leverage * Financial Leverage

= 1.33*1.25=1.67

8. The following particulars are available :

Sales Rs. 1,00,000

Variable Cost Rs. 70,000

Fixed Cost Rs. 20,000

Debentures @10% Rs. 50,000

Compute operating, financial and combined leverage

Solution

Particulars	**Rs**
Sales	100,000
Less Variables Costs	70,000
Contribution	**30,000**
Less – Fixed Costs	20000
Earnings Before Interest and Tax	**10,000**
Less Interest	5,000
Earnings Before Tax	**5,000**

Operating leverage = $\frac{Contribution}{EBIT}$

= $\frac{30000}{10000}$ = 3

Financial Leverage = $\frac{EBIT}{EBT}$

= $\frac{10000}{5000}$ = 2

Combined Leverage = $\frac{Contribution}{EBT}$

= $\frac{30000}{5000}$ = 6

Combined Leverage = Operating Leverage * Financial Leverage

= 3* 2 = 6

9. A company has sales of Rs. 5,00,000, variable costs of Rs. 3,00,000, fixed costs of Rs. 1,00,000 and long-term loans of Rs. 4,00,000 at 10% rate of interest. Compute operating, financial and combined leverage .

Solution: Operating Leverage : 2, Financial leverage :1.67, Combined Leverage: 3.33

EBIT EPS Analysis

10. The firm EBIT is Rs.1, 20, 000. The firm has 2 alternative financial plans. First plan either to raise the entire funds by issuing 50,000 ordinary (equity shares) shares @ Rs.10 per share. Second plan is to raise the fund issuing the debentures Rs.2,50,000 @ 15% and issuing the 25,000 ordinary shares @ Rs.10 per share. The tax rate is 50%. What are the effects of the alternate plans for equity shareholders? Calculate EPS

Solution : Statement Showing EPS for different financial plans

Particulars	**Plan 1**	**Plan 2**
Earnings Before Interest and Tax (EBIT)	120000	120000
Less Interest(I)	-	37500
Earnings Before Tax (EBT)	120000	82500
Less Tax	60000	41250
Earnings after Tax (EAT)	60000	41250
Less Preference Dividend (Dp)	-	-
Earnings Available to Equity Share Holders(EATES)	60000	41250
No of Shares	50000	25000
Earnings per Share (EPS)= EATES/No of Shares	1.2	1.65

11. From the following information, calculate EPS. The face value of share is Rs.10. The firm wants to raise the funds of Rs.2,00,000. Debenture on 8%, Preference shares @ 8%. Income tax rate is 35%. Expected EBIT is Rs.80,000.

Capital Structure	**Financial plan I**	**Financial plan II**	**Financial plan III**
Equity shares	100%	50%	50%
Debentures	--	50%	--
Preference shares	--	--	50%

Solution : Statement Showing EPS for different financial plans

Particulars	**Financial plan I**	**Financial plan II**	**Financial plan III**
Earnings Before Interest and Tax (EBIT)	80000	80000	80000
Less Interest(I)		8000	
Earnings Before Tax (EBT)	80000	72000	80000
Less Tax @ 35%	**28000**	**25200**	**28000**
Earnings after Tax (EAT)	**52000**	**46800**	**52000**
Less Preference Dividend (Dp)			**8000**
Earnings Available to Equity Share Holders(EATES)	**52000**	**46800**	**44000**
No of Shares	**20000**	**10000**	**10000**
Earnings per Share (EPS)= EATES/No of Shares	**2.6**	**4.68**	**4.4**

12. From the following information, calculate EPS. The face value of share is Rs.100. The firm wants to raise the funds of Rs.10,00,000. Debenture on 10%, Preference shares @ 10%. Income tax rate is 50%. Expected EBIT is Rs.2,40,000.

Capital Structure	**Financial plan I**	**Financial plan II**	**Financial plan III**	**Financial plan IV**
Equity shares	100%	50%	50%	50%
Debentures	--	50%		25%
Preference shares	--	-	50%	25%

13. From the following information, calculate EPS. The face value of share is Rs.100. The firm wants to raise the funds of Rs.10,00,000. Debenture on 10%, Preference shares @ 12%. Income tax rate is 40%. Expected EBIT is Rs.2,00,000.

Capital Structure	**Financial plan I**	**Financial plan II**	**Financial plan III**	**Financial plan IV**
Equity shares	100%	50%	50%	40%
Debentures	--	50%		30%
Preference shares	--	-	50%	30%

3.2 CAPITAL STRUCTURE.

Capital structure 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 sources 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.

3.2.1 DEFINITION OF CAPITAL STRUCTURE

- 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 **Prasanna Chandra, "**Capital structure is essentially concerned with how the firm decides to divide its cash flows into two broad components, a fixed component that is earmarked to meet the obligations toward debt capital and a residual component that belongs to equity shareholders. It is the composition of a firm's financing consists of equity, preference, and debt"..

It represents the mix of different sources of long term funds such as equity shares, preference shares and long term loan, retained earnings etc. The company should select a capital structure, which will help in attaining the objectives of maximization of the shareholders wealth.

3.2.2 PATTERNS OF CAPTIAL STRUCTURE

The capital structure of a company may be of any one of the following four patterns:

i) issuing only equity shares

ii) issuing equity and preference shares

iii) issuing equity and debentures

iv) issuing equity, preference and debentures

Which of the above patters would be most suited to the firm is dependent upon internal and external factors with in which the firm operators but the main idea behind the decision is maximization of shareholders wealth.

3.2.3 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.

3.2.4 FACTORS DETERMINING CAPITAL STRUCTURE

1. **Trading on Equity-** The word "equity" denotes the ownership of the company. Trading on equity means taking advantage of equity share capital to borrowed funds on reasonable basis. It refers to additional profits that equity shareholders earn because of issuance of debentures and preference shares. It is based on the thought that if the rate of dividend on preference capital and the rate of interest on borrowed capital is lower than the general rate of company's earnings, equity shareholders are at advantage which means a company should go for a judicious blend of preference shares, equity shares as well as debentures. Trading on equity becomes more important when expectations of shareholders are high.
2. **Degree of control-** In a company, it is the directors who are so called elected representatives of equity shareholders. These members have got maximum voting rights in a concern as compared to the preference shareholders and debenture holders. Preference shareholders have reasonably less voting rights while debenture holders have no voting rights. If the company's management policies are such that they want to retain their voting rights in their hands, the capital structure consists of debenture holders and loans rather than equity shares.
3. **Flexibility of financial plan-** In an enterprise, the capital structure should be such that there is both contractions as well as relaxation in plans. Debentures and loans can be refunded back as the time requires. While equity capital cannot be refunded at any point which provides rigidity to plans. Therefore, in order to make the capital structure possible, the company should go for issue of debentures and other loans.
4. **Choice of investors-** The company's policy generally is to have different categories of investors for securities. Therefore, a capital structure should give enough choice to

all kind of investors to invest. Bold and adventurous investors generally go for equity shares and loans and debentures are generally raised keeping into mind conscious investors.

5. **Capital market condition-** In the lifetime of the company, the market price of the shares has got an important influence. During the depression period, the company's capital structure generally consists of debentures and loans. While in period of boons and inflation, the company's capital should consist of share capital generally equity shares.
6. **Period of financing-** When company wants to raise finance for short period, it goes for loans from banks and other institutions; while for long period it goes for issue of shares and debentures.
7. **Cost of financing-** In a capital structure, the company has to look to the factor of cost when securities are raised. It is seen that debentures at the time of profit earning of company prove to be a cheaper source of finance as compared to equity shares where equity shareholders demand an extra share in profits.
8. **Stability of sales**- An established business which has a growing market and high sales turnover, the company is in position to meet fixed commitments. Interest on debentures has to be paid regardless of profit. Therefore, when sales are high, thereby the profits are high and company is in better position to meet such fixed commitments like interest on debentures and dividends on preference shares. If company is having unstable sales, then the company is not in position to meet fixed obligations. So, equity capital proves to be safe in such cases.
9. **Sizes of a company**- Small size business firms capital structure generally consists of loans from banks and retained profits. While on the other hand, big companies having goodwill, stability and an established profit can easily go for issuance of shares and debentures as well as loans and borrowings from financial institutions. The bigger the size, the wider is total capitalization.

3.2.5 OPTIMAL CAPITAL STRUCTURE

Optimal capital structure refers to the combination of debt and equity in total capital that maximizes the value of the company. An optimal capital structure is designated as one at which the average cost of capital is the lowest which produces an income that leads to maximization of the market value of the securities.

E. F. Brigham defines—"the optimum capital structure strikes that balance between risk and return which maximises the price of the stock and simultaneously minimizes the firm's overall cost of capital."

A sound optimum capital structure is one which:

(i) Maximises the worth or value of the firm

(ii) Minimizes the cost of capital

(iii) Maximises the benefit to the shareholders by giving best earning per share and maximum market price of the shares in the long-run

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

Features of Optimal Capital Structure

The salient features of an optimal capital structure are described below:

a) The relationship of debt and equity in an optimal capital structure is made in such a manner that the market value per equity share becomes maximum.

b) Optimal capital structure maintains the financial stability of the firm.

c) Under optimal capital structure the finance manager determines the proportion of debt and equity in such a manner that the financial risk remains low.

d) The advantage of the leverage offered by corporate taxes is taken into account in achieving the optimal capital structure.

e) Borrowings help in increasing the value of company leading towards optimal capital structure.

f) The cost of capital reaches at its minimum and market price of share becomes maximum at optimal capital structure.

3.2.6 CAPITAL STRUCTURE THEORIES

1.Net Income Approach (NI)

2.Net operating income Approach (NOI)

3.Traditional Approach

4.Modi Giliaini-Miller Approach (Modi-Miller Approach or MM Approach)

Definitions & Symbols

S= Total Market Value of Equity

B= Total Market Value of Debt

I= Interest

V= Total Market Value Of The Firm (V=S+B)

NI= Net Income Available To Equity Holders

Cost Of Debt (Ki) = I/B

B=I/Ki

Cost of Equity Capital (Ke) = (D1 Or E1)/P0

Overall Cost of Capital, Ko = EBIT/V

EBIT = V X Ko

Ke = Ko + (Ko – Ki) B/S

Assumptions to all the approaches:

1. There are only two sources of financing only equity and debentures
2. Taxes do not exists.
3. The total financing remains constant. i.e. one source can be substituted for the other but there is no additional financing.
4. The total assets of the organization remain constant.
5. All money available to equity shareholders will be distributed as dividends i.e.there are no retained earnings
6. EBIT are not expected to grow
7. Business risk remains constant
8. Firm has perpetual life

Net Income Approach (NI)

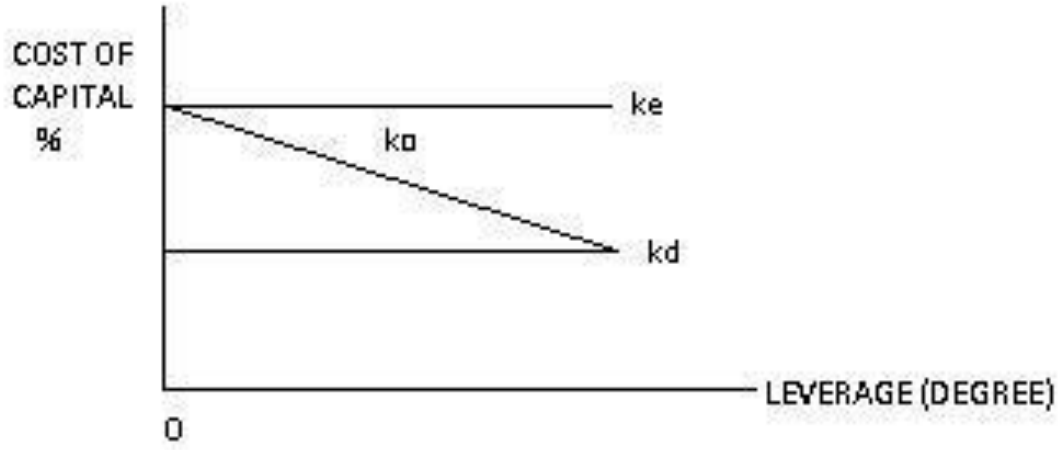
Theory: Changes in capital structure will affect the value of the firm.

Net income approach was proposed by David Durand. Net Income approach proposes that there is a definite relationship between capital structure and value of the firm. The capital structure of a firm influences its cost of capital (WACC), and thus directly affects the value of the firm. The significance of the NI approach is that a firm can lower its overall cost of capital continuously by increasing the proportion of cheaper debt capital in its capital

structure. It leads to an increase in the total value of the firm. If this process continues, the firm will be able to achieve the optimum capital structure.

Assumptions

- Cost of debt is less than cost of equity (Ki<Ke)
- Cost of debt remains constant
- Cost of equity remains constant



As per NI approach, higher use of debt capital will result in reduction of cost of capital. As a consequence, value of firm will be increased.

NET INCOME THEORY

Theory : Changes in capital structure will affect the value of the firm

Illustration 1 Assume EBIT Rs.50,000, value of debt is Rs.2 00,000, Ki is 10%, Ke is 15%. What will be the impact on the value of the firm and overall cost of capital in the following cases assuming when Ki and Ke remains the same?

a)When the debt raises to Rs.3,00,000.

b) When the debt decreases to Rs 1,00,000

Solution

Statement showing different levels of debt

Particulars	When Debt is 2,00,000	When Debt is 3,00,000	When Debt is 1,00,000
EBIT	50000	50000	50000
less Interest	20000	30000	10000
EATES	30000	20000	40000
Value of Equity (S) = EATES/Ke	200000	133333	266667
Value of Debt (B)	200000	300000	100000
Value of the firm (V) V= B+S	400000	433333	366667
Overall cost of capital Ko= EBIT/V	12.50%	11.50%	13.60%

When Debt changes, overall cost of capital also changes. Thus it is proved that changes in capital structure will affect the value of firm .The debt is considered as a cheaper source of finance. Hence overall cost of capital is reduced as more debt is employed. Hence Value of firm Increases

NET OPERATING INCOME THEORY

Theory : The change in the capital structure will NOT affect the value of the firm.

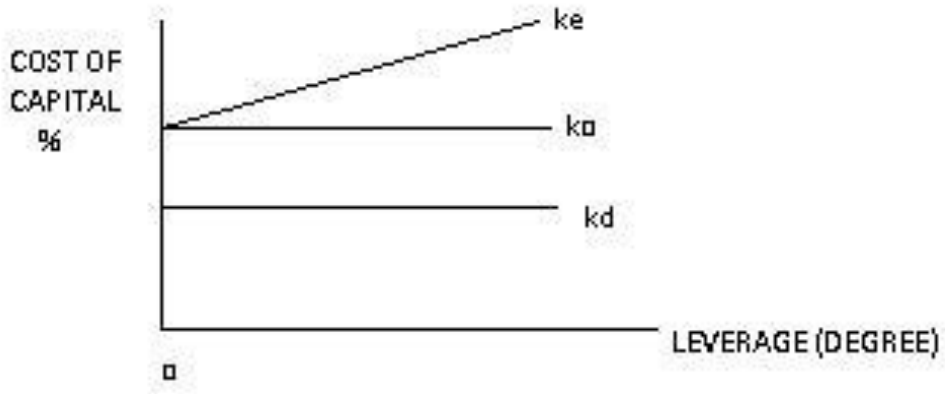
Net Operating Income Approach was advocated by David Durand in 1959. In addition to the list of common assumptions described earlier this theory is based on different set of further assumptions

Assumptions:

- There are no corporate taxes.
- The cost of debt(Ki) remains constant.
- Cost of debt is less than cost of equity (Ki<Ke)
- Debt increases, leverage increases. Ke starts increasing if the value of debt increases

The use of higher debt component (borrowing) in the capital structure increases the risk of shareholders. Increase in shareholders' risk causes the equity capitalization rate to increase, i.e. higher cost of equity (Ke). A higher cost of equity (Ke) nullifies the advantages gained due to cheaper cost of debt (Kd). This approach implies that there is no one optimum capital structure as the cost of capital remains the same for all debt-equity ratios.In other words, this

means that as the cost of capital is the same at all capital structures, every capital structure are optimal.



Under the NOI approach, the cost of equity, Ke, increases but the cost of debt, Kd decreases the weighted average cost of capital, Ko, and the total value of the firm, V all remain constant as leverage is changed. Thus the advantage of having cheaper debt capital is lost to the company as there will be an offsetting increasing in its cost of equity.

Illustration 2 :Assume EBIT Rs.50,000, value of debt is Rs.2 00,000, Ki is 10%, Ke is 15%. What will be the impact on the value of the firm and overall cost of capital in the following cases assuming when Ki and Ke remains the same?

a)When the debt raises to Rs.3,00,000. The cost of equity increases to 20%*

b) When the debt decreases to Rs 1,00,000. The cost of equity decreases to 13.33%*

Solution Note : Ke increases when debt increases.

Statement showing different levels of debt

	When Debt is	When Debt is	When Debt is
Particulars	2,00,000	3,00,000	1,00,000
EBIT	50000	50000	50000
less Interest	20000	30000	10000
EATES	30000	20000	40000
Value of Equity (S) = EATES/Ke	200000	100000	300000
Value of Debt (B)	200000	300000	100000
Value of the firm (V) V= B+S	400000	400000	400000
Overall cost of capital Ko= EBIT/V	12.50%	12.50%	12.50%

When debt is	ki	ke	ko	value of firm
100000	10%	13.33%	12.50%	400000
200000	10%	15%	12.50%	400000
300000	10%	20%	12.50%	400000

The debt is considered as a cheaper source of finance .It is considered to have a positive effect. When debt increases, risk of equity shareholders also increases and consequently ke, increases resulting in increase in overall cost of capital and decrease in value of the firm. It is considered as a negative effect. The positive and negative effect nullifies each other; Hence Value of firm remains the same.

TRADITIONAL APPROACH THEORY

According to the NI approach, the use of the debt capital in the capital structure always affects the overall cost of capital as well as the total value of the firm whereas the NOI approach advocates that the capital structure decision is totally irrelevant to the overall cost of capital and the total value of the firm. However, the Traditional Approach is midway between the NI and NOI approaches. It, in fact, adopts some features of both the NI and NOI approaches. It compromise between the two approaches, therefore it is known as Intermediate Approach.

This approach subscribes to the view of the NI approach that cost of capital and total value of the firm are not independent of the capital structure. But it disagrees with the view of the NI approach that a firm can continuously enjoy a higher market value by increasing its debt-equity ratio. On the other hand, the traditional approach shares a feature with the NOI approach that beyond a certain value of debt-equity (or a certain degree of financial leverage), the overall cost of capital increases which results in a decrease in the total value of the firm. However, at the same time, the traditional approach disagrees with the proposition of the NOI approach that the overall cost of capital is constant for all degrees of leverage (all values of debt-equity ratio)

According to traditional approach, through judicious use of debt, the value of firm increases and overall cost of capital decreases. The rationale behind it is debt are cheaper source of finance than equity. But if debt equity ratio is further raised firm would become

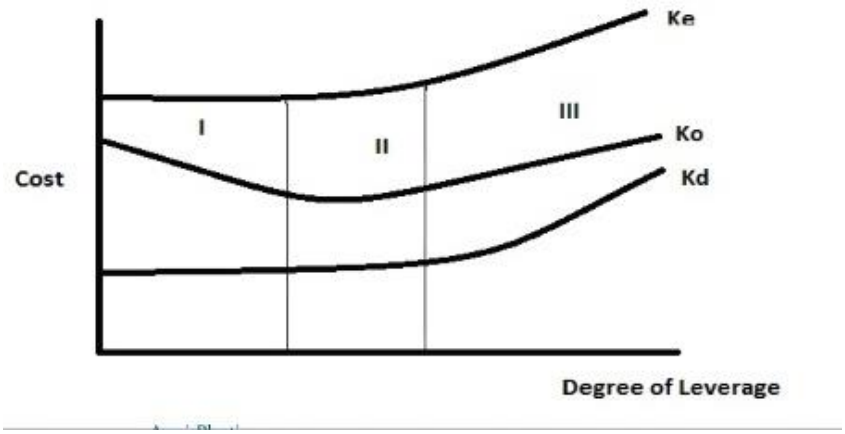
more risky and investors demand higher equity returns hence ke increases. But increase in ke may not be so high to neutralise the benefit of cheaper debt. Hence benefit of cheaper debt is still available. Value of firm is increased and over all cost is also reduced. But when debt further raises two things likely to happen owing to increased financial risk ke will substantially rise and the firm will become very risky and creditors will also demand higher returns, so ki will also rise. When debt is used beyond a certain point , overall cost (ko) rise. In simple words use of debts up to a certain level is favourable and value of firm increases but beyond a level of use of debt will adversely affect it.

Stage I: The first stage starts with introduction of debt in the firm's capital structure. As a result of the use of low cost debt the firm's net income tends to rise; cost of equity capital (K_e) rises with addition of debt but the rate of increase will be less than the increase in net earnings rate. Cost of debt (K_i,) remains constant. Combined effect of all these will be reflected in increase in market value of the firm and decline in overall cost of capital (K_0).

Stage II: In the second stage further application of debt will raise costs of debt and equity capital so sharply as to offset the gains in net income. Hence the total market value of the firm would remain unchanged.

Stage III: After a critical turning point any further dose of debt to capital structure will prove fatal. The costs of both debt and equity rise as a result of the increasing riskiness of each resulting in an increase in overall cost of capital which will be faster than the rise in earnings from the introduction of additional debt. As a consequence of this market value of the firm will tend to depress.

The overall effect of these stages suggests that the capital structure decision has relevance to valuation of firm and cost of capital. Up to favorably affects the value of a firm. Beyond that point value of the firm will be adversely affected by use of debt.



Assume a firm has 10% debentures of Rs 1,00,000. and equity shares of Rs 5,00,000 The current capitalization rate is 12 %. Compute overall cost of capital .

- Stage 1 - Low debt - What would be the change in the overall cost of capital if the debt increases to Rs 2,00,000. Ki and ke remains constant
- Stage 2 - Moderate debt - What would be the change in the overall cost of capital if the debt increases to Rs 3,00,000. Ki remains constant and ke increases to 13.33%
- Stage 3 - High debt -What would be the change in the overall cost of capital if the debt increases to Rs 5,00,000. Ki increases to 12% and ke increases to 15%

Level of Debt	Debt Equity Ratio	Interest	Dividend	Total fixed charges	Overall cost of capital	Status of Ko
Stage 1 - Low debt	Debt = 1,00,000 @ 10% Equity = 5,00,000 @12%	10000	60000	70000	11.67	
	Debt = 2,00,000 @ 10% Equity = 4,00,000 @12%	20000	48000	68000	11.33	Decreases
Stage 2 - Moderate debt	Debt = 3,00,000 @ 10% Equity = 3,00,000 @13.33%	30000	40000	70000	11.67	Remains Constant
Stage 3 - High debt	Debt = 5,00,000 @ 12% Equity = 1,00,000 @12%	60000	15000	75000	12.50	Increases

Illustration 3: Assume a firm has a EBIT of Rs 40,000 and has 10% debentures of Rs 1,00,000.The current capitalization rate is 16%. Compute value of the firm and overall cost of capital .

- What would be the change in the value of the firm and overall cost of capital if the debt increases to Rs 1,50,000. Ki raises to 11% and Ke raises to 17%
- What would be the change in the value of the firm and overall cost of capital if the debt increases to Rs 2,00,000. Ki raises to 12.5% and Ke raises to 20%

Solution

Statement showing different levels of debt

Particulars	When Debt is 1,00,000 Ki=10%, Ke 16%	When Debt is 1,50,000 Ki =11%, Ke=17%	When Debt is 2,00,000 Ki =12.5%, Ke=20%
EBIT	40000	40000	40000
less Interest	10000	16500	25000
EATES	30000	23500	15000
Value of Equity (S) = EATES/Ke	187500	138235	75000
Value of Debt (B)	100000	150000	200000
Value of the firm V= B+S	287500	288235	275000
Overall cost of capital Ko= EBIT/V	13.91%	13.88%	14.55%

When debt is 1,50,000 the value of the firm is highest .

MODI GILIANI AND MILLER APPROACH (MM APPROACH)

Theory: Changes in capital structure will not affect the value of the firm.

Franco Modigliani and Merton H. Miller developed this theory, which supports the NOI approach. They argue that there is no influence of the capital structure of a firm on its cost of capital and market value. In other words, the overall cost of capital and the value of the firm are independent of the capital structure.

Assumptions

1. Capital markets are perfect.

It implies that-

(a) There is no transaction cost.

(b) There is no bankruptcy cost.

(c) Investors are free to buy, sell & switch between securities

(d) Securities are infinitely divisible.

(e) Individual investors can borrow without restrictions on the same terms and conditions as firms can.

(f) Investors are rational and behave accordingly.

2. Investors have identical expectations about future operating earnings. That is, investors have homogenous expectations.

3. Firms operate in similar business conditions and have similar business risk. All firms can be classified into homogeneous risk classes.

4. The dividend payout ratio is 100%. It implies that all earnings are distributed among shareholders as dividend.

5. There is no corporate tax. However, this assumption is removed later on.

Based on the above assumptions, M-M developed two propositions which are discussed as follows:

Home Made Leverage:

An investor may like to shift from one firm to the other firm due to economic benefits. In case the investor wants to maintain secured ownership but runs with short of funds, it is assumed that the investor would borrow money and invest in the company which is more secured and beneficial.

According to MM approach if two companies under the same business environment have the same EBIT but have different capital structure(one may be levered and un levered) yet the value of the two firms will be equal. But if there is a small difference in the value, it will be for a temporary period only. The investors will analyse the investment and returns they get in two different companies. They would find some economic benefits if they shift from high value firm to low value firm. The process of shifting from one firm to the other is called arbitrage process.

Due to this arbitrage process, demand of shares for higher value firm will decreases. And also its value and price will decrease. On other hand the value and price of the lower firm will increase. So because of arbitrage process the value of both the firms become equal. Hence the changes in capital structure does not affect the value of the firm.

Limitations of MM Approach:

1.Perfect market conditions need not exist:

- All investors are not rational.
- Complete information may not be available to all investors
- Transaction cost will exist
- Flotation cost will exist.

2. Investors may not like to borrow money for making investment on securities.

3. In practice the investors borrow money for the interest rate which would definitely more than the company' s borrowing rate.

4.There need not be only equity and debentures for financing. Preference shares will also exists.

5.Taxes may exist.

6.The total financing need not be constant

Illustration 4 : Two firms L and U falling in the identical risk class have net operating income of Rs. 1,00,000 each. Firm A is an unlevered concern having all equity but Firm B is levered concern as it has Rs. 5,00,000 of 10% bonds outstanding. The equity capitalisation rate of firm U is 12.5% and of firm L is 16.0%. Calculate market value of each firm and explain arbitrage process with an illustration

Particulars	Firm L	Firm U
	Ki=10%, Ke 16%	Ke=12.5%
EBIT	100000	100000
less Interest	50000	0
EATES	50000	100000
Value of Equity (S) = EATES/Ke	312500	800000
Value of Debt (B)	500000	
Value of the firm (V) = B+S	812500	800000
Overall cost of capital (Ko)		
Ko= EBIT/V	12.31%	12.50%

The arbitrage process will work as under:

Suppose Mr X owns 10 percent shares of Firm L. He thus holds shares worth Rs. 31,250 (10% of Rs. 3,12,500) and his earnings will amount to Rs. 5,000 (10% of Rs. 50,000). For X's investment of Rs 31,250 he gets a return of Rs 5,000. A rational investor will start to shift from high value firm to low value firm for economic benefits. He will liquidate his holdings of Firm L and use the proceeds to buy shares of Firm U for economic benefit.

To obtain 10% holding in U , Mr X requires Rs 80,000(10% of 8,00,000) . He has Rs 31,250(money realized from selling shares of firm L) . He would need to make an additional contribution of Rs 48,750 (80000-31250), which he would borrow at 10% (Home made leverage)

Net Return of Mr X from U ltd

Return on investment in Firm U :	Rs 10,000
Less interest paid (48750*10%) :	Rs 4875
Net Returns	Rs 5,125

We thus find that Mr X is getting a net return of Rs. 5,125 from his investment in firm U, where as he was getting Rs 5,000 earlier from firm L. Therefore Economic benefit is Rs 125 . Because of this benefit the investor would always prefer to invest in firm U. Due to increased demand , the share prices of firm U increases and hence total value of firm also increases. Similarly Due to constant sale of shares of Firm L will cause drop in share prices of firm L and value of the firm decreases. The investors will keep doing it till equilibrium is obtained. Ie both the firms have the same value . This process of shifting from one firm to another firm is called as arbitrage process. This arbitrage process will continue till the opportunity of making same amount of return with investment outlay exists. At the point where there will be no such opportunity the total value of the two firms will be identical.

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SCHOOL OF MANAGEMENT STUDIES

UNIT – IV -FINANCIAL MANAGEMENT– SBAA1307

1. FINANCING DECISION - COST OF CAPITAL

4.1 COST OF CAPITAL

Cost of capital for a firm may be defined as the cost of obtaining funds i.e.; The average rate of return that the investors in a firm would expect for supplying funds to the firm. According to Soloman Ezva," cost of capital to the minimum required rate of earnings or the cut- off rate of capital expenditure.

4.2 USES OF COST OF CAPITAL IN FINANCIAL DECISION MAKING:

1. **CAPITAL BUDGETING DECISION:**

In various methods of capital budgeting, cost of capital is the key factor in deciding the project out of various proposals pending before the management.

2. **DESIGNING OF CAPITAL MIX:**

The mix of debt and equity increased the rate of return on equity capital, other things remaining the same. But use of debt increases, the financial risks also. The situation results in a higher cost of capital for the firm. Thus cost of capital affects the capital structure.

3**. DECIDING ABOUT THE METHOD OF FINANCING:**

Whenever additional finance requires, he may have a better choice of the source of finance, which bears he minimum cost of capital.

4. **PERFORMANCE OF TOP MANAGEMENT:**The performance of top management should be evaluated by comparing actual profitability of projects, with (a) the projected overall cost of capital and (b) the actual costs of funds raised to finance the projects.

5. **OTHER AREAS:**

The concept of cost of capital is also important in many other areas of decision making, such as dividend decision and working capital policy.

4.3 SPECIFIC COST AND WEIGHTED COST

Specific cost refers to the cost which is associated with the particular sources of capital. E.g.- Cost of Equity Weighted/ Composite cost is the combined cost of different sources of capital taken together. E.g.- Cost of debt, cost of equity & Cost of pref.shares.

MEASUREMENT OF SPECIFIC COST OF DIFFERENT SOURCES:

I. COST OF DEBT: (Kd)

The cost of debt is defined in terms of the required rate of return that the debt investment must yield to protect the shareholders interest.

Cost of **Irredeemable** Debentures **Before Tax** – Issued at Par, Premium or Discount

$$K_i = I/NP \times 100$$

Cost of **Irredeemable** Debentures **After Tax** – Issued at Par, Premium or Discount

$$K_d = I/NP \times 100(1-t) \text{ or } K_d = r(1-t)$$

Cost of **Redeemable** Debentures **Before Tax** – Issued at Par, Premium or Discount

$$K_i = \frac{I + 1/n\,(P-NP)}{1/2(P + NP)}$$

Cost of **Redeemable** Debentures **After Tax** – Issued at Par, Premium or Discount

$$K_d = \left[\frac{I + 1/n\,(P-NP)}{1/2(P + NP)}\right] \times (1-t)$$

I = Interest

NP = Net Proceeds

n = Number of years for maturity

P = Redeemable value of debentures

Illustration No. 1 : A company issue 10% irredeemable debentures of Rs. 10,000. The company is in 50% tax bracket. Calculate cost of debt capital at par, at 10% discount and at 10% premium

Solution

Cost of Debt (Ki) = I/NP

Where, Ki = Before Tax Cost of Debt, I = Interest , NP = Net proceeds

When debentures are issued at par: NP = Par value -Flotation cost

NP= 10,000

When debentures are issued at discount: NP = Par value – Discount – Flotation cost

NP= 10,000-(10,000*10%) = Rs 9,000

When debentures are issued at premium: NP = Par value + Premium – Flotation cost

NP= 10,000+(10,000*10%) = Rs 11,000

Interest (I)	=	Rs 10,000*10% = Rs 1,000
Cost of debt at par Before Tax Ki	=	Rs. 1,000 / Rs. 10,000
Before Tax Ki	=	10%
After Tax Kd	=	Ki (1-tax rate) 10 (1-0.5) = 5%
Cost of debt issued at 10% discount	=	Rs. 1,000 / Rs. 9,000
	=	11.11%
After Tax Kd	=	Ki (1-tax rate) 11.11 (1-0.5) = 5.55%
Cost of debt issued at 10% premium	=	Rs. 1,000 / Rs. 11,000
	=	9.09%
After Tax Kd	=	Ki (1-tax rate) 9.09 (1-0.5) = 4.55%

Illustration No 2. The par value of debenture is Rs.100. Tax rate is 40%, Interest rate 10%, flotation cost 2%. Calculate the cost of irredeemable debentures @ par, premium of 5% and at a discount of 5%.

Solution:

Cost of irredeemable debentures @ par

Cost of Debt (Ki) = I/NP

When debentures are issued at par: NP = Par value -Flotation cost

NP= 100 - (100*2%) = 98

When debentures are issued at premium: NP = Par value + Premium – Flotation cost

NP= 100+ (100*5%) - (100*2%) = 103

When debentures are issued at discount: NP = Par value – Discount – Flotation cost

NP= 100 - (100*5%) - (100*2%) = 93

Interest (I)	=	Rs 100*10% = Rs 10
Cost of debt at par Before Tax Ki	=	Rs. 10 ---------- Rs. 98
Before Tax Ki	=	10.2%
After Tax Kd	=	Ki (1-tax rate) 10.2 (1-0.4) = 6.12%
Cost of debt issued at 10% discount	=	Rs. 10 ---------- Rs. 93
	=	10.75%
After Tax Kd	=	Ki (1-tax rate) 10.75 (1-0.4) = 6.45%
Cost of debt issued at 10% premium	=	Rs. 10 ---------- Rs. 103
	=	9.7%
After Tax Kd	=	Ki (1-tax rate) 9.7(1-0.4) = 5.8%

Illustration No. 3 :

From the following information, calculate cost of debt @ par, @ premium of 10% and discount of 10%, par value Rs.1000, floatation cost 3%, tax rate 40% year of redemption 3years, interest rate of debt is 10%.

Solution

$$\text{Cost of Debt Ki (before tax)} = \frac{I+\frac{1}{n}(P-NP)}{(P+NP)/2}$$

Where, Ki = Before Tax Cost of Debt, I = Interest , NP = Net proceeds P = Par Value Of Debentures n= No. Of Years to Maturity

When debentures are issued at par: NP = Par value -Flotation cost

NP= 1,000 – 30 =970

When debentures are issued at premium: NP = Par value + Premium – Flotation cost

NP= 1,000+(1,000*10%) – 30 = Rs 1070

When debentures are issued at discount: NP = Par value – Discount – Flotation cost

NP= 1,000-(1,000*10%) – 30 = Rs 870

Interest (I) = Rs 1000*10% = Rs 100

Cost of debt at par = $\frac{100+\frac{1}{3}(1000-970)}{(1000+970)/2}$

Before Tax Ki = 11.16%

After Tax Kd = Ki (1-tax rate)
= .16 (1-0.4) = 6.7%

Cost of debt issued at 10% discount = = $\frac{100+\frac{1}{3}(1000-870)}{(1000+870)/2}$

= 15.32%

After Tax Kd = Ki (1-tax rate)
= .32 (1-0.4) = 9.19%

Cost of debt issued at 10% premium = = $\frac{100+\frac{1}{3}(1000-1070)}{(1000+1070)/2}$

= 7.40%

After Tax Kd = Ki (1-tax rate)
= .4(1-0.4) = 4.4%

II. COST OF PREFERENCE SHARES (Kp):

Cost of preference shares are the fixed cost bearing securities. The dividend rate is fixed well in advance at the time of their issue

Irredeemable Preference Shares	$K_p = D/NP$
Redeemable Preference Shares	$K_p = \frac{D + 1/n (P-NP)}{½(P+NP)}$

D = Dividend for preference share holder

NP = Net Proceeds per share = Face value + Premium – Discount – Cost of issue (if any)

n = Number of years for maturity

P = Redeemable value of Preference shares

Illustration :4 Calculate cost of preference shares @ par, @ premium 10% and @ discount 10%. If dividend rate is 12% par value worth Rs.1000, floatation cost 3%.

Solution

Cost of Preference Share (KP) = D/*NP*

D = *Dividend for preference share holder*

NP = *Net Proceeds per share = Face value + Premium – Discount – Cost of issue (if any)*

When preference shares are issued at par: NP = Par value -Flotation cost

NP= 1,000- 30 = 970

When preference shares are issued at discount: NP = Par value – Discount – Flotation cost

NP= 1,000-(1,000*10%)- 30 = Rs 870

When preference shares are issued at premium: NP = Par value + Premium – Flotation cost

NP= 1,000+(1,000*10%) = Rs 1070

Dividend (D)	=	Rs 1,000*12% = Rs 120
Cost of preference shares at par	=	120 / 970
Kp	=	12.3%
Cost of preference shares issued at 10% discount	=	120 / 870
Kp	=	13.7%
Cost of preference shares issued at 10% premium	=	120 / 1070
Kp	=	11.2%

Illustration 5: Form the following information calculate cost of preference shares @ par , @ premium 7%, @ discount 3%. Par value Rs.1000, dividend 15%, floatation cost 3%, and the year of redeemed 4 years.

Solution

Cost of Redeemable Preference Shares (Kp) = = $$\frac{D+\frac{1}{n}(P-NP)}{(P+NP)/2}$$

D = *Dividend for preference share holder*

NP = Net Proceeds per share = Face value + Premium – Discount – Cost of issue (if any)

n = Number of years for maturity

P = Redeemable value of Preference shares

When preference shares are issued at par: NP = Par value -Flotation cost

NP= 1,000- 30 = 970

When preference shares are issued at discount: NP = Par value – Discount – Flotation cost

NP= 1,000-(1,000*3%)- 30 = Rs 940

When preference shares are issued at premium: NP = Par value + Premium –Flotation cost

NP= 1,000+(1,000*7%) = Rs 1040

Dividend (D) = Rs 1000*15% = Rs 150

Cost of preference share at par Before Tax Ki = $\frac{150+\frac{1}{4}(1000-970)}{(1000+970)/2}$

= 15.98%

Cost of preference share issued at 10% discount = $\frac{150+\frac{1}{4}(1000-940)}{(1000+940)/2}$

= 17.0%

Cost of preference share issued at 10% premium = = $\frac{150+\frac{1}{4}(1000-1040)}{(1000+1040)/2}$

= 13.72%

III. COST OF EQUITY SHARES (Ke):

The cost of equity capital is the minimum rate of return that the firm must earn on the equity financed portion of an investment project in order to leave unchanged the market price of the stock.

(a)Dividend / Price Approach:

According to this approach the value of an equity share is equivalent to the present value of future dividends plus the present value of the price expected to be realized.

Ke = D/NP or D/MP

D = Dividend Per share

NP = Net Proceeds per share = Face value + Premium – Discount – Cost of issue (if any)

MP = Market Price Per Share

Illustration 6 Calculate cost of equity @ par, @ premium 10%. If floatation cost 10% and the equity share cost Rs.50. Dividend rate 20%

Solution

Ke = D/NP or D/MP

D= Dividend Per share

NP = Net Proceeds per share = Face value + Premium – Discount – Cost of issue (if any)

MP = Market Price Per Share

When equity shares are issued at par: NP = Par value -Flotation cost

NP= 50- 5 =45

When equity shares are issued at discount: NP = Par value – Discount – Flotation cost

NP= 50 - (50*10%)-5 = 40

When equity shares are issued at premium: NP = Par value + Premium – Flotation cost

NP= 50+(50*10%)-5 = 50

Dividend (D)	=	50*20%= 10
Cost of preference shares at par	=	10/45
Ke	=	22.22%
Cost of preference shares issued at 10% discount	=	10/40
Ke	=	25%
Cost of preference shares issued at 10% premium	=	10/50
Ke	=	20%

(b) Dividend / Price + growth rate Approach:

This approach takes into account dividend as well as rate of growth in the dividend, which is assumed to be equal to the growth rate in earnings per share and market price per share.

Ke = D/NP + G

D = Dividend Per share

NP = Net Proceeds per share = Face value + Premium – Discount – Cost of issue (if any)

MP = Market Price Per Share

G = Growth Rate of Dividends

Illustration 7 Equity share is Rs.90 each dividend per share is Rs.4.50. the company expected growth rate is 7% calculate cost of equity**.**

Ke = D/NP + G

= 4590 **+ 7**

= 12%

(c) Earnings Price ratio Approach:

This ratio establishes the relationship between earnings and market price of the shares. Shareholders capitalize a stream of unchanged earnings by the capitalization ratio of E / P in order to evaluate their holdings.

Ke = E / NP or MP

NP = Net Proceeds per share = Face value + Premium – Discount – Cost of issue (if any)

MP = Market Price Per Share

E = Earnings Per Share

Illustration 8 The market price of the share is 55.45. The floatation cost is 10% growth rate is 5% . the firm expected to the pay the EPS is 7. Find out the cost of equity.

= [55.45 − 55.45 ×10%]= 49.90

E = Earnings Per Share =7

Ke = E/NP

= 749.90

= 14%

(d) **Realised Yield Approach:**

This approach is based on the rate of return actually realized for a period of time by investors in a company. Under this approach, the realized yield is discounted at the present value factor and then compared with the value of investment.

Ke= E /NP or MP

IV. Cost of Retained Earnings:

Retained earnings also have opportunity cost. Opportunity cost of retained earnings is other rate of return which they can get by investing the after tax dividends in other alternative opportunities. It can be expressed as:

Kr= Ke (I-T) (1-B)

T = tax rate

B = Brokerage rate

Illustration 9 X Ltd earning a profit of Rs.50000. The shareholders accrue rate of returns is 10 %(ke) It will incur 2% of brokerage cost. The tax rate is 35%. Calculate cost of retained earnings.

Kr = ke [1- tax rate] [1- Floatation cost]

= 0.1 [1- 0.35] [1- 0.02]

= 6.37%

WEIGHTED AVERAGE COST OF CAPTIAL

Weighted average is an average of the costs of specific sources of capital employed in a business, properly weighted by the proportion, they hold in the firm's capital structure. The weighted cost of capital can be computed by using the book value or the market value weights. Book value weight will be understated it the market value of the share is higher than the book value and vice-versa.

Steps involved in computation of WACC

• Calculate the cost of each of the sources of finance is ascertained.

• Assigning weights to specific costs.

• Multiplying the cost of each source by the appropriate weights.

• Dividing the total weighted cost by the total weights.

Illustration 10: Calculate overall cost of capital using book value and market value?

Sources of finance	Book value	Market value	Cost of capital
Equity capital	45000	90000	14%
Retained earning	15000	–	13%
Pref. share capital	10000	10000	10%
Debenture	30000	30000	10%

Solution

Market Value

Sources of finance	Market value X	Cost of capital W	Weighted Cost of Capital W*X
Equity capital	90000	14%	90000*14%= 12600
Retained earning	–	13%	0
Pref. share capital	10000	10%	10000*10% =1000
Debenture	30000	10%	30000*10% =3000
Total	**130000**		**16600**

Weighted average cost of capital = Total Weighted cost / Total Amount

= 16600 / 130000

= 11%

Book Value

Sources of finance	Book value	Cost of capital	Weighted Cost of Capital W*X	
Equity capital	45000	14%	45000*14%	= 6300
Retained earning	15000	13%	15000*0.13	=1950
Pref. share capital	10000	10%	10000*10%	=1000
Debenture	30000	10%	30000*10%	=3000
Total	**100000**		**12,250**	

Weighted average cost of capital = Total Weighted cost / Total Amount

= 12,250 / 1,00,000 = 12.25%

COST OF CAPITAL : PROBLEMS

COST OF IRREDEEMABLE DEBENTURES

PROBLEM 1 : Par value rs.1000, tax rate 50% interest 12% calculate cost of Irredeemable debentures @ par, @premium of 12% and @ discount of 7%, if the flotation cost is 3% @par

(Ans: At Par Kd = 6.18%, At Premium Kd = 5.55%, At Discount Kd = 6.66%,)

PROBLEM:-2

The company issue10% Irredeemable debenture of Rs.100000,Tax rate 55%, calculate cost of debenture @ par , @ premium of 10% and @ discount of 10%.

(Ans: At Par Kd = 4.5%, At Premium Kd = 4.09%, At Discount Kd = 4.99%,

PROBLEM 3

Calculate the cost of capital for cash of the following situations assuming. Tax rate 50% Company issue 10% perpetual debt of Rs.100000

(i)If debenture are sold @ par and floatation cost is 2%

(ii)If debenture are sold @ premium of 10% and floatation cost 2%

(iii)If debenture are sold @ discount of 5% and floatation cost 3%

(Ans: At Par Kd = 5.1%, At Premium Kd = 4.62%, At Discount Kd = 5.43%,

COST OF REDEEMABLE DEBENTURES

PROBLEM 4

From the following calculate cost of debt at par @ premium 12% , @ discount 7% rate of interest 10%, par value Rs.100, floatation cost 2% tax rate 40%, year of redemption 5 years.

(Ans: At Par Kd = 6.30%, At Premium Kd = 4.57%, At Discount Kd = 7.41%,)

PROBLEM 5

A company issues a new 15% debentures of Rs.1000, face value which is to be redeemed after 10 years the debentures is expected to be sold @ 5% discount. It will also involve floatation cost of 5%. The company tax rate is 50% what would the cost of debt be?

(Ans: at Discount Kd = 8.42%,)

PROBLEM 6

A company issues 15% of debentures of Rs.100 for an amount aggregating Rs.1, 00,000@ 10% premium, redeemable @ par, after 5 years. The company tax rate is 50% determine the cost of debt (Ans: at Premium Kd = 6.19%,)

COST OF PREFERENCE SHARES

COST OF IRREDEEMABLE PREFERENCE SHARES

PROBLEM 7

Calculate cost of preference shares @ par, @ premium 10% and @ discount 7%, par value 100000, dividend 10%, flotation cost 3%

(Ans: At Par Kp = 10.30%, At Premium Kp= 9.34%, At Discount Kp= 11.11%,)

PROBLEM 8

Calculate of cost of preference shares @ par, @ premium 8% @ discount 10%, par value 10000, dividend 10%, and floatation cost 2%.

(Ans: At Par Kp = 10.20%, At Premium Kp= 9.43%, At Discount Kp= 11.36%,)

PROBLEM 9

A company issue 14% irredeemable preference shares of face value of Rs.100 each. Flotation costs are estimated about 5%of expected sales price. What is the cost of preference shares are issued @ par , @ premium 10% and @ discount 5%.

(Ans: At Par Kp = 14.73%, At Premium Kp= 13.33%, At Discount Kp= 15.55%,)

COST OF REDEEMABLE PREFERENCE SHARES

PROBLEM 10

Xyz limited has issued 12% preference shares having a face value of Rs.100 each which can be sold @ premium of 10%, floatation cost 2%, year of redemption 7 years. Determine the cost of preference shares. (Ans: At Premium Kp= 10.43%,)

COST OF EQUITY CAPITAL Dividend / Price Approach:

PROBLEM 11

Calculate cost of equity if equity share cost Rs.10 each , @ premium 10, the company pays 5% commission on equity and the dividend rate 17%.

(Ans: At Premium Ke= 16.19%,)

Dividend / Price + growth rate Approach:

PROBLEM 12

The equity share is Rs.150 each. The dividend is Rs.6 floatation cost is 2% growth rate is 8%

(Ans Ke = 12%,)

PROBLEM 13

Equity share is Rs.120 each dividend ratio is 6%. Growth rate is 8%

(Ans Ke = 14%,)

Earnings Price ratio Approach:

PROBLEM 14

From the following information calculate cost of equity (ke) and cost of retained earnings (kr). A company offers equity share of Rs.100 each the floatation cost is 10% on issued price Dividend rate is 20%. Tax rate is 30%

(Ans : Ke = 22.22%, Kr= 13%)

PROBLEM 15

From the following information calculate overall cost of capital.

Sources of finance	Book value	Market value	Cost of capital
Debenture	40000	38000	10%
Pref. share	10000	11000	12%
Equity share	60000	12000	15%
Retained earning	20000	–	15%

(Ans: Weighted average cost of capital 11.69%, 13.58%)

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SCHOOL OF MANAGEMENT STUDIES

UNIT – V -FINANCIAL MANAGEMENT– SBAA1307

1. DIVIDEND DECISIONS

Once a company makes a profit, it must decide on what to do with those profits. They could continue to retain the profits within the company, or they could pay out the profits to the owners of the firm in the form of dividends. The dividend policy decision involves two questions:

1) What fraction of earnings should be paid out, on average, over time? And,

2) What type of dividend policy should the firm follow? I.e. issues such as whether it should maintain steady dividend policy or a policy increasing dividend growth rate etc.

On the other hand Management has to satisfy various stakeholders from the profit. Out of the Stakeholders priority is to be given to equity share - holders as they are being the highest risk.

5.1 DEFINITION

According to the Institute of Chartered Accountants of India, dividend is "a distribution to shareholders out of profits or reserves available for this purpose." "The term dividend refers to that portion of profit (after tax) which is distributed among the owners / shareholders of the firm."

"Dividend may be defined as the return that a shareholder gets from the company, out of its profits, on his shareholdings." In other words, dividend is that part of the net earnings of a corporation that is distributed to its stockholders. It is a payment made to the equity shareholders for their investment in the company.

5.2 FEATURES OF DIVIDEND

- Dividends are distributed to equity share holders.
- Dividends are variable in nature.
- Dividends are optional payments there is no legal obligations on the part of the company to pay them any fixed dividend.
- Dividends are decided by board of directors
- Equity share holders have the last claim on income
- Dividends cannot be paid out of deprecation reserve or any other capital reserve
- Dividend can be paid only after providing deprecation
- It can be paid in the form of cash or bonus shares

5.3 DIVIDEND DECISION:-

The finance manager has to determine the amount of profit to be distributed as dividend and the amount of profit to be retained in the business for financing its long term growth

5.4 DIVIDEND THEORIES:-

It attempts to explain the (Relationship between the dividends and market value of the firm

According to one school of thought

Dividend Decision does not affect the share holders wealth and value of firm [irrelevance concept of dividend]

- ❖ Modigliani Miller's approach:

According to another school of though Dividend decision affects the value of the firm and share holders' wealth [relevance concept of dividend]

- ❖ Walter's approach
- ❖ Gordon's approach

5.4.1 RELEVANCE CONCEPT OF DIVIDEND

WALTER'S MODEL:

Prof James. E Walter strongly supports the doctrine that the dividend decision affects the value of the firm

According to Prof. James E. Walter, in the long run, share prices reflect the present value of future+ dividends. According to him investment policy and dividend policy are inter related and the choice of a appropriate dividend policy affects the value of an enterprise.

Statement:

Changes in dividend will affect the value of the firm. The Walter's model is based on relationship between (internal rate of return)

- ➢ **If r>k:** The firm can earn higher profits than what a share holders can earn from their investment. Such firms are termed as growth firms.

  Optimum Dividend policy: Plough back the entire earnings

Dividend payment ratio=0

Entire amount is kept as retained earnings no dividends

- **If r<k:** The firm earns a lower profit than what the share holders can earn from their investment they are termed as declining firm.

  Optimum dividend policy: To distribute entire earning as dividend.

  Dividend payment ratio:100% Entire earnings is distributed as dividend no retained earnings

- **If r=k:**The firm earnings is equal to the expectations of the share holders they are termed as normal firm

  Optimum dividend policy: No optimum dividend policy. It does not matter whether the firm retains or distribute.

Assumptions:

- The firm will not go for external finance such as debt or fresh issue of shares. It does the entire finance through retained earnings.
- The rate of return (r) and cost of capital (k) remains constant.
- The dividend declared by the firm and earnings per share remains constant.
- The firm has a very long life.

MATHEMATICAL FORMULA:

P0 = Market value of the share

$$P0 = \frac{D + \frac{r\,(Eps - D)}{k}}{k}$$

Where D = Dividend per share.

R = Rate of return

K = Cost of capital

E = Earning per share

CRITICISM:

Walter's model has subject to various criticisms many of its assumptions are unrealistic.

- Walter's assumption that financial requirements of a firm are met only by retained earnings is seldom true in real world situations. Firms do raise funds by debentures, eq.sha whenever they are in need of money.
- R may not constant:- The firm tend to choose more profitable projects, hence in real life r also changes.
- Similarly k may also not remain constant. The cost of capital may vary based on market conditions
- The firm may not have a perpetual life .The firm may wind up due to external and internal reasons.

Illustration 1 : Assume that there are three firms. Firm A B C.

Particulars	Firm A	Firm B	Firm C
Rate of return (r)	20%	15%	10%
Cost of capital (k)	15%	15%	15%
Earning per share (EPS)	4/-	4/-	4/-

Assume a payout ratio of 0%, 50%,and 100%.

Prove Walter's model

Dividend Payout Ratio	Dividend per Share	A LTD	B LTD	C LTD
		r>k Growth Firm	r=k Normal Firm	r<k Decline firm
DP = 0%	D=0	$\frac{0 + \frac{0.20}{0.15}(4-0)}{0.15}$	$\frac{0 + \frac{0.15}{0.15}(4-0)}{0.15}$	$\frac{0 + \frac{0.10}{0.15}(4-0)}{0.15}$
		=35.46	=26.67	=17.78
DP=50%	D=2	$\frac{2 + \frac{0.20}{0.15}(4-2)}{0.15}$	$\frac{2 + \frac{0.15}{0.15}(4-2)}{0.15}$	$\frac{2 + \frac{0.10}{0.15}(4-2)}{0.15}$
		=31.11	= 26.67	=22.22
DP= 100%	D=4	$\frac{4 + \frac{0.20}{0.15}(4-4)}{0.15}$	$\frac{4 + \frac{0.15}{0.15}(4-4)}{0.15}$	$\frac{4 + \frac{0.10}{0.15}(4-4)}{0.15}$
		=26.67	=26.67	=26.67

Dividend Payout Ratio	A LTD	B LTD	C LTD
	r>k Growth Firm	r=k Normal Firm	r<k Decline firm
DP = 0%	=35.46	=26.67	=17.78
DP=50%	=31.11	= 26.67	=22.22
DP=50%	=26.67	=26.67	=26.67

Growth firms are characterized by an internal rate of return > cost of the capital i.e. r > k. These firms will have surplus profitable opportunities to invest. Because of this, the firms in growth phase can earn more return for their shareholders in comparison to what the shareholders can earn if they reinvested the dividends somewhere else. Hence, for growth firms, the optimum payout ratio is 0%.

Normal firms have r = k. The firms in normal phase will make returns equal to that of a shareholder. Hence, the dividend policy is of no relevance in such a scenario. It will have no influence on the market price of the share. So, there is no optimum payout ratio for firms in the normal phase. Any payout is optimum.

Declining firms have an internal rate of return < cost of the capital i.e. r < k. Declining firms make returns that are less than what shareholders can make on their investments. So, it is illogical to retain the company's earnings. In fact, the best scenario to maximize the price of the share is to distribute entire earnings to their shareholders. The optimum dividend payout ratio, in such situations, is 100%.

Practice Problem 1 : Assume that there are three firms. Firm A B C.

Particulars	Firm A	Firm B	Firm C
Rate of return (r)	15%	10%	5%
Cost of capital (k)	10%	10%	10%
Earning per share (EPS)	8/-	8/-	8/-

Assume a payout ratio of 25%, 50%, 75% and 100%.Prove Walter's model

GORDONS MODEL:

The value of a share, like any other financial asset, is the present value of the future cash flows associated with ownership. On this view, the value of the share is calculated as the present value of an infinite stream of dividends.

Myron Gordon's Dividend Growth Model explains how dividend policy of a firm is a basis of establishing share value. Gordon's model uses the dividend capitalization approach for stock valuation. Myron Gordon relates the market value of the firm to the dividend policy.

Assumptions:

- No external financing:- The firm does not go for external financing.
- Constant return:- Rate of return(R) remains constant.
- Constant cost of capital:- K remains constant.
- Perpetual firm:- The firm has perpetual life.
- The firm is an all equity firm & it has no debt.
- No taxes:- Corporate taxes do not exist.
- Constant retention:- The retention ratio once decided remains constant. Thus growth rate is constant forever.
- Cost of capital is greater than growth rate K > br=g.

  K = cost of capital

  g = growth rate

Statement:

According to this model change in dividend will affect the value of the firm.

Value of firm

$$P0 = \frac{E(1-b)}{k-g}$$

Where Po is market price of the share.

E = earnings per share.

b = retention ratio.

g = growth rate (g=b*r).

k = cost of capital.

r = rate of return.

There are 3 kinds of firm

- Growth firm(r>k).
- Normal firm(r=k).
- Declining firm(k<r).

Criticism:

- Firms may raise funds by external sources also.
- R may not be constant always.
- K may not be constant always.
- Firm might not have perceptual life.
- Growth in dividend is not constant.
- Meaningful value is obtained when k>g. In other situations value of firm cannot be calculated.

Illustration 2 . Assume there are three firms A,B & C. Details regarding 3 firms are given

Particulars	Firm A	Firm B	Firm C
Eps	12	12	12
R	20%	15%	10%
K	15%	15%	15%

Prove Gordon's model when retention ratio is 0%, 25% & 50%.

Retention Ratio	**A LTD r>k Growth Firm**	**B LTD r=k Normal Firm**	**C LTD r<k Decline firm**
b = 0%	$\frac{12\ (1-0)}{0.15-(0\ x\ 0.20)}$	$\frac{12\ (1-0)}{0.15-(0\ x\ 0.15)}$	$\frac{12\ (1-0)}{0.15-(0\ x\ 0.10)}$
	= Rs 80	**= Rs 80**	**= Rs 80**
b =25%	$\frac{12\ (1-0.25)}{0.15-(0.25\ x\ 0.20)}$	$\frac{12\ (1-0.25)}{0.15-(0.25\ x\ 0.15)}$	$\frac{12\ (1-0.25)}{0.15-(0\ .25\ x\ 0.10)}$
	=Rs 90	**= Rs 80**	**Rs 72**
b = 50%	$\frac{12\ (1-0.50)}{0.15-(0.5\ x\ 0.20)}$	$\frac{12\ (1-0.50)}{0.15-(0.5\ x\ 0.15)}$	$\frac{12\ (1-0.50)}{0.15-(0.5\ x\ 0.10)}$
	=Rs120	**= Rs 80**	**=Rs 60**

Retention Ratio	A LTD r>k Growth Firm	B LTD r=k Normal Firm	C LTD r<k Decline firm
b = 0%	**Rs 80**	***Rs* 80**	***Rs* 80**
b =25%	**Rs 90**	***Rs* 80**	***Rs* 72**
b = 50%	**Rs120**	***Rs* 80**	***Rs* 60**

Growth Firm : As retention ratio increases , the value of firm increases. It assumes that the retain earnings are re invested in an all equity firm . This allows the earnings to grow at a rate of br. Thus in a growth firm it is better to retain profits than to distribute them

Normal Firm : In case of normal firm where r=k . Irrespective of firm's retention ratio, value of firms remains the same . Hence the earnings can be distributed or retained in the business

Decline Firm : In case of declining firm where r<k The retention of profits is undesirable by the share holders . Under such circumstances company should distribute all the profits to the share holders

Practice problem 2:. Calculate the value of the firm for the following data under Gordon's model

E = Rs 10/-

r = 20%

k = 15%

When retention ratio is a) 0% b) 50% c) 75% d) 100%.

Practice Problem 3: .Calculate by Gordon's models, the value of the firm whose details are

E = Rs 4/-

r = 10%

k = 12%

When a) Payout ratio is 25%.

b) Payout ratio is 50%.

c) Payout ratio is 75%.

REVISED GORDON'S MODEL/ The bird in the hand augments:

Gordon concludes that in a normal firm where r=k. Dividend policy does not effect value of shares. But in revised model Gordon states that dividend will effect the value of the firm even in normal firm. Investors behaving rationally are risk averse Prefer easily dividend which are certain than the rate dividends which are uncertain hence the investors prefer to avoid uncertainty and willing to pay higher price for the shares which gives greater current dividend other things held constant.

To conclude Gordon: A normal firm(r=k) must also payout dividends to get a higher market price.

5.4.2 IRRELEVANCE CONCEPT OF DIVIDEND

MODIGLIANI AND MILLER APPROACH (MM APPROACH):

Modigliani and miller states that the price of shares of a firm is determined by its earning capacity and investment decision and never by its dividend decision. According to the MM hypothesis, market value of a share before dividend is declared is equal to the present value of dividends paid plus the market value of the share after dividend is declared.

Assumptions:

- Capital markets are perfect.
- Investors behave rationally.
- There is no flotation or transaction costs.
- There are either no taxes or no difference between tax rates applicable to capital gains or dividends.
- Information is freely available to investors.
- The firm has a fixed investment policy.
- Risk or uncertainty does not exist. Investors are able to forecast future prices and dividends with certainty.
- Shares are infinitely divisible.

Statement:-

Payment of dividends will not affect the value of shares.

Formulae:-

1) $P0 = \frac{D1+P1}{1+Ke}$

2) $P1 = P0 (1+Ke) - D1$

3) No of shares to be issued

$\triangle n\ P1 = I-(e-nD1)$

Where E = earnings, nD1 = Dividend X no. of shares, I=investment

4) Value of firm

$$nP0 = \frac{P1 (n+\triangle n) - I + E}{1+Ke}$$

$$P0 = \frac{D1+P1}{1+Ke}$$

Where P0:- Prevailing market value of share

D1:- Dividend after one year

P1:- market value of share after one year

Ke:- Cost of capital

P1 = P0 (1+Ke) - D1

Computation of no. of shares to be issued

m*P1 = I - (X - nD1)

m:- no of shares to be issued

P1:- Price at which new shares to be made

I:- amount of investment required

X:- Total net profit of the firm during the period

nD1:- Total dividends paid during the proof after problems

PROOF:

Step1:-

MKT value of the shares in the beginning of the period is equal to the present value of dividend at end and mkt value of shares at end

$$P0 = \frac{D1+P1}{1+Ke} = \frac{P1}{1+Ke} + \frac{D1}{1+Ke}$$

D1:- Dividend at end

P1:- mkt value of share at end

Ke:- Cost of capital

1+ke:- Since taken after one year present value of money is considered

Step2:- Value of firm would be = no. of shares * mkt values of shares.

$$n * P0 = nP0 = \frac{n(D1+P1)}{1+Ke}$$

$$nP0 = \frac{nD1+nP1}{1+Ke}$$

Step 3:- Assuming that there is no external financing. The firm's internal source of finance also falls short hence fresh issue of shares has to be made

$\triangle n$=no of new shares issued at the end of period 1/Additional shares issue

$$nP0 = \frac{nD1}{1+Ke} + nP1 + \triangle nP1 - \triangle nP1$$

$$nP0 = \frac{nD1+(n\triangle n)P1-\triangle nP1}{1+Ke} \quad \text{——————} \quad \text{Eqn (1)}$$

Step 4:

$\triangle$ nP1=No. of new shares * MV of shares at end

$\triangle$ nP1 = I - (E - nD1)

$\triangle$ nP1 = I-e + nD1 —————— Eqn (2)

I:- Investment required

E:- Earnings/net profit

nD1:- Total dividend

E- nD1 = Retained earnings.

Sub (2) in (1)

$$nP0 = \frac{nD1+(n+\triangle n)\,P1-(\,I-e+nD1)}{1+Ke}$$

$$nP0 = \frac{\cancel{nD1}+(n+\triangle n)\,P1-I+e-\cancel{nD1}}{1+Ke}$$

$$nP0 = \frac{(n+\triangle n)\,P1-I+e}{1+Ke}$$

Since D1 is not found in the formula of value of shares / firm . It is evident that dividend has no effect in the valuation of shares. Thus MM approach concludes that dividend has no effect in the valuation of share price.

Criticism:-

1) Perfect capital market does not exist for the following reasons.

- All investors are not logical while making investment.
- Shares are not infinitely divisible (they are available in market lots).
- Transaction cost exists.
- Flotation cost exists.
- Financial institutions are able to influence market decisions and investors buy & sell when FI's buy and sell.
- All investors do not get perfect information. FI's get better information compared to individual investors.
- Taxation Exists: Different rates of taxes on capital gains and dividend. Capital gains are charged at a lower rate than dividend.

2) The investment policy of the firm changes due to changes in return costs and market conditions.

3) Business risk of the firm will change because of changes in investment policies.

Illustration 3: A ltd has 1000 shares of 100 each. The company declared a dividend of Rs 10 per share. The company belongs to a risk class of 20%.The company expects to have a net income of Rs 25,000.The company has to make a new investment of Rs 48,000 in coming period.

What will be the price of the share when

a) Dividend is declared.

b) Dividend is not declared.

c) no. of new shares to be issued

When dividends are declared

$P_1 = P_0 * (1 + ke) – D1$

$P_1 = 100 (1 + 0.20) – 10$

$P_1 = 110$

New Issue of Equity Shares at the end of year/ Additional shares to be issued

$\Delta n\ P_1 = I – E + nD_1$

$\Delta n\ P_1 = 48000 – 25000 + (1000*10)$

$\Delta n\ P_1 = 33,000$

$\Delta n = \Delta n\ P_1 / P_1 = 33000/110 = 300$ Shares

$\Delta n = 300$ Shares

Value of firm

$nP_0 = (n + \Delta n) \times P_1 – I + E / (1 + ke)$

$nP_0 = (1000 + 300) \times 110 – 48000 + 25000 / (1 + 0.20)$

$nP_0 = 143000 – 48000 + 25000 / (1 + 0.20) = 1,00,000$

Value of firm (nP_0) = 1,00,000

When dividends are NOT declared

$P_1 = P_0 * (1 + ke) – D1$

$P_1 = 100 (1 + 0.20) – 0$

$P_1 = 120$

New Issue of Equity Shares at the end of year/ Additional shares to be issued

$\Delta n\ P_1 = I – E + nD_1$

$\Delta n\ P_1 = 48000 – 25000 + 0$

$\Delta n\ P_1 = 23,000$

$\Delta n = \Delta n\ P_1 / P_1 = 23000/120 = 191.67$ Shares

Value of firm

$nP_0 = (n + \Delta n) \times P_1 - I + E / (1 + ke)$

$nP_0 = (1000 + 191.67) \times 120 - 48000 + 25000 / (1 + 0.20)$

$nP_0 = 143000 - 48000 + 25000 / (1 + 0.20) = 1,00,000$

Value of firm (nP_0) = 1,00,000

Practice Problem 4 : A company has 25000 shares of Rs 100/- each. The firm is expected to declare a dividend of Rs 5 per unit of share. The company needs an investment of Rs 5,00,000 it has an earnings of Rs 2,50,000.It belongs to risk category of 10%.Prove Modimiller's model.

5.5 DIVIDEND POLICIES:-

"Dividend policy means the practice that management follows in making dividend payout decisions, or in other words, the size and pattern of cash distributions over the time to shareholders.". In other words, dividend policy is the firm's plan of action to be followed when dividend decisions are made. It is the decision about how much of earnings to pay out as dividends versus retaining and reinvesting earnings in the firm.

Types of dividend policy

There are 4 types of dividend policy

a. Regular dividend policy
b. Stable dividend policy
c. Irregular dividend
d. Zero dividend policy

Regular dividend policy: In this type of dividend policy the investors get dividend at usual rate. Here the investors are generally retired persons or weaker section of the society who want to get regular income. This type of dividend payment can be maintained only if the company has regular earning.

Merits of Regular dividend policy:

- It helps in creating confidence among the shareholders.
- It stabilizes the market value of shares.
- It helps in marinating the goodwill of the company.

- It helps in giving regular income to the shareholders.

Stable dividend policy/ stability of dividends: Here the payment of certain sum of money is regularly paid to the shareholders.

Merits of stable dividend policy:

- It helps in creating confidence among the shareholders.
- It stabilizes the market value of shares.
- It helps in marinating the goodwill of the company.
- It helps in giving regular income to the shareholders.

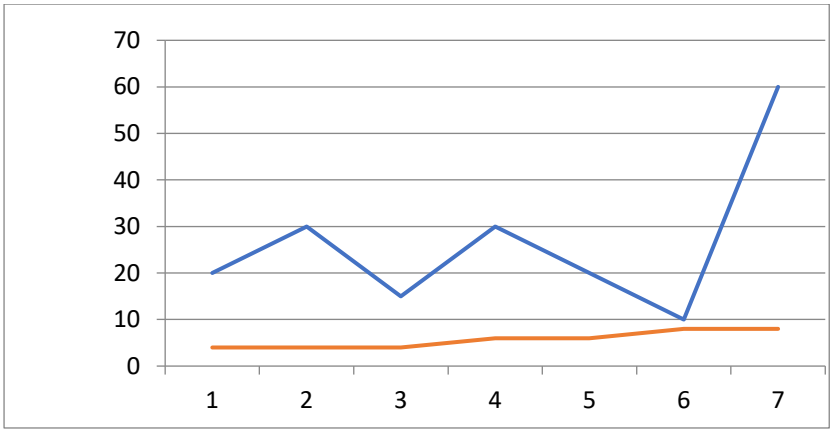
Forms of stability of dividend:-(or) Policies for declaring dividend

1) Constant dividend per share.
2) Constant payout.
3) Constant dividend per share plus extra dividend.

i) Constant dividend per share:-

The policy of paying a fixed amount per share as dividend irrespective of fluctuations in the earnings. The policy does not imply that DPS will never increase. When the earnings increases and expects to maintain that level, the annual dividend may also increased.

Year	EPS	DPS
1	20	4
2	30	4
3	15	4
4	30	6
5	20	6
6	10	8
7	60	8
8	40	8



Advantages:

- Dividends are stable.
- Preferred by FIs.
- Mkt price would be stable to certain extent.

Disadvantages:

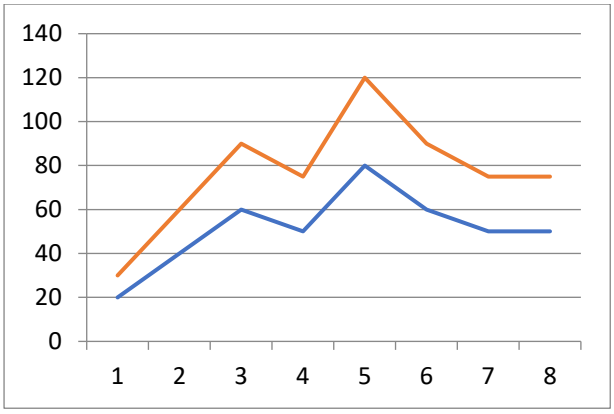
- Difficult to maintain such policy from earnings fluctuating year to year.
- Investors feel they don't get dividend proportionate to earnings.
- When earnings are high, but proportionate dividends were not given it declines market price. In practice when a company has good earnings in a year it earmarks the surplus into dividend equalization reserve so that they can easily payout the constant dividend even in bad time.

ii)Constant payout ratio:-

A certain percentage of net earnings is paid by way of dividends to share holders every year. In such a policy amount of dividend fluctuates in direct proportion with earnings of the company.

Illustration:-Assume 50% payout ratio

year	EPS	DPS
1	20	10
2	40	20
3	60	30
4	50	25
5	80	40
6	60	30
7	50	25
8	50	25



Advantages:

- No boredom dividends are existing.
- Dividend equalization need not be maintained.
- Dividends are proportionate to earnings.
-

Disadvantages:

- No stability in dividends.
- Financial institutions do not prefer.
- Market price will also fluctuate.

iii)Constant DPS + extra dividend :-

In this policy, the firm usually pays fixed dividend per share holders. However in period of market prosperity additional dividend is paid over the regular dividend. The extra dividend is cut by the firm as soon as the normal conditions return

Advantages:-

No boredom excitement in dividends

Disadvantages:-

Uncertainty about the extra dividends for which investors are generally not prepared.

c) Irregular dividend policy: as the name suggests here the company does not pay regular dividend to the shareholders. The company uses this practice due to following reasons:

- Due to uncertain earning of the company.
- Due to lack of liquid resources.
- The company sometime afraid of giving regular dividend.
- Due to not so much successful business.

d) Zero dividend policy

All surplus earnings are invested back into the business. Such a policy is common during the growth phase. It should be reflected in increased share price.

When growth opportunities are exhausted (no further positive NPV projects are available):

- cash will start to accumulate
- a new distribution policy will be required.

Dividend is paid only if no further positive NPV projects available. This may be popular for firms in the growth phase or without easy access to alternative sources of funds.

However: cash flow is unpredictable for the investor and gives constantly changing signals regarding management expectations.

5.6 FACTORS AFFECTING DIVIDENDS:

1) External factors
2) Internal factors

EXTERNAL FACTORS:-

1) **General state of economy:-** In case of uncertain economic conditions management may like to retain the whole are part of firm earnings to preserve firms liquidity similarly even during periods of periods firm would like to retain if the firm has larger investment opportunity
2) **State of capital market:-** f the firm has easy access to the capital market it would follow a liberal dividend policy. If it doesn't have a easy access to capital market then it is likely to adopt a more conservative policy.
3) **Legal Restrictions:-** A firm has certain legal restriction as per company acts regarding payment of dividend. Some of the restrictions are
    - Dividend can be paid out of the current profits only after paying to debenture holders & preference share holders.
    - A company is not entitled to pay dividends unless providing for deprecation.

- Deprecation reserve or general reserve can't be used to pay dividends.

4) **Contractual Restrictions:-** Lenders of the firm generally restrict the dividend payments in order to protect their interest, esp. when the firm is experiencing profitability or liquidity problems.
5) **Tax policy:-**Tax policy followed the govt. also affects the dividend policy for eg. If the govt. provides tax incentives for retaining longer share of dividends then the management may be inclined to retain a larger amount of firm earnings.

INTERNAL FACTORS:

1) **Desire of share holders:** The desire of share holders plays a major role in determining dividend policies. Wealthy investors (capital gains)(low pay out ratio retain). Investors like institutional, retired persons, small investors except a regular dividend
2) **Financial needs of the company:-** If profitable investment opportunities exist it is better to retain earnings. In case of no good opportunities for investment the firm can distribute higher dividends.
3) **Nature of earnings:-F**irms have less competition (monopoly) earning a stable income can have a higher payout ratio as compared to firms having higher competition and fluctuating earnings
4) **Desire of control:-** In the firms desire for control then it should have a low dividend payout ratio. If the firm has higher dividend payout ratio it would affect firms ability to invest in profitable opportunity, in such a situation the firm has to go for fresh issue or loans from FIs in both the cases firm control is diluted. Hence if a firm desires for a higher control, it has to retain and distribute low dividends
5) **Liquidity position:-** If the firm's liquidity position is good it can afford to pay higher dividends. If the firm's liquidity is low then it has to pay either low dividends or distribute bonus shares.

5.7 FORMS OF DIVIDENDS

1) Cash Dividend:-

The dividend is paid in the cash. Adequate cash resources are required to pay in form of cash dividend most popular.

2) Property Dividend:-

In such a case it is paid in the form of assets other than cash generally companies products are distributed as dividends. This is not popular in India.

3) Stock Dividend:-

This is next to cash dividend in popularity. The company issues its own shares to share holders in addition to cash dividends. This is popularly known as "Issue of bonus shares".

4) Bond Dividend:-

In case the company does not have sufficient funds to pay it pays dividend in the form of bonds. The bond holders get regular interest on their bonds as well as bond money on due date. Not popular in India.

5.8 BONUS SHARES:

Bonus means extra dividend paid when this dividend is paid in form of shares it is termed as bonus shares. Issue of bonus shares does not affect the capital structure of the company.

Benefits of bonus shares:-

(A) For Investors

1) Immediately Realizable: Bonus shares can be sold in the market immediately after a shareholder gets it.
2) Not taxable: Bonus shares are not taxable.
3) Increase in future Income: Shareholders will get dividend on more shares than earlier in future.
4) Good Image increases the value in market: Bonus shares create very good image of the company and the shares. Thereby it results into increase in the value of the share in the market.

(B) For Company:

1) Economical: It is an inexpensive mode of raising capital by which cash resources of company can be used for some other expansion project.
2) Wider Marketability: When bonus shares are issued, market price of share is automatically reduced which increases its wider marketability.

3) Increase in Credit Worthiness: Issuing bonus shares mean capitalisation of profits and capitalisation of profits always increases the credit worthiness of the company to borrow funds.
4) More realistic Balance Sheet: Balance Sheet of the company will reveal more realistic picture after the issue of bonus shares.
5) More Capital Availability: After issuing bonus shares, more capital will be available and hence more capital can be utilised for more expansion works.
6) Unaltered Liquidity Position: Liquidity cash position of the company will remain unaltered with the issue of bonus shares because issue of bonus shares does not result into inflow or outflow of cash.

Disadvantages of Issue of Bonus Shares:

1) Rate of dividend decline: The rate of dividend in future will decline sharply, which may create confusion in the minds of the investors.
2) Speculative dealing: It will encourage speculative dealings in the company's shares.
3) Forgoes Cash equivalent: When partly paid up shares are converted into fully paid-up shares, the company forgoes cash equivalent to the amount of bonus so applied for this purpose.
4) Lengthy Procedure: Prior approval of central government through SEBI must be obtained before the bonus share issue. The lengthy procedure, sometime may delay the issue of bonus shares.

5.9 LEGAL AND PROCEDURAL ASPECTS OF PAYMENT OF DIVIDEND:

1. Right to Recommend the Dividend

The right to recommend a dividend lies with the Board of directors. Only when the Board recommends a dividend, the shareholders can declare a dividend in the general meeting.

2. Right to Declare a Dividend

Only the shareholders in the Annual General Meeting can declare the dividend.. The shareholders, by passing a resolution in the general meeting, can declare the dividend.

3. Payable out of Profits Only

The company can declare and pay a dividend only where there is a profit. In other words, dividend is payable only out of profits. If there is no profit, there can be no distribution of dividend. The Companies Act provides that a dividend can be paid only

- Out of the profits of the Current financial year, or.
- Out of the profits of the previous years, or
- Out of moneys provided by the Central or State Governments for the purpose of paying a dividend.

4. Provision for Depreciation

It is already stated that a dividend can be declared only out of profits.after providing for depreciation for the current year and also for all the arrears of depreciation or loss in any previous year [Sec. 205 of Companies Act].

5. Setting off the Previous Losses

If any loss is incurred in any previous year after 1960, such loss should be set off against the profits of the current year before declaring a dividend [Sec. 205(1)(b)].

6. Payable Only in Cash

The dividend is payable only in cash. However, a company is not prohibited from capitalizing its profits or reserves by the issue of bonus shares or by making partly paid up shares into fully paid up shares.

7. Transfer to Reserves

It is also provided in the Companies Act that every company before declaring any dividend should transfer a certain percentage not exceeding 10% of the profit, to the reserves of the company.

8. Time Limit for Payment

When a dividend is declared, it should be paid within 30 days from the date of declaration. The dividend when declared shall become a debt due from the company. If the company does not pay the dividend within the period, every person who is a party to the default is punishable with simple imprisonment up to seven days and also with a fine.

9. Unpaid Dividend Account

If a dividend is declared but not paid within 7 days from the date of expiry of the 30 days, should transfer the amount of unpaid dividend to a separate account with any Scheduled Bank opened under the style “Unpaid Dividend Account of……Company Ltd“.

10. Transfer to General Revenue Account

Any amount transferred to the Unpaid Dividend Account, which remains unpaid or unclaimed for a period of three years, should be transferred by the company to the General Reserve Account of the Central Government.