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SCHOOL OF MANAGEMENT STUDIES

UNIT – I – FUNDAMENTALS OF FINANCIAL MANAGEMENT- SBAA3004

Definition

It means planning organizing, directing and controlling the financial activities such as procurement and effective utilization of funds to accomplish the objectives of the organization.

Nature of Financial Management

1. Financial management is an integral part of overall management. Acquisition, maintenance, replacement of assets, sources and costs of different capital, production, marketing, finance and personal decisions are the activities in a firm.
2. The Central focus of financial management is valuation of firm. That is financial decisions are directed at optimizing the value of the firm.
3. It involves risk return, trade off. Decisions on investment involve choosing the type of assets, which generate returns accompanied by risks. Generally higher the risk, returns must be greater and vice-versa.
4. It affects the survival, growth and vitality of the firm. The amount, type, sources, conditions and cost of finance influence the functioning of the unit.
5. It is the concern of every concern – small or big, individual or corporate undertakings.
6. It is a sub-system of the business system, which has other sub-systems like production, marketing etc.
7. The external legal and economic environment influences it. The investor preferences, stock market conditions etc affect financial decisions of the business.
8. Finance functions are generally centralized, i.e., more decisions are taken at the top level and ensure unified directions to investment and financing functions.

Finance and related disciplines

Financial management is related to different fields and study such as Economics, accounting, marketing, production and quantitative methods.

1. **Finance and Economics**

Business firms operate in macro and micro economic environment.

Macroeconomics deals with money, Banking system, capital markets, monitory and fiscal policies and ETC. so, there is a need of the financial managers to understand the following.

- Monitory policy and availability of funds.
- Fiscal policy which effect on economy.
- Financial institutions.
- Levels of economic activity and changes in economic policy.

Micro economics deals with the economic decisions of individuals and organization. It involves

- Supply and demand relationship and profit maximization strategies.
- optimal sales and product pricing strategies
- measurement of risk
- The rationale of depreciating assets.

It also discusses on marginal analysis which suggests that decisions should be take based on marginal cost and marginal reference.

1. Finance and accounting:

Accounting is an input in financial decision making. It is a sub- function of finance. It generates data relating to activities of the organization. Financial statement such as the balance sheet, the income statement (P and L), cash flow statements are obtained from accounting. This information assists the finance managers in assessing the company's past performance and future directions of the firm, in meeting legal obligations like taxes, ETC. finance and accounting activities are within the control of VP finance or CFO

Difference between finance and accounting

-Treatment of fund:

Accounting: Accrual principle (when incurred and not when actually collected are payed)

Finance: cash flows (when actually cash is received are paid

-Decision making:

Purpose of accounting is collection of data and primary focus of financial manager is planning, controlling and decision making.

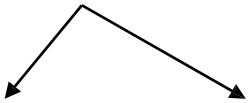
3. Finance and other disciplines

Marketing: promotion plans, new product development.

Production: process and capital expenditure.

Quantitative methods: analyze complex financial problems.

Financial management approaches



Traditional Modern

Traditional approach:

Focuses on procurement of funds from investors, financial institutions, and investment bankers.

Decision making is ignored.

Focus was on long term financial problems, working capital management was not given important.

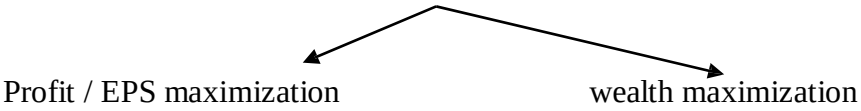
Financial management was confined to important events like mergers and acquisitions.

This approach ignores cost and capital, capital structure valuation of firms, etc.

Modern approach:
Modern approach focuses on effective utilization of funds which were raised efficiently. It discusses on investment decision, financing decision and dividend decision.

Objectives of financial management

Two important objectives of financial management:



According to this approach those that increase profit are given atmost importance and those that decrease profit are to be avoided. Profit is a measurement for economic performance. It leads to efficient allocation of resources and ensures maximum social welfare.

Drawbacks:

1. Ambiguity:

The term profit is a vague and ambiguous concept. Profit may be short term or long term; it may be before tax or after tax, may be return on capital employed or total assets or shareholder's equity. There is a question as to which profit should a firm consider.

2. Timing of benefit:

It ignores the differences in the time of the benefits received. It does not value the cash flow highly when received early. In practice benefits received sooner are more valuable than benefits received later. Receipt of funds immediately should always be preferred to future promise of funds because these earnings or returns could be reinvested for other projects to provide greater future earnings.

3. Risk: It ignores risk. Investors are generally risk averters so they expect returns with minimum risk. It does not consider time, economy and other factors making the returns highly uncertain. The risk that actually occurs may differ from those expected. A trade-off exists between return and risk. Return and risk are the key determinants of share price. Higher profit pushes share price higher, whereas higher risk tends to result in a lower share price because shareholders will be paid higher return when there is high risk.

Wealth maximization:

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. The market price of shares (excluding impact of speculation) serves as the standard to judge whether financial decisions have been taken and implemented efficiently or not. Therefore, maximisation of the firm's market value is considered to be the proper objective.

Merits:

1. It is based on the concept and cash flow generated by decision. Thus it avoids ambiguity.
2. It considers both quality and quantity dimensions of benefits. Amount of return and risk taken is analyzed. Time value of money is considered. Cash flow stream is calculated by discounting.
3. The discount role reflects risk and returns. Higher discount rate means high risk because it takes a longer time to get back the return.
4. It implies maximization of the market price of the shares which means value/ wealth/ NPV maximizatio n.
5. It focuses on EVA - economic value added
6. Focus on stakeholders: Maintaining positive shareholders relationship minimizes conflict and litigation. So, a firm can better achieve its goal of shareholder's wealth maximization with cooperation with stakeholders.

Stakeholders ⟶ customers, supplier, employees, banks, loan provider, etc.

Demerits:

1. Shareholder's interest:

The goal of maximizing share prices does not imply that managers should seek to improve the value of the common stock at the expense of debt/debenture holders.

2. Agency problem:

When managers place their personal goals ahead of corporate goals or shareholders goals it is called as wealth maximization.

Agency problems are prevented by following:

Shareholders participation: voting rights can replace underperforming management with competent management.

Hostile takeover: Acquisition of the firm by another firm that is not supported by management is possible. So due to this threat of takeover managers are motivated to act on corporate goals.

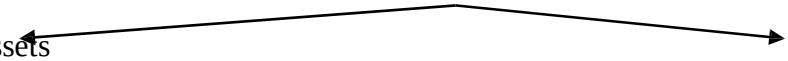
3. Social responsibility:

As economic agents whose actions have considerable impact on the society, business firms must take into account the implications of their policies and actions on society as a whole. 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.

Finance function/ decisions in financial management

1. The investment decision:

Selection of assets in which the fund is invested



Long term assets Short term assets

Long term assets

Return over a period of time

Capital budgeting

Selection of an asset or investment, proposal it depends on:

i) Selecting the asset based on alternatives available.

ii) Analysis of risk and uncertainty

iii) Worth of long term project depending on the benefits that is rate of return called as cost of capital.

Short term assets/Current assets

Assets which are convertible to cash in the cause normal course of business

Working capital management

Management of current assets:

i) Ensuring a trade – off between profitability and liquidity.

ii) Individual current assets should be efficiently managed

So that funds are not locked up. (cash, receivables and inventory.)

2. Financing decision:

It relates to the choice of the proportion of debt and equity sources of financing. It is termed as capital structure. There are two aspects of financing decision;

i) Theory of capital structure: shows the relationship between the use of debt and returns to the shareholders which is also termed as financial risk. A capital structure with reasonable proportion after and equity capital is called as the optimum capital structure.

ii) Capital structure decision: Determination of appropriate capital structure

3. Divided policy decision:

The profit of a firm is distributed to the shareholders in the form of dividends or is retained in the business. The proportion of net profits distributed to shareholders is termed dividend payout ratio.

Dividend payout ratio = Total div/net income or Dividend per share/Earnings per share

Roles/ activities of the financial manager

Financial Planning

This is a decision making function. It involves three basic steps namely i) determining short-term and long-term financial objectives ii) Formulating financial policies and iii) Making adjustments and readjustments. In setting out the objective, profitability and financial risk should be considered. Among various objectives profit maximisation and wealth maximisation are notable. After setting objectives, the following policies are likely to be formulated. i)policies determining the total amount of capital required ii) policies determining the selection of source of capital iii) policies determining debt-equity ratio iv) policies guiding the dividend policy v) credit policy terms and vi) policies determining the investment of funds in fixed assets and current assets.

Financial Control:

Success of a financial plan depends upon suitably designed control system and measures. Control is essential for checking actual performance with planned one. For control the following steps are needed:

1. Developing standards of performance and 2. Comparing actual performance with these standards. For proper control a system of reports must be established. The function of financial control should be continuously performed because the working of a firm is continuously changing.

Financing decisions:

Financing decisions relate to proportion of debt capital and equity capital in total capital employed. While making this decision, the financial manager aims at securing optimal financing mix which secure maximum market price per share in the long run. Financing decisions are concerned with the choice of sources of funds and the amounts to be raised from the sources. The cost of financing, the nature of commitment and the period of raising funds govern selection of sources of particular source of finance.

Investment decisions:

Investment decisions involve the decision of allocation of funds to long term assets and current assets which determines the firm's risk. Costs of various methods of financing are affected by this risk. The financial manager is to see that fund on profitable investments. Some special investments decisions such as merger, acquisitions, reorganization etc. are also are taken by financial manager.

Management of Income and Dividend Decisions:

Net profits can be allocated either in the form of dividend to share holders or to employees in profit sharing plans or by retaining them for further expansion of the concern. The financial manager is to decide to extent to which funds to be allocated for each purpose. Usually, the amount to be paid to employees under profit sharing plans is statutorily fixed, therefore, there

is problem in them. He has paid considerable attention to the remaining two choices. Decisions relating to dividend relate Dividend payout ratio, stability of dividends over a period of time, and dividends in the form of shares. The financial manager has to study the following to determine the optional dividend payout ratio:

- The preference of investors or current dividends and for capital appreciation.
- The impact of retained earnings on capital structure and the impact of decisions relating

Liquidity Decisions:

Liquidity decisions relate current assets management. It should be managed efficiently otherwise the firm may become insolvency. Investment in current assets affects firm's profitability and liquidity. In order to ensure that insufficient and unnecessary funds are invested in current assets the executive should develop sound techniques of managing current assets. He should estimate them and make sure that funds should be made available when needed.

Deciding upon borrowing policy:

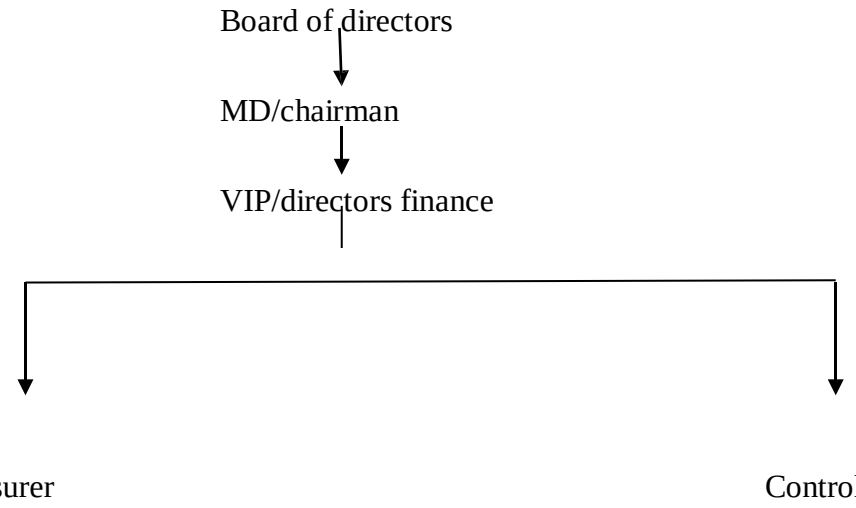
Every organization plans for the expansion of the business for which he requires additional resources. Personal resources being limited borrowing from banks or by issue of new shares and new debentures. The financial manager at this juncture will take a decision about the time when the funds borrowed from outside sources, how long they will be needed and from what source they will be repaid. He must choose the capital structure keeping various points such as cost of capital, return expected and financial risks involved etc. into mind.

Checking upon financial performance:

The financial manager is under an obligation to check the financial performance of the funds invested in the business. It requires retrospective analysis of the operating period to evaluate the efficiency of financial planning.

The executive functions discussed are interrelated. Therefore, a change in decision with regard to one of the functions is likely to affect change in decision concerning some or all others.

Organisation of finance function



Capital expenditure management
Financial planning and fund raising manager
Cash manager
Credit manager
Foreign exchange management

Tax manager
corporate accounting management
Cost accounting manager
Financial Accounting manager

The main roles of treasurer;

1. Obtaining finance.
2. Banking relationship
3. Investor relationship
4. Short term financing
5. Cash management
6. Credit administration
7. Investment
8. Insurance

Functions of controller:

1. Financial accounting
2. Internal audit
3. Taxation
4. Management Accounting and control.
5. Budgeting, planning and control.
6. Economic appraisal.

Financial forecasting

To increase the profitability of the firm, the financial manager must be able to anticipate its future needs for cash. Financial forecasting allows the financial manager to make educated guesses about the future financial condition of the firm. From these forecasts he or she can then plan the financing of the firm and arrange for external sources, such as debt and stock, if they are needed. The financial manager also develops budgets, which indicate, as time passes, whether the forecasts are proving to be accurate.

Tools for financial forecasting

- Financial Statements
- Balance Sheet
- Income statements
- Projected balance sheet
- Comparative balance sheet
- Common size balance sheet

Advantages of financial forecasting:

- It indicates to the management the resources, which are needed.
- It enables the management to know how much and how long funds are required.
- It ensures a method of control by which a corrective action can be taken in time.
- It enables the management to gather the necessary information for the formulation of the plan.

- It enables the management to co-ordinate preliminary performances for sales and production and to pre-determine stock levels.
- It enables the management evaluate plans in financial terms and facilitates comparison with the results which have been obtained.
- The data obtained from forecasts provide a basis for the decisions regarding cash management and investment in marketable securities.
- The commercial banks are favourably impressed by careful financial planning, especially on the part of small business where such planning is frequently not done.

Sources of finance

(a) Long Term source

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. Funds can be secured from various sources. While the availability of finance is of vital importance to any firm, securing it from proper sources is of prime concern to the finance manger.

External sources

1. Preference Shares:

Preference shares have two preferential rights.

i) At the time of payment of dividend.

ii) Repayment of capital at the time of liquidation of the company.

A fixed rate is paid and they do not have voting rights, so they have no say in the management of company. There are many kinds of preference shares. Investors who do not like to risk their investment prefer these shares. The preference shares are issued in various types and each of them having change by its nature. They are Participating preference shares, non- participating preference shares, and cumulative preference shares. Non-cumulative preference shares, redeemable preference shares, irredeemable preference shares, convertible preference shares and non-convertible preference shares.

Merits:

- No voting rights and normally has no control over the policies.
- The property need not be mortgaged for issue of preference shares.
- Finance through preference shares is less costly as compared to the equity shares.
- Common investors and institutional investors may have special attraction for this share because of fixed and higher of income. It extends the availability of funds in the market.

Demerits:

- 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.

- Preference shares may lead for insolvency of the company in case where the Directors continue to pay dividends on them inspite of lower profits to maintain their attractiveness.

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. The rate of dividend on them depends upon the profits of the company. These shares are issued without creating any charge over the assets of the company.

Merits:

- It does not involve any fixed obligation for payment of dividends.
- The larger the equity base, the higher the ability of the company to detain credit.
- It can be issued without creating any charge on the assets of the company.
- The liability of the firm is limited to the extent of their capital contribution.
- Equity shares are of small face value. Even the small investors can become members of big organization. This enhances the opportunity to raise the finance from the market.

Demerits:

- The cost of equity capital is high. The rate of return required by equity shareholders is Generally higher than the rate of return required by other investors.
- The cost of issuing equity share is generally higher than the cost of issuing other types of securities. Underwriting commission, brokerage cost and other issue expenses are higher for equity capital.
- Issuing excess equity shares may lead to over capitalization.
- The control of the company can be easily absorbed through cornering of shares by a group of shareholders for their personal advantage at the cost of company's interest.

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. It is payable at some specified time mentioned in the instrument. A fixed interest has to be paid regularly till the principal has been fully repaid by the company. Debentures provide an opportunity for trading on equity. They do not entitle to participate in the management of the company. Cautious investors prefer them. Companies such as transport, electricity etc may get more benefits from debentures.

Merits:

- The Company is able to secure capital without giving any control to the debenture holders.
- The Company can raise this capital at lesser flotation cost.
- It provides an opportunity to the company to trade on equity and increase the return on equity and to increase the return on equity capital.

Demerits:

- Raising of funds through debentures is risky, since in the event of failure of the company to pay interest or the principal installment in time, the debenture holder may go for the remedy if filing a petition for winding up of the company.
- Debentures are particularly not suitable for companies whose earnings are always fluctuating.

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. Such corporations provide both long term and medium term loans on easy installments to big industrial houses. The assistance of these institutions are help in promotion of new companies, expansion and developments of existing companies. They exist in direct subscription to company securities, under writing of shares and meeting the financial requirements of companies during economic depression.

5. Public Deposits:

Public deposits are the important source for the firms. Companies prefer public deposits because:

- These deposits carry lower rate of interest
- These are unsecured deposits
- These deposits are comparatively for a long period in comparison with the sources of working capital.

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. Through the ownership of the asset is not with the business enterprise, the right to use the asset is vested with the business unit. Leasing allows flexibility for the funds in the hands of the business firms and the cost of obtaining long-term finance is reduced to a large extent.

7. Hire Purchase:

Hire purchase is also a form of acquiring the assets. Assets involving huge amounts if other sources of long-term finance are too costly may be acquired through hire purchase. The terms of hire purchase are set out at the time of entering into the contact itself. As per the contractual agreement, the business firm will pay a hire purchase charge for a fixed duration till the hire purchase price of the equipment is fully paid. Hire purchase formalities are lesser and are easier and less costly mode of financing long-term needs.

8. Government Assistance:

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. This relieves to a large extent to obligations which otherwise the company would have to incur. Though there are procedural delays in obtaining this form of finance, this is the cheapest and most beneficial source of long-term finance for the business firms.

9. Mortgage Bonds:

Mortgage bonds are secured by a lien on fixed assets of the company. 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. If the company defaults in any of the provisions of bond agreement, the trustee on behalf of the bond holders has the power to take over and sell it, using the amount to pay the bond. If the sale proceeds is less than the amount of the issue outstanding the bondholders become unsecured creditors for the balance amount.

Internal sources

1. Retained Earnings:

A company out of its profits, a certain percentage is retained ad that amount is re-invested into the business for its development. This is also known ploughing back of profits. According to this device, a part of total profits is transferred to various reserves. These reserves can help the units to come over depression. These methods are cheaper and best source of internal financing. This method adds credit worthiness of the company and increases public confidence in the solvency of the company. A Company with adequate surplus can follow stable dividend policy. It is an ideal source of finance for expansion and modernization. By going for this source the firm has the following advantages.

- It enables business reputation and also increases the capacity of the business to absorb unexpected and sudden business shocks.
- This method of financing has been found to be useful financing improvements and expansion.
- As compared to other sources of financing this method of financing is least costly since it does not involve any flotation cost.

The disadvantages of raising funds by this way of are:

- The management can misuse the retained earnings.
- The shareholders may also object for the continuous use of retained earnings.

2. Depreciation:

Depreciation means decrease in the value of the asset due to wear and tear, lapse of time and accident. This is also considered as one of the source of financing to business. Depreciation does not generate funds but it definitely saves funds. The firm can get the benefit of reducing its income by deducting this non-cash expense in its profit and loss account. So that the income tax liability for the period is reduced.

(b) Short term finance:

Short-term financing deals with raising of money required for a shorter periods i.e. periods

varying from a few days to one year. There are, however, no rigid rules about the term. It may sometimes exceed one year but still be called as short-term finance.

1. Trade Credit

Just as a firm grants credit to its customers it can also get credit from the manufacturers or wholesalers or suppliers. It is known as trade or mercantile credit. The usual duration of this credit ranges from 30 to 90 days. It is granted to the company or firm on "Open account" without any security except that of the goodwill and financial standing of the buyer. The willingness of the supplier to extend credit is also depending upon the following factors:

- The financial resources of the supplier.
- His eagerness to dispose of his stock.
- Degree of competition in the market.
- Credit worthiness of the firm.

2. Consumer Credit or Customer Advance:

Many times the manufacturers or the suppliers insist on, advance by the customers particularly in case of special orders or big orders. The customer advance forms part of the price of the products ordered by him. This is an interest free source of finance. The period of such credit depends upon the time taken to deliver the goods.

3. Accounts Receivable Financing:

Under this method, a financing company purchases the account receivables from the customers or money is advanced on the security of the accounts receivable. In short, it is a method of getting credit by pledging book debts. In financial accounting, it is denoted as Sundry Debtors or Trade Debtors, and this item appears on the asset side of the Balance Sheet.

Time Value of Money

Definition:

Money has different values at different period of time. Worth of rupee received today is different from the worth of rupee to be received in future.

Reasons for time preference of money:

- Risk: The longer the time period of returns, the greater is the risk. Hence, present value is preferred.
- Preference for present consumption: People prefer present consumption than future consumption.
- Inflation: Inflation erodes the value of money.
- Investment opportunities: Most persons and companies prefer present money because of available opportunities of investment for additional cash flows.

Questions Bank :

(PART-A)

1. Meaning of Financial Management
2. Definition of Financial Management
3. Importance of Financial Management
4. Objectives of Financial Management
5. What is the primary objective of financial management?
6. What do you understand by time value of money?
7. Ms.Banu has deposited Rs. 50,000 in IOB. Interest is compounded at 6% p.a. for 3 years. Compute the amount of maturity.
8. What do you understand by the Time value of Money?

Question (PART-B)

1. What is meant by financial management? State the primary objective of financial management.
2. Explain, how does proper financial management helps in the growth of business?
3. Give the meaning of Investment and financing decisions of financial management.
4. Explain the concept and the objective of financial management.
5. What is the minimum amount which a person should be ready to accept today from a debtors who otherwise has to pay a sum of Rs. 10,000, Rs.12,000, Rs.16,000, Rs.18,000, and Rs.20,000 at the end of year 1,2,3 and4 respectively from today. The rate of interest may be taken as 14%.
6. Discuss the various methods used for risk factor in capital budgeting decisions.

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SCHOOL OF MANAGEMENT STUDIES

UNIT – II – FUNDAMENTALS OF FINANCIAL MANAGEMENT-SBAA3004

Capital Budgeting

Introduction

Capital Budgeting decision is also known as investment decision or Capital Expenditure decision. Financial management is concerned with the raising and allocation of funds. The funds that are raised through different sources of long term will be allocated for long term investments. The funds when allocating for long term investment the main objective will be to select the project that yields maximum returns so as to cover risk and also to the cost of various sources of funds. Rising of funds like Debentures has the cost of interest, Preference shares and Equity shares have the cost of dividend. Allocation of funds should be done in such a way that it recovers all these costs. Hence the finance manger has to evaluate available investment options in terms of risk, returns and uncertainty, only then he can decide whether the project is feasible or not.

Meaning & Definition of Capital Budgeting

Capital Budgeting is an important tool in the Financial Management that evaluates Capital expenditure projects. Capital Expenditure project is an expenditure whose benefit is spread over a long period of time say more than one year. Here the expenditure is incurred at one point of time for a long term project and the benefit is realized over the years in the future. Thus Capital Budgeting decision is a process which involves decision making regarding capital expenditure.

Definitions:

According to Prof. I.M Pandey, "Capital Budgeting decisions may be defined as the firm's decision to invest its current funds most efficiently in long term activities in anticipation of an expected flow of future benefits over a series of years."

According to Charles T Horngen, "Capital budgeting is long term planning for making and financing proposed capital outlays."According to R.M. Lynch, "Capital budgeting consists in planning the employment of available capital for the purpose of maximizing the long term profitability of the concern."

According to Richard and Green law "Capital budgeting is concerned with acquiring inputs with long run returns."

Nature of Capital Budgeting

Nature of capital budgeting can be explained in simple terms as follows:

- Capital budgeting involves huge investment in capital expenditure like investment in fixed assets (Land & Building, Plant & Machine etc.).
- Investment in capital expenditure is for a long term and cannot be withdrawn easily.
- Capital budgeting decision involves evaluation of future profits from an investment.
- Capital budgeting decision involves high risk as future profits are not certain.

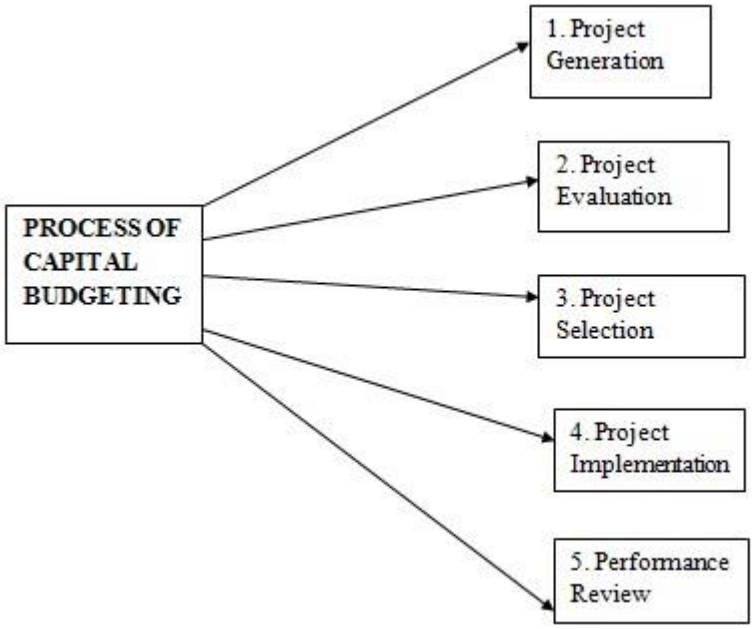


Figure Process of Capital Budgeting

1. **Project Generation:**

The process of capital Budgeting begins with the generation or identification of an investment proposal. The proposal for an investment can be identified from within the organization or from outside. Project generation within the firm comes either from the top, middle or lower level management. Sometimes even the workers provide idea related to their work. Some of the investment proposals are as follows:

- Adding a new product to the product line
- Expansion of production capacity in existing product lines
- Reduction in the cost of output without changing scale of operation
- Replacement of Assets
- Modernization projects
- Research and Development projects
- Employee welfare projects
- Education & training projects.

Hence a firm first has to identify the various proposals for investment while making capital budgeting decisions.

2. **Project Evaluation:**

Once an investment proposal is identified the next step in capital budgeting process is to evaluate the various proposals in terms of its profitability. There are two steps in the evaluation as follows:

- Estimate the cost and benefit of a proposal in terms of cash flows
- Select an appropriate criterion to judge the desirability of the project.

The benefits and cost from a proposal is estimated by considering the cash inflows and cash outflows. This depends on the future risk and uncertainty. The risk associated with each project should be analyzed and provisions should be made to cover all types of risk. There are a number of criteria to judge the suitability of a project. The selection of criterion should meet the firm's objective of maximizing market value. The technique of time value of money can be used as tool in the evaluation of a proposal.

3. **Project Selection:**

The next step in the capital budgeting process is screening and selecting the proposal. The screening and selecting process differ from one firm to another. In reality though the projects are scientifically screened by the middle level management, they are approved by the top management.

4. **Project Implementation:**

Once the project is selected the finance manager makes necessary arrangements to allocate funds required for the project. He also prepares a capital budget and takes care to reduce the weighted average cost of capital. The top manager has to ensure that the funds are spent in accordance with the allocation made in the capital budget. The preparation of periodical reports and submitting to top management helps in the proper control over capital expenditure.

5. **Performance Review or Follow up:**

An investment should be reviewed periodically. For this purpose a systematic procedure should be developed and the performance of a project should be reviewed. The review is done by comparing actual performance with the budgeted estimates.

Significance of Capital Budgeting

One of the important business decisions made by every business organization is capital budgeting decision. All types of capital investment decisions are made by firms only after evaluation of the cost and benefit of such investments. This is because it affects the firm's working and profitability for many years in the future. Some of the reasons for the significance of capital budgeting decisions are as follows:

a) **Long term effect:**
   The capital budgeting decisions will have an effect on the organization for a very long term, in terms of its profitability and the cost. An appropriate decision leads to a very high return to the firm where as a wrong decision might put the firm's survival under question.

b) **More Risky:**
   Investment in long term assets not only increases the average return of the firm, but also leads to fluctuations in the earnings. This makes the firm risky. The longer the period of the project larger will be the risk. Hence it can be said that the Capital budgeting decisions affects the future of an organization.

c) Huge Investment:
Capital Budgeting decision requires large initial investment or cash outflow for the acquisition of fixed assets or for the implementation of large projects. Hence it is essential to carefully estimate and make arrangements from various sources to get these funds.

d) Irreversible Decisions:
Capital budgeting decisions are investment in long term assets which are not easily reversible without much loss. The reasons is that it is very difficult to find a market for such used capital assets and also those assets cannot be used for any other alternative purpose. Hence firm incurs huge loss if a wrong capital investment decision is made.

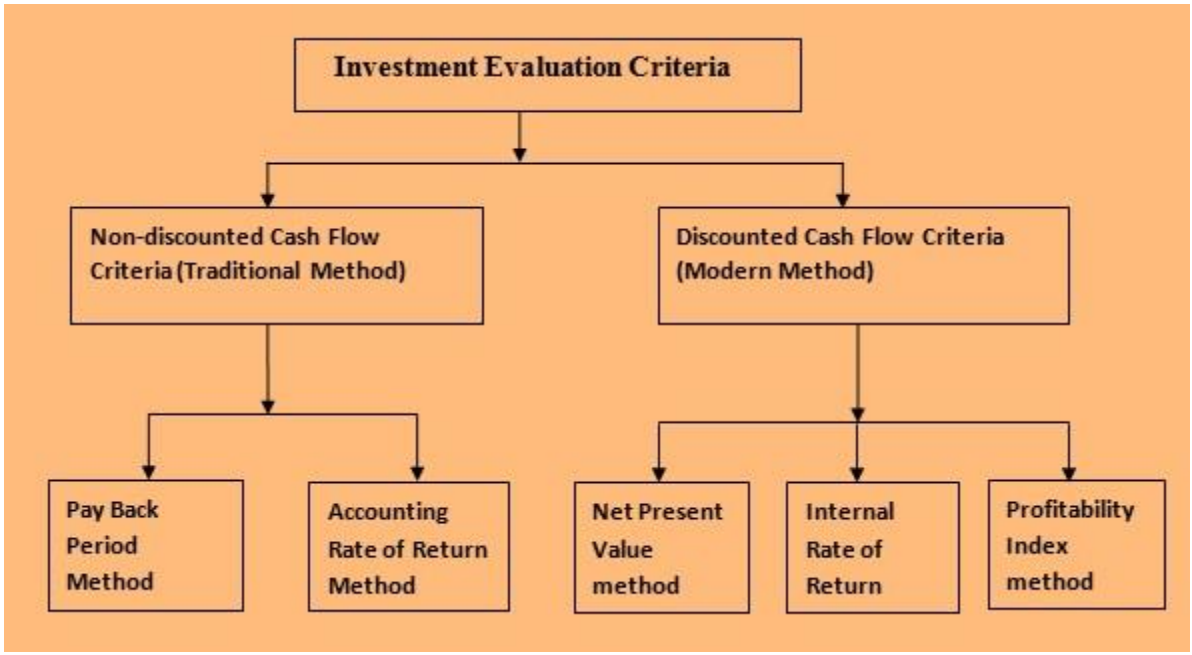
e) Effect on Cost Structure:
Based on the capital expenditure decision taken by an organization many associated cost arises such as supervision charges **Irreversible Decisions**, insurance, interest to debt fund and dividend to equity and preference shareholders, rents and salaries etc. If the investment fails to make expected profits then it affects the firm's profitability as the firm as to bear all these costs.

f) **Difficult Decision:**
Capital budgeting decisions are the most difficult decision every business organization makes as it involves future uncertainty and expected future cash inflows. The future cash flows and business environment are highly affected by the economic, political and technological forces. Hence these decisions are vital and most difficult.

g) Capital Structure Planning:
The capital structure of the firm is also affected by the capital budgeting decision. The profit from an investment proposal depends upon the type of capital structure.

Investment Evaluation Criteria/ Capital budgeting Techniques:

There are a number of methods for evaluating capital investment proposals is available. In all the methods the basic focus is on the comparison of the investments with the return expected from it. Some of the important methods are discussed here. The investment evaluation methods can be classified as under:



Non-discounted Cash Flow Criteria (Traditional Method):
Under non-discounted Cash Flow method or Traditional Method the time value of money is ignored.

1. Pay Back Period Method:
Payback period method helps in the calculation of time required by an investment proposal to return back the initial investment. In other words it is the period in which the project generates necessary cash to recover the cash out flow from an investment. Here time value of money is not considered. It takes in to account only initial investment, annual cash inflows, and the economic life of the project.

Cash inflow refers to profit before depreciation and after taxes.

Merits of Pay Back Period:

- It is easy to calculate and simple in understanding.
- Very low cost is involved in implementing this method.
- Under this method selection and rejection of a project is easy.
- The results are more reliable.
- In case of tight money conditions, PBP method helps in judging the quick pay back project which avoids locking up of funds in projects that yields high returns but takes a longer period of time.

Demerits of Pay Back Period:

- This method does not consider the time value of money.
- This method does not consider the profitability of economic life of the asset. Earnings after payback period are ignored.
- Total return on investment is also not considered.
- There is no standard procedure for setting the payback period. Hence it is difficult to determine the maximum acceptable payback period.
- This method does not consider all the dimensions of profitability.

Decision Rule :(Accept/Reject Rule):
If the payback period calculated for a project is less than the maximum or standard payback period fixed by the management, it will be accepted. On the other hand if the payback period calculated for a project is more than the maximum or standard payback period fixed by the management, it will be rejected.

Accept: Calculated PBP < Maximum PBP
Reject: Calculated PBP > Maximum PBP

a) Formula for PBP when Cash inflows are uniform:

$$\text{Payback period} = \frac{\text{Original investment}}{\text{Annual Cash Flow}}$$

Illustration 1:
A project requires an investment of Rs. 1, 00,000 and the estimated life of the project is 10 years. The project generates an annual cash inflow of Rs. 20,000. Calculate the payback period of this project.

Solution:

$$\text{Payback period} = \frac{\text{Original investment}}{\text{Annual Cash Flow}}$$

Original investment = Rs. 100000
Annual Cash flow = Rs. 20000

$$\text{Payback period} = \frac{100000}{20000}$$

PBP = 5 years

b) Formula for calculation of Pay Back Period when cash flows are unequal or not uniform: Under this method cash flow is calculated based on the cumulative cash flows.

PBP = Year before full recovery + (Unrecovered amount of investment / Cash flows during the next year)

Illustration 2:
Dev Industries is considering the purchase of a machine. Two machines X and Y costing Rs. 60,000 each are available. Cash inflows are expected to be as under. Calculate Payback period.

Year	Machine X	Machine Y
	Rs.	Rs.
1	20000	5000
2	30000	10000
3	40000	20000
4	10000	40000
5	5000	80000

Solution:
Calculation of Pay Back period:

Year	Machine X		Machine Y	
	PATBD (Rs.)	Cumulative CFATBD	PATBD (Rs.)	Cumulative CFATBD
1	20000	20000	5000	5000
2	30000	**50000**	10000	15000
3	40000	**90000**	20000	**35000**
4	10000	100000	40000	**75000**
5	5000	105000	80000	155000

PBP = Year before full recovery + (Unrecovered amount of investment / Cash flows during the year)
PBP for Machine X = 2 + 10000/40000 = 2.25 years
PBP for Machine Y = 3 + 25000/40000 = 3.625 years
Here machine X is preferred as the payback period of machine Y is 3.625 years and the Machine X is 2.25 years which is the shortest.

2. Accounting Rate of Return Method
This method is also known as Return on investment method or average rate of return method. Accounting rate of return method is based on the conventional accounting concepts. Under this method the total earnings from a project over its economic life is considered. The rate of return is calculated as a percentage of the earnings from a project.

Merits of Accounting Rate of Return Method:
- It is very simple method to understand and easy to calculate.
- This method considers all the earnings over the life of the project.
- The information required for this method can be easily drawn from the accounting records.
- This method is less costly compared to modern methods, as this can be calculated by an accountant and does not require any specialist to analysis.

Demerits of Accounting Rate of Return:
- This method ignores the concept of time value of money.
- This method is based on accounting concepts and not on actual cash flows after taxes in

evaluating the project. But accounting profits also includes non-cash items and assumptions.

- It ignores the fact that the profit can be reinvested.
- It does not consider the market value of shares and thereby ignores the objective of wealth maximization of shareholders.

Decision Rule/ Accept- Reject Rule:

In case of ARR method accept reject rule is based on the comparisons of calculated ARR with the predetermined cut-off rate.

Accept: Calculated ARR > Predetermined ARR or cut-off rate.
Reject: Calculated PBP < Predetermined ARR or cut-off rate.
Cash flow under this method means the Profit after depreciation and after tax for the entire life of the project.
There are two methods of calculation of Accounting Rate of Return:

a) **When clearly mentioned as Accounting Rate of Return:**

$$\text{ARR} = \frac{\text{Average Annual Profit After Tax and Depreciation}}{\text{Initial Investment}} \times 100$$

b) **When clearly mentioned as Average Rate of Return:**

$$\text{ARR} = \frac{\text{Average Annual Profit After Tax and Depreciation}}{\text{Average Investment}} \times 100$$

$$\text{Average Annual Profit After Tax and Depreciation} = \frac{\text{Total Profit After Tax and Depreciation}}{\text{Life of the Machine}}$$

$$\text{Average Investment} = \frac{\text{Original Investment} - \text{Scrap Value} + (\text{Additional Working Capital} + \text{Scrap Value})}{2}$$

c) **When ARR is given in the problem, any one of the above method can be used but average rate of return method is the ideal one.**

Illustration 3:
Calculate the average rate of return for two projects X and Y from the following:

Particulars	Project X	Project Y
Investments	Rs. 10000	Rs. 12000
Life	5 years	4 years
Projected Net Income after interest, depreciation & taxes		
Years	Project A (in Rs)	Project B (in Rs)
1	1000	5000
2	2000	2000
3	3000	4000
4	5000	6000
5	4000	-

If the required rate of return is 12% which project should be accepted?
Solution:

$$\text{ARR} = \frac{\text{Average Annual Profit After Tax and Depreciation}}{\text{Average Investment}} \times 100$$

$$\text{Average Annual Profit After Tax and Depreciation} = \frac{\text{Total Profit After Tax and Depreciation}}{\text{Life of the Machine}}$$

Project X:

$$\text{Average Annual Profit After Tax and Depreciation} = \frac{1000 + 2000 + 3000 + 5000 + 4000}{5}$$

= 3000

$$\text{Average Investment} = \frac{\text{Original Investment} - \text{Scrap Value} + (\text{Additional Working Capital} + \text{Scrap Value})}{2}$$

Average Investment = 10000/2 = 5000

$$\text{ARR Project X} = \frac{3000}{5000} \times 100$$

ARR Project X = 60%
Project Y:

$$\text{Average Annual Profit After Tax and Depreciation} = \frac{5000 + 2000 + 4000 + 6000}{4}$$

= 4250

$$\text{Average Investment} = \frac{12000}{2} = 6000$$

$$\text{ARR for Project Y } = \frac{4250}{6000} \times 100$$

ARR for Project Y = 70.83%

As the ARR is highest in project Y (70.83%) compared to Project X (60%), Project Y can be accepted.

Illustration 4:

A project required an investment of Rs. 4, 00,000 and has a scrap value of Rs 10,000 after five years. It is expected to yield profit after depreciation and taxes during the five years amounting to Rs. 30,000, Rs. 50,000, Rs. 60,000, Rs. 40,000 and Rs. 10,000. Calculate the average rate of return on the investment.

Solution:

$$\text{ARR} = \frac{\text{Average Annual Profit After Tax and Depreciation}}{\text{Average Investment}} \times 100$$

Total Profit = 30000+50000+60000+40000+10000 =190000

$$\text{Average Annual Profit After Tax and Depreciation} = \frac{\text{Total Profit After Tax and Depreciation}}{\text{Life of the Machine}}$$

$$\text{Average Profit } = \frac{\text{Rs. } 190000}{5} = \text{Rs. } 38,000$$

$$\text{Average Investment} = \frac{\text{Original Investment} - \text{Scrap Value} + (\text{Additional Working Capital} + \text{Scrap Value})}{2}$$

$$\text{Average Investment} = \frac{400000 - 10000}{2} = 195000$$

$$\text{Average Rate of Return} = \frac{\text{Average Anuual Profit}}{\text{Average Investment}} \times 100$$

$$\text{ARR} = \frac{38000}{195000} \times 100$$

$$\text{ARR} = 19.48\%$$

Return per unit of Investment Method: There is a small difference in this method and the average rate of return method. Under this method the total profit after tax and depreciation is dividend by the total investment, i.e.

$$\text{Return per unit of Investment} = \frac{\text{Total Profit (after depreciation and taxes)}}{\text{Net Investment in the Project}} \times 100$$

Illustration 5:

Taking the same figures as given in the above illustration 4, the return on average investment can be calculated as under:

Total Profit (after depreciation & taxes) = 190000
Net Investment in the Project = 400000 – 10000 = 390000

$$\text{Return per unit of Investment} = \frac{190000}{390000} \times 100$$

$$\text{Return per unit of Investment} = 48.72\%$$

Discounted Cash Flow Criteria (Modern Method)

To overcome the disadvantages of Pay Back method and ARR method, discounted cash flow or time adjusted techniques was developed. This method considers the time value of money. Time as a factor of investment is fundamental for evaluating the future cash flow from an investment. According to this method a rupee received today has more value than receiving the same rupee tomorrow. Some of the discounted cash flow methods are as follows:

1. Net Present Value Method

Net present value method is considered as the best method in evaluating the capital investment proposal. NPV method takes into account the time value of money. The cash inflows that are to be received in the future at different periods are discounted at a particular discount rate. Then the present value of cash inflows is compared with the present value of cash outflows to judge the best proposal.

Under NPV cash flow refers to Profit after tax and before depreciation.

Merits of NPV Method:

- NPV considers the time value of money.
- It considers the cash flows of the entire life of the project.
- NPV is most preferred in case of mutually exclusive projects.
- It takes into account the firm's objective of wealth maximization of the shareholders.
- It considers a discount rate to calculate the present value of cash flow which is equal to the cost of capital.

Demerits of NPV:

- NPV is difficult to understand and calculate when compared to Non-discounted methods.
- Calculation of discounting rates is difficult and lengthy and time consuming process.
- In case of unequal lives of projects this method is not of much use.
- Also in case of different cash outlays this method will not provide exact answer.

Decision Rule (Accept / Reject Criteria):

If the NPV of a project is positive then the project is selected for investment and on the other hand if the NPV is negative, the project is rejected.

Accept if NPV > Zero

Reject if NPV < Zero

Present Value can be calculated as under:

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

Where i = Discount rate,
n = Number years after which the money is received.

NPV = Present Value of cash inflow – Present Value of cash outflow

Illustration 6:
Find the NPV for a project which require an initial investment of Rs. 15000 and which involves a net cash inflow of Rs. 5000 each year for 5 years. The cost of funds is 9%. There is no scrap value. (PV of annuity of Rupee 1 for 5 years at 9% per annum is Rs. 3.890)

Solution:

PV of cash inflow 5000 X 3.890	Rs.19450
Less: Initial investment	Rs. 15000
Net Present Value (NPV)	Rs. 4450

Illustration 7:
From the following information calculate the net present value of two projects Sun and Moon and suggest which of the two projects should be accepted @ 10% discount rate. The details are as follows:

	Sun (Rs)	**Moon (Rs)**
Initial Investment	50000	60000
Estimated Life	5 years	5 years
Scrap Value	2000	3000

Profit before depreciation and after tax are as follows:

Years	**Sun (Rs)**	**Moon (Rs)**
1	20000	10000
2	30000	20000
3	10000	35000
4	5000	15000
5	4000	30000

Total	69000	110000

The present value of Re. 1 @ 10% is as follows:

Years	1	2	3	4	5
PVF @ 10%	0.909	0.826	0.751	0.683	0.621

Solution:
NPV = Present Value of cash inflow – Present Value of cash outflow

Year	**Project Sun**			**Project Moon**		
	Discount factor @ 10 %	**Cash inflow (Rs)**	**Present value of cash inflow (Rs)**	**Discount factor @ 10 %**	**Cash inflow (Rs)**	**Present value of cash inflow (Rs)**
1	0.909	20000	18180	0.909	10000	9090
2	0.826	30000	24780	0.826	20000	16520
3	0.751	10000	7510	0.751	35000	26285
4	0.683	5000	3415	0.683	15000	10245
5	0.621	4000	2484	0.621	30000	18630
5(Scrap Value)	0.621	2000	1242	0.621	3000	1863
Present Value of cash inflow			57611			82633
Less: cash outflow			50000			60000
Net Present Value (NPV)			+ 7611			+ 22633

The NPV is more in case of Project Moon than Project Sun. Hence Project Moon can be selected.

2. Internal Rate of Return Method

Internal rate of return can be defined as the rate at which the sum of discounted cash inflows will be equal to sum of discounted cash outflows. IRR is the rate where the Net Present Value of a will be zero. This method is also known as Trial & Error method, Time adjusted rate of return method, discounted rate of return and yield method.

Under this method the cash flow from a project is discounted at certain rate through trial method. The rate which equates the net present value calculated with the initial investment will be considered as IRR. As this method considers the internally determined rate, it is called as internal rate of return. At this rate present value of cash inflow will be equal to present value of cash outflow.

In case of IRR method cash flow refers to Profit after Tax and before Depreciation.

Merits of IRR Method:

- IRR method also considers the time value of money.
- It considers the profitability of the project for its entire life.
- Under IRR calculation of the cost of capital is not a pre-requisite.
- It helps in uniform method of ranking all the projects as it calculates the percentage rate of return.
- It supports the firm's objective of maximizing the shareholders wealth.

Demerits of IRR Method:

- It is the most difficult method of understanding.
- The evaluation of project under this method is very difficult as it involves lot of calculations.
- IRR method is based on the assumption that the earnings from the project are reinvested at the internal rate of return, which is not a justified assumption.
- The results from NPV method and IRR method differs if the projects differ in their size, life and the periods of cash flow.

By referring to the present value annuity table for 5 years at PV factor 4 is between 7% (4.1002) and 8% (3.9927). Hence IRR is 8% approximately.

ii. **If the annual cash inflows are unequal:** In such cases, IRR is calculated by hit and trial method where an assumed discount rate is considered to find out the total present value of cash inflows that equals the total cash outflow. The rate at which the total present value of cash inflows equals the cash outflows is the internal rate of return.

Illustration 9:

Initial investment Rs. 70000
Life of the Asset 6 years
Expected Net annual cash inflows: Rs

1 Year	22000
2 Year	18000
3 Year	24000
4 Year	38000
5 Year	16000
6 Year	12000

Calculate the Internal Rate of Return.

Solution:

Statement of Present Value of Cash Inflows

Year	Cash inflow	Discount factor @ 10%	PV of cash inflow @ 10%	Discount factor @ 12%	PV of cash inflow @ 12%	Discount factor @ 15%	PV of cash inflow @ 15%	Discount factor @ 22%	PV of cash inflow@ 22%
1	22000	0.909	19998	0.893	19646	0.869	19118	0.819	18018
2	18000	0.826	14868	0.797	14346	0.756	13608	0.671	12078
3	24000	0.751	18024	0.712	17088	0.657	15768	0.550	13200
4	38000	0.683	25954	0.635	24130	0.571	21698	0.451	17138
5	16000	0.621	9936	0.567	9072	0.497	7952	0.370	5920
6	12000	0.564	6768	0.507	6084	0.422	5064	0.303	3636
Total			95548		90366		**83208**		**69990**

Illustration 10:

A project requires an investment of Rs. 12000 and the expected cash flows are:

Year's	**Cash flow (Rs.)**
1	8000
2	10000
3	6000

The cost of capital is 10% and the PV factors at 10% are as follows:

1 year	2 year	3 year
0.909	0.826	0.751

Compute the Profitability Index.

Solution:

$$\text{Profitability Index} = \frac{\text{Present Value of Cash Inflow}}{\text{Present Value of Cash Outflow}}$$

Calculation of Present value of cash inflow:

Years	**Cash Flow**	**Discount Factor @ 10%**	**PV of cash inflow @ 10%**
1	8000	0.909	7272
2	10000	0.826	8260
3	6000	0.751	4506
Present value of cash inflow			20038

$$\text{Profitability Index} = \frac{20038}{12000} = 1.67$$

Questions
(part-A)

1. Why are the capital investments important?
2. Describe the capital Budgeting.
3. State the feature of capital budgeting.
4. Discuss the importance of capital budgeting.
5. Explain the various stage involved in capital budgeting decisions.
6. Write short note on IRR method.
7. What is mean by risk adjusted discount rate?
8. Give the meaning of profitability Index.

Questions (part-B)

1. What is capital budgeting? What steps are involved in the process of capital budgeting?
2. Describe some measures which are relevant for the successful implementation of a project in the process of capital budgeting.
3. What is post completion audit in the process of capital budgeting?
4. What is the significance of investment analysis in the capital budgeting process?
5. Explain the various methods of evaluating capital expenditure decisions.
   Project cost Rs.50,000 and has a scrap value of Rs.10,000. Its stream of income before depreciation and taxes during the first five years are Rs.10,000, Rs.12,000, Rs.14,000, Rs.16,000 and Rs.20,000. Assume a 50% tax rate and depreciation on straight line basis. Calculate the accounting rate of return.
6. Discuss discounted cash flow techniques useful in capital budgeting decision.

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Leverage

Definition:
It's the Firm's ability to use the fixed cost assets or funds to magnify the returns.

Types:
Financial leverage
The use of fixed charges (or interest) bearing sources of funds, such as debt and preference capital along with the owners' equity in the capital structure of a company is described as financial leverage or gearing or trading on equity.
The use of term trading on equity is derived from the fact that the debt is raised on the basis of the owner's equity - the equity is traded upon.

The financial leverage is employed by a company only when it is confident of earning more return on fixed charge funds than their costs. In case the company earns more than the derived surplus will increase the return on the owner's equity. In case the company earns less on the fixed charge funds when compared to their costs, the resultant deficit will decrease the return on owner's equity.

If all other things remain same, lower the amount borrowed, lower the interest, lower will be the profit and greater the amount borrowed, lower the interest, greater will be the profit.

Financial leverage reflects the amount of debt used in the capital structure of the firm.

Because debt carries a fixed obligation of interest payments, we have the opportunity to greatly magnify our results at various levels of operations.

The degree of financial leverage is computed as the percentage change in earnings available to common stockholders associated with a given percentage change in earnings before interest and taxes.

Thus financial leverage is a commitment to fixed debt charges payment obligation undertaken by a company.

Measures of financial leverage:
Debt ratio is the ratio of debt to the total available funds of the company, i.e. sum of owner's equity and outside debt. The owner's equity can be measured in terms of either book value or the market value. In some countries it is also named as leverage ratio. It is defined down traditional lines as the ratio of external debt to total equity.
Debt equity ratio is the ratio of debt to the total equity. Here too, the equity can be measured in terms of either book value or the market value. .
Degree of financial leverage: The degree of financial leverage (DFL) is defined as the percentage change in earnings per share [EPS] that results from a given percentage change in earnings before interest and taxes (EBIT), and it is calculated as follows:
DFL = Percentage change in EPS / Percentage change in EBIT

Operating leverage:

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

Operating Leverage = Contribution/EBIT

If a high percentage of a firm's total costs are fixed, the firm is said to have a high degree of operating leverage.

The degree of operating leverage (DOL) is defined as the percentage change in operating income (or EBIT) that results from a given percentage change in sales.

When fixed costs are very large and variable costs consume only a small percentage, even a slight change in revenue will have a large effect on reported profits.

Operating leverage, refers to the magnified effect on operating earnings (EBIT) given change in sales.

One of the most dramatic examples of operating leverage is in the airline industry, where a large portion of total costs are fixed. The higher the proportion of fixed costs to total costs the higher the operating leverage of the firm. Since a fixed expense is being compared to an amount which is a function of a fluctuating base (sales), profit-and-loss results will not bear a proportionate relationship to that base. These results in fact will be subject to magnification, the degree of which depends on the relative size of fixed costs vis-a-vis the potential range of sales volume.

Operating leverage refers to the use of fixed costs in the operation of a firm. A firm will not have operating leverage if its ratio of fixed costs to total costs is nil. For such a firm, a given change in sales would produce same percentage change in the operating profit or earnings before interest and taxes.

Higher the fixed cost, higher the variability in EBIT for a given change in sales. Other things remaining the same, companies with higher operating leverage (because of higher fixed costs) are most risky. Thus operating leverage increases with fixed costs. Operating profit of a highly leveraged (operating) firm would increase at a faster rate for any given increase in sales.

Thus, DOL = (% change in EBIT) / (% change in sales)

Combined effect of operating and financial leverage:

The combined effect of two leverages can be quite significant for the earnings available to ordinary shareholders. They cause wide fluctuation in earnings per share for a given change in sales. If a company were to employ a high level of operating and financial leverage, even a very small change in the level of sales will cause significant effect on the earning per share. Thus the degrees of operating and financial leverages can be combined to ensure the effect of total leverage on earning per share due to a very small change in sales. The degree of combined leverage is expressed in the following manner DCL = (% change in EBIT / % change in sales) x (% change in EPS / % change in EBIT) DCL = % change in EPS / % change in sales.

EBIT-EPS Analysis

EBIT-EPS analysis is a very strong and important tool in the hands of the finance manager. This is an alternative technique to measure the impact of financial leverage on the returns available to equity shareholders. Under EBIT-EPS analysis, an attempt is made to analyse the impact of change in the capital structure on earnings available to equity shareholders. Thus, EBIT-EPS analysis shows the relationship between EBIT and EPS at various financing pattern i.e. debt equity ratio. The financing mix, which yields the maximum EPS to equity shareholders under assumed EBIT level, is regarded as the best mix or the optimum capital structure.

Particulars	**Amount (Rs.)**
EBIT	XXX
Less: Interest	XXX
EBT	XXX
Less:Tax	XXX
EAT	XXX
Less:Preference Dividend	XXX
Earnings Available to Equity Shareholders	XXX
Number of Equity Shares	XXX
EPS:(Earnings to ESH/ No of Equity Shares)	XXX

The EPS will be different for different financing patterns assuming constant level of EBIT. It is because the interest paid is tax deductible which resulted in tax benefits to equity share holders. Thus, interest on debt capital can be used to increase the return to equity share holders. However it should be remembered that interest is a liability i.e. fixed financial charge on the earning of the company. It increases the risk perception of the investor. So, it's not possible to keep increasing the level of debt content in the capital structure of the company. The ratio of debt in capital structure will depend on various factors like nature of business, market conditions, economic conditions, earning pattern of the company and cost of the debt. But the two important factors which determine the level of debt content in the capital structure are rate of interest on debt capital and rate of return on overall capital. If the rate of interest is higher than the rate of return to the firm, it is better to use less amount of debt content in the capital structure. In such a case,

equity shareholders will bear a part of cost of debt and EPS will decline. Similarly, when rate of return on capital exceeds rate of interest on debt, higher amount of debt can be used in the capital structure which will result in disproportionate increase in the earnings available to equity shareholders (ESH) and EPS will increase.

PROBLEM:
A company is expecting EBIT of Rs. 5,00,000 per annum on investment of Rs.10,00,000. Company is in need of Rs. 8,00,000 for its expansion activities. Company can raise this amount by either equity shares capital or 12% preference share capital or 10%debentures.
The company is considering the following financing patterns:
a.10,00,000 through issue of Equity Shares at par;

b. 5,00,000 by issue of Equity Share Capital and remaining 5,00,000 by issue of Debentures;

c.5,00,000 through Equity Shares and 2,50,000 through 12% Preference Share Capital and remaining 2,50,000 through 10% Debentures.;

d. 5,00,000 through Debt and 2,50,000 through Equity Shares and remaining 2,50,000through 12% Preference Share Capital. Find out the best financing mix assuming 50% tax rate.

Solution:

Capital Structure	**Plan I**	**Plan II**	**Plan III**	**Plan IV**
Equity Share of 100 each	10,00,000	5,00,000	5,00,000	2,50,000
12% Preference Share	-----	-----	2,50,000	2,50,000
10% Debt	------	5,00,000	2,50,000	5,00,000
Total Capital Employed	10,00,000	10,00,000	10,00,000	10,00,000
EBIT (ROI 25%)	5,00,000	5,00,000	5,00,000	5,00,000
Less:Interest	--------	50,000	25,000	50,000
EBT	5,00,000	4,50,000	4,75,000	4,50,000
Less:Tax(50%)	2,50,000	2,25,000	2,37,500	2,25,000
EAT	2,50,000	2,25,000	2,37,500	2,25,000
Less:Preference Dividend	---------	---------	50,000	30,000
Earnings to Equity Shareholder	2,50,000	2,25,000	1,87,500	1,95,000
Number of shares	10,000	5,000	5,000	2,500
EPS= Earnings to Equity Shareholder/ Number of shares				
EPS (Rs.)	**25**	**45**	**41.5**	**78**

In the above example, alternative IV seems to be best alternative with EPS of Rs. 78.The EPS is Rs. 25 when no debt is used in the capital structure. The EBIT of Rs. 5,00,000 on investment of RS 10,00,000 turn out to be 50%. After tax ROI will be 25%. But the use of cheaper source of finance such as debt at 10% cost and preference share at 12%cost will increase earnings per share. Thus, use of more and more debt or fixed payment capital will lead to increase in EPS to the shareholders.

PROBLEMS:

1. The following are the details:
Selling price per unit Rs. 20
Variable cost per unit Rs. 12
Actual sales 200 units
Installed capacity 300 units
Calculate operating leverage in each of the following two situations.
(i) When fixed costs are Rs. 1000
(ii) When fixed costs are Rs. 800.

Solution:

Statement showing computation of operating leverage

Sales	Rs. 4,000 (Rs. 20*200 units)	Rs. 4,000(Rs. 20*200 units)
Less Variables Costs	Rs. 2,400 (Rs.12*200 units)	Rs. 2,400 (Rs.12*200 units)
Contribution	Rs. 1,600	Rs. 1,600
Less – Fixed Costs	Rs. 1,000	Rs. 800
Earning Before Tax	Rs. 600	Rs. 800
OperatingLeverage= Contribution/EBIT	= Rs. 1,600/ Rs. 600 **=2.67**	= Rs. 1,600/ Rs. 800 **= 2**

2. A firm has a sale of Rs. 90 lakh, variable cost of 20 lakh, fixed cost of Rs. 5,00,000. The capital structure of the firm includes 10% debenture of Rs. 20 lakh and equity share capital of Rs. 40 lakh. Calculate operating, financing and combined leverage.

Solution :
Statement of EBT

Particulars	**Amount (Rs.)**
Sales	90 lakh
Less:Variable Cost	20 lakh
Contribution	70 lakh
Less: fixed Costs	5 lakh
EBIT	65 lakh
Less:Interest on Debenture	2 lakh
EBT	63 lakh

(i)
Operating Leverage
= Contribution/ EBIT= 70 lakh/65 lakh= 1.07 times

(ii)
Financial Leverage
= EBIT /EBT= 65 lakh/ 63 lakh= 1.03 times(iii)

Combined Leverage
= FL×OL= 1.07 × 1.03= 1.10 times.

Problems to solve:
1. Following data of a company is given below: Sales = 90,00,000.
Variable Cost = 50,00,000
Fixed Costs = 10,00,000
Interest Payment = Rs.5,00,000.
Calculate degree of operating leverage and financial leverage. By what percentage will EBIT increase if there is 10% increase in sales?

2. A company has a sales of Rs. 20,00,000, variable cost of Rs. 14,00,000. Fixed cost of Rs. 4,00,000 and debt of Rs, 10,00,000 at 12% rate of interest. What are the operating and financial and combined leverages?

3. The finance manager of X ltd expected EBIT is Rs.10,000 for the current year. The firm has 5% debentures aggregating Rs.40, 000, while 10% preference shares for Rs.20, 000. What would be the EPS assuming EBIT being Rs.6, 000 and Rs.14, 000? The firm has tax rate 35%. The number of equity shares issued

Capital Structure

Meaning of capital structure

Capital structure is the permanent financing of the company represented primarily by long-term debt and shareholder's funds but excluding all short-term credit. The term capital structure differs from financial structure.

Financial structure refers to the way the firm's assets are financed. In other words, it includes both, long-term as well as short-term sourced of funds. Thus a company's capital structure is only a part of its financial structure.

Patterns of capital structure

In case of new company, the capital structure may be of any of the following four patterns.

(1) Capital structure with equity shares only.
(2) Capital structure with both equity and preference shares.
(3) Capital structure with equity shares and debentures.
(4) Capital structure with equity shares, preference shares and debentures

Factors affecting capital structure

Capital Structure depends on a number of factors such as,

- The nature of the business,
- Regularity of earnings,
- Conditions of the money market,
- Attitude of the investor,
- Debt-equity mix:

There is a basic difference between debt and equity. Debt is a liability on which interest has to be paid irrespective of the company's profits. While equity consists of shareholders or owners funds on which payments of dividend depends upon the company's profits. A high proportion of the debt content in the capital structure increases the risk and many lead to financial insolvency of the company in adverse times. However, raising funds through debt is cheaper as compared to raising funds through shares. This is because interest on debt is allowed as an expense for tax purpose. Dividend is considered to be an appropriation of profits and so payment of dividend does not result in any tax benefit to the company. This means if a company, which is in 50% tax bracket, pays interest at 12% on its debentures, the effective cost to it comes only to 6%, while if the amount is raised by issue of 12% preference shares, the cost of raising the amount would be 12%. Thus, raising of funds by borrowing is cheaper resulting

in higher availability of profits for shareholders. This increases the earnings per equity share of the company, which is the basic objective of a financial manager.

Optimum capital structure

A firm should try to maintain an optimum capital structure with a view to maintain financial stability. This optimum capital structure is obtained when the market value per equity share is the maximum.

It may, therefore, be defined as that relationship of debt and equity securities which maximizes the value of a company's share in the stock exchange. In case a company borrows and this borrowing helps in increasing the value of the company's shares in the stock exchanges, it can be said that the borrowing has helped the company in moving towards its optimum capital structure.

In case, the borrowing results in fall in market value of the company equity shares, it can be said that the borrowing has moved the company away from its optimum capital structure.

The objective of the term should therefore be to select a financing or debt equity mix, which will lead to maximum value of the firm.

According to EZRA SOLOMAN: "Optimum leverage can be defined as that mix of debt and equity, which will maximize the market value of a company i.e., the aggregate value of the claims, and ownership interests represented on the credit interests represented on the credit side of the balance sheet. Further the advantages of having an optimum, financial structure if such an optimum does exist, is two-fold; it minimizes the company's cost of capital which in turn increases it ability to find new wealth-creating investment opportunities. Also by increasing the firm's opportunity to engage in future wealth-creating investment it increases the economy rate of investment and growth".

Considerations

The following considerations will be greatly helpful for a finance manager in achieving his goal of optimum capital structure.

(1) He should take advantage of favourable financial leverage. In other words if the ROI is higher than the fixed cost of funds, he may prefer raising funds having a fixed cost to increase the return of equity shareholders.

(2) He should take advantage of the leverage offered by the corporate taxes. A high corporate income tax also provides some a form of leverage with respect to capital structure management. The higher cost of equity financing can be avoided by use of debt, which in effect provides a form of income tax leverage to the equity shareholders.

(3) He should avoid a perceived high risk capital structure. This is because if the equity shareholders perceive an excessive amount of debt in the capital structure of the company, the price of the equity shares will drop. The finance manager should not therefore issue debentures or bonds whether risky or not, if the investors perceive an excessive risk and therefore it is likely to depress the market prices of equity shares.

Capital structure theories

In order to achieve the goal of identifying an optimum debt-equity mix, it is necessary for the finance manager to be conversant with the basic theories underlying the capital structure of corporate enterprises.

There are the four major theories approaches explaining the relationship between capital structures cost of capital and value of the firm.

1. Net Income (NI) Approach,
2. Net Operating income (NOI) approach,
3. Modigliani-miller (MM) approach,
4. Traditional approach.

Assumptions

The following are the assumptions in order to present the analysis in a simple and intelligible manner:

(i) The firm employs only the two types of the capital-debt and equity. There are also no preference shares.

(ii) There are no corporate taxes. This assumption has been removed later.

(iii) The firm pays 100% of its earning as dividend. Thus, there are no retained earnings.

(iv) The firm's total assets are given and do not change .In other words the investment decision are to assumed to be constant.

(v) The firm's total financing remains constant. The firm can change its capital structure either by redeeming the debentures by issue of share or by raising more debt and reduce the equity share capital.

(vi) The Operating Earning (EBIT) are not expected to grow.

(vii) The business risk remains constant and is independent of capital structure and financial risks.

(viii) All investor have the same subjective probability distribution of the future expected operating earnings (EBIT) for a given firm.

(ix) The firm has a perpetual life.

1. Net income (NI) approach. (Suggested by Durand)

According to this approach, capital structures decision is relevant to the valuation of the firm. In other words a change in the capital structure causes a corresponding change in the over all cost of the capital as well as the total value of the firm.

Higher debt content in the capital structure (i.e. High financial leverage) will result in the overall or weighted average cost of the capital. This will cause increase in the value of the firm and consequently increase in the value of equity share of the company. Reverse will happen in a converse situation.

Assumptions:

(i) There are no corporate taxes.
(ii) The cost of the debt is less than cost of equity or equity capitalization rate.
(iii) The debt content does not change the risk perception of the investors.

2. Net operating income (NOI) approach. (Suggested by Durand)

This is just opposite of the Net income approach. According to this approach the market value of firm is not at all affected by the capital structure changes .The market value of the firm is ascertained by the capitalizing the net operating income at the overall cost of capital (k), which is considered to be constant .The market value of equity is ascertained by deducting the market value of the debt from the market value of the firm.

Assumptions:

(i) Over cost of capital (k) remains constant for all degrees of debt equity mix or leverage.
(ii) The market capitalizes the value of the firm as a whole and therefore, the split between debt and equity is not relevant.
(iii) The use of debt having low cost increases the risk of equity shareholders, this, results in increase in equity capitalization rate. Thus, the advantage of debt is set off exactly by increase in the equity capitalization rate.
(iv) There are no corporate taxes.

Value of the firm:

According to the NOI approach, the value of a firm can be determined by the following equation:Optimum capital structure:

According to net operating income (NOI) approach, the total value of the firm remains constant irrespective of the debt-equity mix or the degree of leverage. The market price of equity shares will, therefore, also not change on account of change in debt-equity mix. Hence, there is nothing like optimum capital structure. Any capital structure will be optimum according to this approach.

In those cases where corporate taxes are presumed, theoretically there will be optimum capital structure when there is 100% debt content. This is because with every increase in debt content declines and the value of the firm goes up. However due to legal and other provisions, there has to be a minimum equity. This means that optimum capital structure will be at a level where there can be maximum possible debt content in the capital structure.

3. Modigiliani-miller approach

The Modigiliani-Miller approach is similar to the net operating income (NOI) approach. In other words, according to this approach, the value of a firm is independent of its capital structure.

However, there is a basic difference between the two. The NOI approach is purely conceptual. It does not provide operational justification for irrelevance of the capital structure in the valuation of the firm. While MM approach supports the NOI approach provides justification for the independence of the total valuation and cost of capital of the firm from its capital structure. In other words, MM approach maintains that the overall cost of capital does not change in the debt equity mix or capital structure of the firm.

Basic propositions:

The following are the three basic propositions of the MM approach.

1. The overall cost of capital (k) and the value of the firm (V) are independent of the capital structure. In other words k and V are constant for all levels of debt-equity mix. The total market value of the firm is given by capitalizing the expected net operating income (NOI) by the rate appropriate for that risk class.
2. The cost of equity is equal to capitalization rate of a pure equity stream plus a premium for the financial risk. The financial risk increases with more debt content in the capital structure. As a result, ke increases in a manner to off set exactly the use of a less expensive source of funds represented by debt.3. The cut-off rate for investment purposes is completely independent of the way in which an investment is financed.

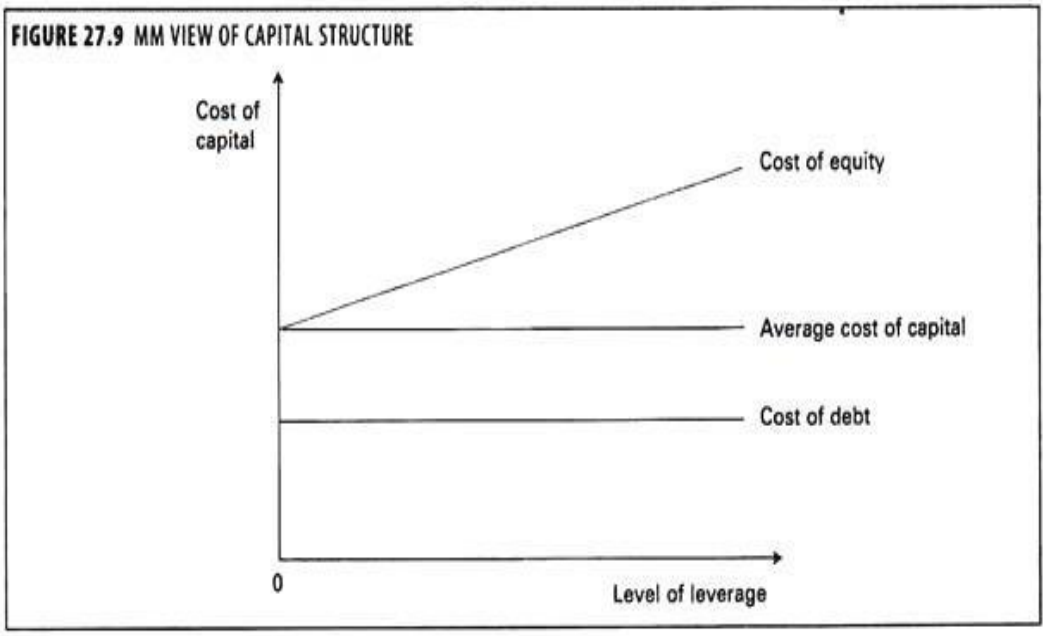
Assumptions:

(i) Capital markets are perfect. This means

(a) Investors are free to buy and sell securities.
(b) The investors can borrow without restriction on the same terms on which the firm can borrow;
(c) The investors are well informed;
(d) The investors behave rationally; and
(e) There are no transaction costs.

(ii) The firms can be classified into homogeneous risk classes all firms within the same class will have the same degree of business risk.
(iii) All investors have the same expectation of a firms net operating income (EBIT) with which to evaluate the value of any firm.
(iv) The dividend payout ratio is 100%. In other words, there are no retained earnings.
(v) There are no corporate taxes. However, this assumption has been removed later.

"MM hypothesis based on the idea that no matter how you divide up the capital structure of a firm among debt, equity and other claims, there is a conservation of investment value".
That is, because the total investment value if corporation depends upon its underlying profitability and risk. It is invariant with respect to relative changes in the firm's financial capitalization. So, regardless of the financing mix, the total value of the firm remains the same.



Arbitrage process

The arbitrage process is the operational justification of MM hypothesis. The term "Arbitrage' refers to an act of buying an asset or security in one market having lower price and selling it in another market at a higher price. The consequence of such action is that the market price of the securities of the two firms exactly similar in all respects except in their capital structures cannot for long remain different in different markets. Thus, arbitrage process restores equilibrium in value of securities.

Limitations of mm hypothesis:

1. **Rates of interest are not the same for the individuals and the firms**:

The assumption made under the MM hypothesis that the firms and individual can borrow and lend at the same rate of interest does not hold good in actual practice. This is because firms have the higher credit standing as compared to the individuals on account of firms holding substantial fixed assets.

2. **Homemade leverage is not perfect substitute for corporate leverage**:

The risk to which an investor is exposed is not identical when the investor is exposed is not identical when the investor himself borrows. As a matter of fact, the risk exposure to the investor is greater in the former case as compared to the latter. When the firms borrows, the liability of the investor is limited only to the extent of his proportionate share holding, in case the company is forced to go for its liquidation.

3. **Transaction costs involved**:

Buying and selling of securities involves transaction costs. It would therefore become necessary for investor to invest a larger amount in the shares of the unlevered / levered firms than his prevent investment to earn the same return.

4. Institutional restrictions:

The switching option form unlevered to levered firm and vice-versa is not available to All investors particularly, institutional investors life insurance corporation of India, unit trust of India, Commercial banks etc. Thus, the institutional restrictions stand in the way of smooth operation of the arbitrage process.

5. Corporate taxes frustrate MM hypothesis:

On account of corporate taxes, it is a known fact that the cost of borrowing funds to the firm is less than the contractual rate of interest. As a result, the total return to the shareholders of an unleveled firm is always less than that of the levered firm,. Thus, the total market value of levered firm tends to exceed that of the unlevered firm on account of this very reason.

Corporate taxes

The MM hypothesis that the value of a firm and its cost of capital will remain constant with leverage does not hold good when there are corporate taxes. Since corporate axes do exist, in 1963 MM agreed that the value of the firm will increase or the cost of capital will decline, if corporate taxes are introduced in the exercise. This is because interest is a deductible expense for tax purposes and therefore the effective cost if debt is less than the contractual rate of interest. A levered firm should have, therefore, a greater market value as compared to an unlevered firm. The value of the levered firm would exceed that of the unlevered firm by an

amount equal to the levered firm's debt multiplied by the tax rate. This can be put in the form of the following formula:

VL = Vu + Bi

Where

VL = value of levered firm;
Vu = value of an unlevered firm;
B = amount of debt; and
T = tax rate

The market value of an unlevered firm will be equal to the market value of its shares.

Vu = S

Where
Vu = market value of an unlevered firm S = market value of equity;

S = Profits available for equity shareholders / Equity capitalization rate.

In other words, the value of Vu can be determined by the following equation.

$$Vu = \frac{(1-t)\ EBT}{Ke}$$

Where;
EBT = earnings before tax, T = tax rate.
Ke = equity capitalization rate.
Since in case of unlevered firm there is no debt content, earning before tax (EBT) means earning before interest and tax (EBIT).

4. Traditional approach

The net income approach and net operating income approach represent two extremes. According to NI approach the debt content in the capital structure affects both the overall cost capital and total valuation of the firm while NOI approach suggests that capital structure is totally irrelevant so far as total valuation of the firm is concerned.

i) The traditional approach is similar to NI approach to the extent that it accepts that the capital structure or leverage of the firm affects the cost of capital and its valuation. However, it does not subscribe to the NI approach that the value of the firm will necessarily increase with all degree of leverages.

ii) It subscribes to NOI approach that beyond a certain degree of leverage, the overall cost of capital increases resulting in decrease in the total value of the firm. However, it differs from NOI approach in the sense that the overall cost of capital will not remain constant for all degree of leverage.

The essence of the traditional approach lies in the fact that a firm through judicious use of debt-equity mix can increase its total value and thereby reduce its overall cost of capital. This is because debt is relatively a cheaper source of funds as compared to raising money through shares because of tax advantage. However, beyond a point raising of funds through debt may become a financial risk and would result in a higher equity capitalization rate. Thus, up to a point, the content of debt in the capital structure will favorably affect the value of the firm. At this level of debt equity mix, the capital structure will be optimum and the overall cost of capital will be the least.

Optimum capital structure

The optimum capital structure may be defined as " Capital Structure or combination of debt and equity that leads to the maximum value of the firm. Optimal capital structure maximizes the value of the firm and hence the wealth of its owners and minimizes the company's cost of capital.

The following considerations should be kept in mind while maximizing the value of the firm in achieving the goal of optimum capital structure.

(i) It is the return on investment is higher than the fixed cost of funds, the company should prefer to raise funds having affixed cost, such as debentures, loans and preference share capital. It will increase earnings per share and market value of the firm. Thus company should make maximum possible use for leverage.

(ii) When debt is used as a source of finance, the firm saves a considerable amount in payment of tax as interest is allowed as a deductible expense in computation of tax. Hence the effective cost of debt is reduced called tax leverage. A company should take advantage of tax leverage.

(iii) The firm should avoid undue financial risk attached with the use of increased debt financing. If the shareholders perceive high risk in using further debt-capital, it will reduce the market price of shares.

(iv) The capital structure should be flexible

Features of an appropriate capital structure

1. Profitability:

The capital structure of the company should be most profitable, the most profitable capital structure is one that tend sot minimize cost of financing and maximize earning per equity share.

2. Solvency:

The pattern of capital structure should be so devised as to ensure that the firm does not

run the risk of becoming insolvent. Excess use of debt threatens the solvency of the company. The debt content should not therefore be such that it increases risk beyond manageable limits.

3. Flexibility:

The capital structure should be such that it can be easily maneuvered to meet the requirements of changing conditions. Moreover, it should also be possible for the company to provide funds whenever need to finance its profitable activities.

4. Conservatism:

The capital structure should be conservative in the sense that the debt content in the total capital structure does not exceed the limit which the company can bear. In other words, it should be such as is commensurate with the company ability to generate future cash flows.

5. Control:

The capital structure should be so devised that it involves minimum risk of loss of control of the company.

Factors determining capital structure

1. Financial leverage (or) trading on equity:

The use of long term fixed interest bearing debt and preference share capital along with equity share capital is called financial leverage or trading on equity. The use of long-term debt increases magnifies the earnings per share if the firm yields a return higher than the cost of debt. The earnings per share also increase with use of preference share capital but due to the fact that interest is allowed to be deducted while computing tax, the leverage impact of debt is much more. However the leverage can operate adversely also if the rate of interest on long-term loans is more than the expected rate of earnings of the firm. Therefore it needs caution to plan the capital structure of a firm.

2. Growth and stability:

The Capital Structure of a firm is highly influenced by the growth and stability of its sale. If the sales of a firm are expected to remain fairly stable it can raise a higher lever of debt. Stability of sales ensures that the firm will not face any difficulty in meeting its fixed commitments of interest repayment of debt. Similarly the rate of growth in sales also affects the capital structure decision. Usually greater the rate of growth of sales, greater can be the use of debt in the financing of firm.

3. Cost of capital:

Cost of Capital refers to the minimum return expected by its suppliers. The capital Structure should provide for the minimum cost of capital. The main sources of finance for a firm are equity, preference share capital and debt capital. The return expected by the suppliers of capital

depends upon the risk they have to undertake. Usually, debt is cheaper source of finance compared to preference and equity capital due to I) Fixed rate of interest on debt ii) legal obligation to pay interest iii) repayment of loan and priority in payment at the time of winding up of the company.

4. Cash flow ability to service debt:
A Firm shall be able to generate larger and stable cha inflows can employ more debt in its capital structure as compared to the one, which has unstable and lesser ability to generate cash inflows. Debt financing implies burden of fixed charge due to the fixed payment of interest and the principal. Whenever a firm wants to raise additional funds. It should estimate the future cha inflows to ensure the coverage of fixed charges.

5. Nature of enterprise.
The nature of enterprise also to a great extent affects the capital structure of the company. Business enterprises which have stability in their earning or which enjoy monopoly regarding their products may go for debentures or preference shares since they will have adequate profits to meet the recurring cost of interest/fixed dividend.

6. Size of the company:
Companies, which are of small size, have to rely considerably upon the owner's funds for financing. Such companies find it difficult to obtain long-term debt, large companies are generally considered to be less risky by the investors and therefore they can issue different types of securities and collect their funds from difficult sources. They are in a better bargaining position and can get funds form the sources of their choice.

7. Retaining control:
The capital structure of a company is also affected by the extent to which the promoter's management of the company desires to maintain control over the affairs of the company. The preference shareholders and debenture holders have not much say in the management of the company. It is the equity shareholders who select the team of managerial personnel. It is necessary for the promoters to own majority of the equity share capital in order to exercise effective control over the affairs of the company. The promoters or the existing management are not interested in losing their grip over the affairs of the company and at the same time, they need extra funds.

8. Purpose of financing:
The purpose of financing also to some extent affects the capital structure of the company. In case funds are required for some directly productive purposes, for example, purchase of new machinery, the company can afford to raise the funds by issue of debenture. This is because the company will have the capacity to pay interest on debentures out of the profits so earned.

9. Requirement of investors:
Different types of securities are to be issued for different classes of investors. Equity shares are best suited for bold or venturesome investors. Debentures are suited for investors who are very cautious while preference shares are suitable for investors who are not very cautious. In order to collect funds form different categories of investors, it will be appropriate for the companies to issue different categories of securities.

10. Period of finance:
The period for which finance is required also affects the determination of capital structure of companies. In case, funds are required, say for 3 to 10years, it will be appropriate to raise them by issue of debentures rather than by issue of shares. This is because in case issue of shares raises the funds, their repayment after 8 to 10 years will be subject to legal complications.

11. Capital market conditions:
Capital market conditions do not remain the same forever. Sometimes there may be depression while at other times there may be boom in the market. The choice of the securities is also influenced by the market conditions. If the share market is depressed the company should not issue equity shares and investors would prefer the company should not issue equity shares. It is advisable to issue equity shares in the boom period.

12. Asset structure:
The liquidity and the composition of assets should also be kept in mind while selecting the capital structure. If fixed assets constitute a major portion of the total assets of the company. It may be possible for the company to raise more of long-term debts.

13. Costs of floatations:
The Cost of floating a debt is generally less than the cost of floating equity and hence it may persuade the management to raise debt financing. The costs of floating as a percentage of total funds decrease with the increase n size of the issue.

14. Government policy:
Government policy is also an important factor in planning the company capital structure. For example a change in the lending policy of financial institutions may mean a complete change in the financial pattern. Similarly, by virtue of the capital issues control act, 1947 and the rules made there under, the controller of capital issues cal also considerably affects the capital issue policies of various companies.

15. Legal requirements:
The promoters of the company have also to keep in view the legal requirements while deciding about the capital structure of the company. This is particularly true in case of banking

companies, which are not allowed to issue any other type of security for raising funds except equity share capital on account of the banking regulation act.

16. Corporate tax rate:
High rate of corporate taxes on profits compel the companies to prefer debt financing, because interest is allowed to be deducted while computing taxable profits. On the other hand, dividend on shares is into an allowable expense for that purpose.

Questions (part-A)

1. Write short note on leverage.
2. Explain different types of Leverage.
3. How is the degree of financial leverage measured?
4. From the following information, Calculate operating leverage:
   No.of Units produced and sold:60,000
   Selling price per unit:30
   Variable cost per unit:Rs20
   Fixed cost per unit at current level of sales is Rs.3
5. Compare financial leverage with operating leverage.
6. What is meant by capital structure?
7. `What do you mean by optimum capital structure?

Questions (part-B)

1. Describe the arbitrage process under MM approach.
2. What do you mean by operating leverage? Explain its significance.
3. Describe composite leverage. How it is measured?
4. From the following information, Calculate operating leverage:
   No.of Units produced and sold:30,000
   Selling price per unit:20
   Variable cost per unit:Rs10
   Fixed cost per unit at current level of sales is Rs.5. What will be the new operating leverage if the variable cost is Rs.12
5. Explain the Modigliani and Miller approach to capital structure.
6. Discuss the net operating income approach to capital structure.
7. Discuss the factors to be kept in mind while determining the capital structure of a firm.

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SCHOOL OF MANAGEMENT STUDIES

UNIT – IV – FUNDAMENTALS OF FINANCIAL MANAGEMENT-SBAA3004

Cost of capital

Introduction

The cost of capital is a cornerstone and an important element in Financial Management. The capital structure of a company is framed on the basis of the concept of cost of capital. Hence it is essential to understand the cost a firm incurred in raising various types of capital. The cost of capital is the overall cost incurred by a firm for getting capital. It is the rate of return required by the suppliers of capital. In other words the cost of capital is the minimum rate of return on investment expected by the company to satisfy various categories of investors who made investments in the form of shares, debentures or term loans. Unless the company earns this minimum rate of return, it will not be in a position to pay interest to debenture holders and dividend to its share holders. The cost of capital is the weighted average cost various financial resources that a firm uses in its capital structure.

Definitions

According to I.M. Pandey "It is simply the rate of return the funds should produce to justify their use within the firm in light of the wealth maximization objective".
According to Solomon & Pringle "It is the rate of return required by those who supply the capital".

Methods of Computing Cost of Capital

As we discussed a firms cost of capital is the combined cost of equity, preference, debt and retained earnings, to calculate cost of capital we need to calculate cost of different sources of finance.

1. Cost of Debt

A company's debt capital may be of short term or long term nature. For the calculation of cost of debt, the interest on the debt can be considered, but in reality it is not the real cost of debt. The cost of debt is much lower than the rate of interest the company has to pay. This is because the interest on debts is tax deductible. Hence while computing the cost of debts adjustments are to be made for considering tax.
Suppose a firm issues the 12% debentures at a face value of Rs. 1000 each and the tax rate applicable to the company is 50%. The cost of debenture is not 12%, which is the rate of interest but it is to be deducted by the tax benefit available. The tax benefit is 50% of 12%. Hence the cost of debenture is only 6%.

Cost of Equity

Computation of cost of equity is the most difficult and complex exercise as the equity shareholders do not receive any fixed rate of dividend. The cost of equity capital depends upon the market value of shares, which in turn depends upon the dividends paid and the rate of dividend depends on the degree of financial and business risks. The various approaches to the computation of cost of equity are as follows:

Dividend Price Approach

According to this approach, an investor before investing in equity shares of a company he expects certain return on investment in the form of dividend. Hence the expected rate of dividend is the cost of equity.

Earning Price Ratio or Earning Yield Approach

According to this approach an investor invest with the expectation of earning some amount on his investment from the company either distributed as dividend or not. This method assumes that the value of invested capital is equal to the market price of shares.

$$\text{Earning Yield} = \frac{E}{P} \times 100$$

Where, E = Earnings per share

P = Market price per share

Dividend Plus Growth Approach

According to this approach when an investor invests in the equity shares of a company he expects not only payment of dividend but also growth in the dividend rate at a uniform rate perpetually.

Costs of Retained Earnings

That part of the earnings which is not distributed to shareholders in the form of dividend but reinvested in the business itself is called as retained earnings. It is argued that retained earnings do not cost anything to company as there is no formal or implied obligations to pay return on retained earnings. But retained earnings involve opportunity cost as dividend is forgone by shareholders and the opportunity to earn returns by investing same outside.

There are three methods of calculating cost of Retained Earnings.

Weighted Average Cost of Capital (WACC)

The weighted average cost of capital is the overall cost of capital. Weighted average cost of capital is calculated by giving weightage to the cost of each source of funds by assessing the proportion of each source of funds to the total and the by considering the book value or the market value of each source of fund.

Illustration 1

ABC Limited has the following capital structure:

Securities	**Book Value (Rs.)**	**After Tax Cost (%)**
Equity Capital	500000	12
Retained Earnings	200000	10
Preference Capital	300000	14
Debentures	500000	7
	1500000	

Calculate the weighted average cost of capital of a company.

Solution:

STATEMENT OF WACC

Securities	**Book Value (Rs.)**	**Proportion**	**After Tax Cost (%)**	**Weighted Cost (%)**
Equity Capital	500000	33.33	12	4
Retained Earnings	200000	13.33	10	1.33
Preference Capital	300000	20.00	14	2.8
Debentures	500000	33.33	7	2.33
	1500000	100	43	10.47

Weighted Average Cost of Capital ABC Limited is 10.47%.

Illustration 2
A company has the following capital structure. Find out the weighted average cost of capital:

Securities	**Book Value (Rs.)**	**After Tax Cost (%)**
Equity Capital	300000	13
Retained Earnings	600000	10
Preference Capital	800000	14
Debentures	500000	6
	2200000	

Solution:
STATEMENT OF WACC

Securities	**Book Value (Rs.)**	**Proportion**	**After Tax Cost (%)**	**Weighted Cost (%)**
Equity Capital	300000	13.64	13	1.77
Retained Earnings	600000	27.27	10	2.73
Preference Capital	800000	36.36	14	5.09
Debentures	500000	22.73	6	1.36
	2200000	**100**	**43**	**10.95**

Weighted Average Cost of Capital ABC Limited is 10.95%.

Limitations of WACC
Some of the limitations of WACC are as follows:

1. **Difficulty in the determination of weights:**

While determining the weights for various sources of cost of capital one of the major problems involved is whether book value weights or the market value weights to be considered. As book value weights and market value weights are different. The Market value weight gives a higher value compared to book value weights.

2. **Problem with choosing capital structure:**

In practice there are three types of capital structure like

- Existing/ current capital structure,
- Marginal capital structure

- Optimal capital structure

Now the question is which capital structure is to be considered. The best one is the optimal capital structure, but existing capital structure is considered as the optimal capital structure, which is not always true.

3. **Other Limitations:**

WACC has limited applicability and not useful during the below said circumstances:

- In case of significant changes in the debt policy of the company.
- During changes in the dividend policy
- Company's decision to change its growth objective.
- Changes in the capital mix.

Considerations in Calculating WACC

The following are the steps to be followed in calculating WACC:

1. **Step:** Assigning of weights to various sources of funds based on either book value of funds or on the bases of market value of funds.
2. **Step:** Multiply the cost of each source of funds by the weight so assigned.
3. **Step:** Add all the weights so obtained to ascertain WACC.

Questions
(part-A)

1. What do you understand by the cost of capital?
2. Why is the cost of capital important?
3. Describe some aspects of cost of capital.
4. What is cost of debt capital?
5. Write an important condition for the adjustment of the cost of debt.
6. What is the importance of cost of equity capital?
7. What does the cost of equity capital indicate?

Questions (part-B)

1. Explain the concept of average cost of capital with the help of an example?
2. Explain the method of computing cost of preference shares with the help of an example.
3. What is meant by 'to establish the cost of equity capital'?
4. How many approaches are there for estimating cost of equity?
5. Describe the correct capital structure of a firm for obtaining the weights to work out the weighted average.
6. What points should be taken into consideration in order to calculate the cost of capital?
7. Describe net capital investment as a component of investment analysis

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- Advanced Financial Management: Kohok, M. A., Everest Publishing House
- Cases & Problems On Financial Management: Rao, A. P., Everest Publishing House
- Cases In Financial Management: Pandey, I/ Bhat, R. TMH
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UNIT – V – FUNDAMENTALS OF FINANCIAL MANAGEMENT-SBAA3004

Dividends

Meaning of dividend

The term dividend refers to that part of the profits of a company, which is distributed amongst its shareholders. It may be defined as the return that a shareholder gets from the company, out of its profits, on his shareholdings.

According to the Institute of Chartered accountants of India, dividend is "a distribution to shareholder out of profits or reserves available for this purpose".

Dividend policy

The term dividend policy refers o the policy concerning quantum of profits to be distributed as dividend.

The concept of dividend policy implies that companies through their Board of Directors evolve a pattern of dividend payments, which has a bearing on future action.

Classification of dividends

Dividends can be classified into different categories depending upon the form in which they are paid. The various forms of dividends are as follows:

(1) Cash Dividend:

Payment of dividend in cash is called cash dividend and these results in outflow of funds from the firm.

(2) Bond dividend:

If the company does not have sufficient funds to pay dividend in cash it may issue bonds for the amount due to the shareholders by way of dividends. The purpose of bond dividend is to postpone the payment of dividend in cash.

(3) Property Dividend:

In this case, the dividend is paid in the form of assets other than cash. This may be in the form of assets, which are not required by the company or tin the form of company's products.

(4) Stock dividend:

The company issues its own shares to the existing shareholders in lieu or in addition to cash dividend. Payment of stock dividend is known as "Issue of bonus shares".

Theories related to dividend policies

1. Modigliani and miller's approach:

This comes under the Irrelevance concept of dividend. According to them, dividend policy has no effect on the share prices of a company and therefore, of no consequence. They have suggested that the price of shares of a firm is determined by its earning potentiality and investment policy and never by the pattern of income distribution.

For eg., If a company having investment opportunities, distributes all its earnings among its shareholders, it will have to raise the capital from outside. This will result in increasing the number of shares resulting in the fall in the future Earning per share. Thus, whatever a shareholder has gained as a result of increased dividends will be neutralized completely on account of fall in the value of shares due to decline in the expected earning per share.

Assumptions of MM Hypothesis:

MM hypothesis is based on the following assumptions:

(i) Capital markets are perfect.

(ii) Investors behave rationally. Information is freely available to them and there are no transaction and floatation costs.

(iii) There are either no taxes or there are no differences in the tax rates applicable to capital gains and dividends.

(iv) The firm has a fixed investment policy.

(v) Risk or uncertainty does not exist.

According to MM hypothesis, the market value of a share in the beginning of the period is equal to the present value of dividends paid at the end of the period plus the market price of the share at the end of the period.

This can be put in the form of the following equation:

$$Po = (D1\ P1)/(1\ Ke)$$

Where Po = Prevailing market price of a share.

Ke = Cost of equity capital.

D1 = Dividend to be received at the end of the period one.

P1 = Market Price of a share at the end of the period one.

From the above equation, the following equation can be derived for determining the value of P1.

$P1 = Po (1 + Ke) – D1$

Criticism of MM hypothesis:

Tax: MM hypothesis assumes that taxes do not exist, is far from reality.

Floatation costs: A firm has always to pay floatation cost in term of underwriting fee and broker's commission whenever it wants to raise funds from outside.

Transaction costs: The shareholder has to pay brokerage fee, etc, when he wants to sell the shares.

Discount rate: The assumption under MM hypothesis that a single discount rate can be used for discounting cash inflows at different time periods is not correct. Uncertainty increases with the length of the time period.

2. Walter's approach

This comes under the relevance concept of dividend.

Relevance concept:

A firm's dividend policy has a very strong effect on the firm's position in the stock market. Higher dividends increase the value of stock while low dividends decrease their value. This is because dividends communicate information to the investors about the firm's profitability.

According to Prof.James E. Walter's approach, the dividend policy always affects the value of the enterprise. The finance manager can, therefore use it to maximize the wealth of the equity shareholders. Walter has also given a mathematical model to prove this point.

Prof. Walter's model is based on the relationship between the firm's

(i) Return on investment or internal rate of return (i.e.)

(ii) Cost of Capital or required rate of return. (i.e., k)

According to Prof.Walter, if $r > k$, i.e., the firm can earn a higher return than what the shareholders can earn on their investments, the firm should retain the earnings. Such firms are known as growth firms, and in their case the optimum dividend policy would be to plough back the entire earnings. In their case the dividend payment ratio (D/P ratio) would, therefore, be zero. This would maximize the market value of their shares.

In case of firm, which does not have profitable investment opportunities (i.e., r, k), the optimum dividend policy would be to distribute the entire earnings as dividend. The shareholders will stand to gain because they can use the dividends so received by them in channels, which can give them higher return. Thus, 100% payout ratio in their case would result in maximizing the value of the equity shares.

In case of firms, where $r = k$, it does not matter whether the firm retains or distributes earnings. In their case the value of the firm's shares would not fluctuate with change in the dividend rates. There is, therefore, no optimum dividend policy for such firms.

Assumptions:

(i) The firm does the entire financing through retained earnings. It does not use external source of funds such as debt or new equity capital.

(ii) The firm's business risk does not change with additional investment. It implies the firm's internal rate of return (i.e., r) and cost of capital (i.e., k) remains constant.

(iii) In the beginning earning per share (i.e. E) and dividend (i.e., D) per share remain constant. It may be noted that the values of 'E' and 'D' may be changed in the model for determining the results, but any given values of 'E' and 'D' are assumed to remain constant in determining a given value.

(iv) The firm has a very long life.

Mathematical formula:

Prof. Walter has suggested the following formula for determining the market value of a share:

$$P = \frac{D + \frac{r}{K}(E - D)}{K}$$

Where,

P = Market Price per share

E = Earnings per share

D = Dividend per share

K = Cost of capital of the firm

r = internal rate of return of the firm.

Criticism:

(i) Walter's assumption that financial requirements of a firm are met only by retained earnings and not by external financing is seldom true in real situations.

(ii) The assumption that the firm's internal rate of return (i.e.,r) will remain constant does not hold good.

(iii) The assumption that 'k' will also remain constant does not hold good.

3. Gordon's theory on dividend policy:

Gordon's theory on dividend policy is one of the theories believing in the 'relevance of dividends' concept. It is also called as 'Bird-in-the-hand' theory that states that the current dividends are important in determining the value of the firm. Gordon's model is one of the most popular mathematical models to calculate the market value of the company using its dividend policy.

Relation of dividend decision and value of a firm:

The Gordon's theory on dividend policy states that the company's dividend payout policy and the relationship between its rate of return (r) and the cost of capital (k) influence the market price per share of the company.

Relationship between r and k	**Increase in Dividend Payout**
r>k	Price per share decreases
r<k	Price per share increases
r=k	No change in the price per share

Assumptions of gordon's model:

No debt
No external financing
Constant irr
Constant cost of capital
Perpetual earnings
Corporate taxes are not accounted for in this model.
Constant retention ratio: The model assumes a constant retention ratio (b) once it is decided by the company. Since the growth rate (g) = b*r, the growth rate is also constant by this logic.

K>G

Gordon's model assumes that the cost of capital (k) > growth rate (g). This is important for obtaining the meaningful value of the company's share.

Gordon's formula to calculate the market price per share (P) is **P = {EPS * (1-b)} / (k-g)**

Where,

P = market price per share
EPS = earnings per share
b= retention ratio of the firm
(1-b) = payout ratio of the firm
k = cost of capital of the firm
g = growth rate of the firm = b*r

Implications of Gordon's model:

Gordon's model believes that the dividend policy impacts the company in various scenarios as follows:

Growth firm

A growth firm's internal rate of return (r) > cost of capital (k). It benefits the shareholders more if the company reinvests the dividends rather than distributing it. So, the optimum payout ratio for growth firms is zero.

Normal firm

A normal firm's internal rate of return (r) = cost of the capital (k). So, it does not make any difference if the company reinvested the dividends or distributed to its shareholders. So, there is

no optimum dividend payout ratio for normal firms.

However, Gordon revised this theory later and stated that the dividend policy of the firm impacts the market value even when r=k. Investors will always prefer a share where more current dividends are paid.

Declining firm

The internal rate of return (r) < cost of the capital (k) in the declining firms. The shareholders are benefitted more if the dividends are distributed rather than reinvested. So, the optimum dividend payout ratio for declining firms is 100%.

Criticism of Gordon's model:

Gordon's theory on dividend policy is criticized mainly for the unrealistic assumptions made in the model.

Constant internal rate of return and cost of capital

The model is inaccurate in assuming that r and k always remain constant. A constant r means that the wealth of the shareholders is not optimized. A constant k means the business risks are not accounted for while valuing the firm.

No external financing

Gordon's belief of all investments being financed by retained earnings is faulty. This reflects sub-optimum investment and dividend policies.

Factors affecting dividend policy

The factors affecting the dividend policy are both external as well as internal.

External factors

1. General state of economy:

In case of depressions, uncertain economic and business conditions, the management may like to retain the whole or part of the retained earnings to build up reserves to absorb shocks in the future. In periods of prosperity the management may not be liberal in dividend payments though the earning power of a company warrants it because of availability of larger profitable investment opportunities.

2. State of capital market:

In case a firm has an easy access to the capital markets either because it is financially strong or because favourable conditions prevail in the market, it can follow a liberal dividend policy. However, if the firm has no easy access to capital market because either of weak financial position or because of unfavourable conditions in the capital market, it is likely to adopt a more conservative dividend policy.

3. Legal restrictions:

A firm may also legally restricted form declaring and paying dividends. For e.g., the Companies Act, 1956 has put several restrictions regarding payments and declaration of

dividends. Some of these restrictions are as follows:

(i) Dividends can only be paid out of

(a) The current profits of the company,

(b) The past accumulated profits or

(c) Money provided by the Central or State Government for the payment of dividends is pursuance of the guarantee given by the Government.

(ii) A company is not entitled to pay dividends unless

(a) It has provided for present as well as all arrears of depreciation

(b) A certain p[percentage of net profits of that year as prescribed by the Central Government not exceeding 10%, has been transferred to the reserves of the company.

(iii) Past accumulated profits can be used for declaration of dividends only as per the rules framed by the Central Government in this behalf.

Similarly, the Indian Income tax Act also lays down certain restrictions payment of dividends. The management takes into consideration all the legal restrictions before taking the dividend decision.

4. Contractual restrictions:

Lenders of the firm generally put restrictions on dividend payments to protect their interests in periods when the firm is experiencing liquidity or profitability problems. For eg.it may be provided in a loan agreement that the firm shall not declare any dividend so long the liquidity ratio is less than 1: 1 or the firm will not pay dividend of more than 12% so long the firm does not clear the loan.

5. Tax Policy:

The tax policy followed by the Government also affects the dividend policy. For e.g., the Government may give tax incentives to companies retaining larger share of their earnings. In such a case the management may be inclined to retain a large amount of the firm's earnings.

Internal factors:

The following are the internal factors, which affect the dividend policy of the firm:

Desire of the shareholders
Financial needs of the company
Nature of earnings
Desire to control
Liquidity position.**Problem:**

Example on Walters's dividend model:

The following information is obtainable in respect of a firm:

Capitalisation Rate (Ke) = 10%

Earning Per Share (E) = Rs. 8

Compute the market price of share under Walter's Model by assuming

Rate of Return

(i) 15% (ii) 10% (iii) 5%

Dividend Payout Ratio

(i) 0% (ii) 25%

Solution:-

Dividend policy and the value of share (walter's model)

Sr. No.	r > K_e	r = K_e	r < K_e
	r= 0.15 K_e = 0 .10 E = Rs. 8	r= 0.10 K_e = 0 .10 E = Rs. 8	r= 0.05 K_e = 0 .10 E = Rs. 8
(i)	D/P Ratio = 0% (Dividend per share = Rs.0) $P = \frac{0 + \frac{0.15}{0.10}(8-0)}{0.10}$ P = 120	D/P Ratio = 0% (Dividend per share =Rs.0) $P = \frac{0 + \frac{0.10}{0.10}(8-0)}{0.10}$ P = 80	D/P Ratio=0% (Dividend per share = Rs.0) $P = \frac{0 + \frac{0.05}{0.10}(8-0)}{0.10}$ P = 40
(ii)	D/P Ratio = 25% (Dividend per share = Rs.2) $P = \frac{2 + \frac{0.15}{0.10}(8-2)}{0.10}$ P = 110	D/P Ratio = 25% (Dividend per share =Rs.2) $P = \frac{2 + \frac{0.10}{0.10}(8-2)}{0.10}$ P = 80	D/P Ratio=25% (Dividend per share = Rs.2) $P = \frac{2 + \frac{0.05}{0.10}(8-2)}{0.10}$ P = 50

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%
Earnings per share (EPS)	8/-	8/-	8/-

Assume a payout ratio of 0%, 50%, and Rs.100/.Prove Walter's model

2. Assume that there are three firms. Firm A B C.

Particulars	Firm A	Firm B	Firm C
Earnings per share (EPS)	12	12	12
Rate of return (r)	20%	15%	10%
Cost of capital (k)	15%	15%	15%

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

Questions
(part-A)

1. What is dividend? Explain the types of dividend.
2. Explain the approaches of dividend decision.
3. Explain the factors affecting the dividend policy
4. Discuss the various types of dividend policy.
5. Write short note on stable
6. State the criticism of MM approach.
7. What are the assumptions of Walter's model

Questions (part-B)

1. What are the assumptions and criticisms of Gordon's model?
2. Explain the irrelevance and relevance dividend theories.
3. Explain the factors affecting the dividend policy
4. Discuss the various types of dividend policy.

Reference Books

- **Advanced Financial Management:** Kohok, M. A., Everest Publishing House
- **Cases & Problems On Financial Management:** Rao, A. P., Everest Publishing House
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