

② Reasons

(i) Funding :- Investment decisions generally involve large amount of funds, which make it imperative for the firm to plan its investment programmes very carefully and make an advance arrangement for procuring finance internally or externally.

(ii) Irreversibility :-

Most investment decisions are irreversible.
 ↳ It is difficult to find a market for such capital items once they have been acquired.

↳ The firm will incur heavy losses if such assets are scrapped.

(iii) Complexity :-

Investment decisions are among the firm's most difficult decisions.

↳ They are an assessment of future events, which are difficult to predict.

→ Capital Budgeting Process :-

It involves

(i) Identification of Investment Proposals :-

The capital budgeting process begins with the identification of investment proposals.

↳ The idea of identification may originate from top level management or may come from rank and file workers of any department.

↳ These proposals are then sent to Capital Expenditure Planning Committee in case of large organisation.

② Screening the Proposals :-

The Expenditure Planning Committee screens the various proposals received from different departments.

↳ The Committee views these proposals in line with the corporate strategies or selection criterion of the firm.

③ Evaluation of Various Proposals :-

The next step is to evaluate the profitability of various proposals.

↳ There are many methods used for this purpose such as Pay back period, Rate of return method, NPV method, IRR method etc.

↳ In evaluation the proposals are classified as

- (i) Independent Proposals
- (ii) Contingent or Dependent Proposals
- (iii) Mutually Exclusive Proposals

④ Fixing Priorities :-

After evaluating various proposals, the unprofitable projects may be rejected. Those proposals which are profitable are accepted.

⑤ Final Approval & Preparation of Capital Expenditure Budget :-

Proposals meeting the evaluation and other criteria are finally approved to be included in the Capital Expenditure Budget.

⑥ Implementing Proposal :-

⑦ Performance Review :-

The evaluation is made through post-completion audit by way of comparison of actual expenditure on the project with the budgeted one and also actual results.

Kinds of Capital Budgeting Decisions:-

The Capital Budgeting Decisions can be broadly classified into two categories:

- (i) Those which increase revenue &
- (ii) Those which reduce costs.

(i) Those which increase revenue :-

The first category of capital budgeting decisions are expected to increase revenue of the firm through expansion of the production or size of operation by adding new product.

(ii) Those which reduce cost :-

The second category increases the earnings of the firm by reducing costs.

On such case a firm has to decide whether continue with the same asset or replace it. Such decision is taken by the firm by evaluating in the form of reduction in costs.

Capital Budgeting decision may also be classified as

(i) Mutually Exclusive Investments :-

Such decisions relate to proposals which compete with one another in such a way that acceptance of one automatically excludes the acceptance of other.

↳ Thus one of the proposals is selected at the cost of the other. e.g.,

A co. has a choice to buy old machine or new machine, if it purchases old machine the choice of buying new machine automatically rejected by buying old one.

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② Independent Investments or Accept-Reject Decisions :-

Accept-Reject decisions relate to independent projects which do not compete with one another.

↳ Such decisions are taken on the basis of minimum return on investment.

↳ Those proposals which yield rate of return higher than minimum return are accepted otherwise rejected.

③ Contingent or Dependent investments :-

Contingent investments are dependent projects; the choice of one investment depends on one or more other investments. eg, If a co. decides to build a factory in a remote, backward area, it may have to invest in houses, roads, hospitals, schools etc.

Methods of Capital Budgeting or Evaluation of Investment Proposals :-

There are many methods of evaluating Profitability of Capital Investment Proposal. These methods include

(1) Traditional methods :-

- (1) Pay back Period or Pay out or Pay off Method
- ↳ Pay back is the number of years required to recover the original cash outlay invested in a project.

The Pay back Period can be calculated in the following manner:-

- (1) Calculate annual net earnings (profits) before Dep. & after tax, called annual cash inflows.

- (2) Divide initial outflow by annual cash inflows
- (3) Where annual cash inflow (Profit before dep. after tax) are unequal. The Pay back Period can be found by adding cash inflows until the total is equal to the initial cash outflow or original cost of the asset.

$$\text{Pay Back Period} = \frac{\text{Cash outflow or original cost of asset}}{\text{Annual cash inflow}}$$

Advantages :-

- (1) This method is simple to understand & easy to calculate.
- (2) It saves in cost, it requires lesser time & labour as compared to other methods.
- (3) In this method, a project with a shorter pay back period is preferred to the

one having a longer pay back period.

(4) This method is suited to a firm which has shortage of cash or whose liquidity position is not particularly good.

Disadvantages:-

(1) It does not take into account the cash inflows earned after pay back period & hence the true profitability of the project can not be correctly assessed.

(2) This method ignores the time value of money.

(3) It does not take into account the cost of capital.

(4) It treats each asset individually in isolation which is not feasible in real life.

(5) Pay back period method does not measure the true profitability of the project.

Illustration

② Improvement in traditional approach to pay back period method:-

(a) Post Pay-back Profitability Method:-

We know that pay back period does not take into consideration the profit earned after pay back period.

Hence an improvement over this method can be made by taking into account the returned received after the pay back period. These returns are called post pay-back profits.

$$\text{Post Pay-back Profitability Index} = \frac{\text{Post Pay back Profits}}{\text{Investment}} \times 100$$

Illustration 6 ✓

(b) Day-back Reciprocal Method :-

Reciprocal method is used to calculate the internal rate of return generated by a project.

$$\text{Day back Reciprocal Method} = \frac{\text{Annual cash inflow}}{\text{Total Investment}}$$

↳ This can be calculated in %ages by multiplying 100.

↳ This method is used only when

(i) Equal cash inflows are generated every year.

(ii) The project under consideration has a long life, which must be at least twice the pay back period.

(c) Discounted Day back method :-

✓ From Book

③ Rate of Return method :-

The method takes into account the earnings expected from the investment over their whole life.

↳ It is known as Accounting rate of Return for the reason that under this method the accounting concept of Profit (net Profit after Dep & tax) is used.

↳ Under this method, Projects are ranked on the basis of earnings or rate of return. The Project with higher rate of return is selected as compared to the one with lower rate of return.

↳ This method is also known as Return on investment (ROI).

↳ This method can be used in several ways:

(a) Average Rate of Return Method :-

Under this method average Profit after tax & Dep. is calculated & then it is divided by the total investment.

$$\text{Average rate of return} = \frac{\text{Total Profit (after Dep \& tax)}}{\text{Net Investment in the Project} \times \text{No. of Years of Profit}} \times 100$$

$$\text{or} \quad \frac{\text{Average Annual Profits}}{\text{Net Investment in the Project}} \times 100$$

Illustration 8 ✓

(b) Return per unit of Investment Method :-

This method is small variation of the Average Rate of Return method.

In this method the total Profit after tax and depreciation is divided by the total Investment.

$$\text{Return per unit of Investment} = \frac{\text{Total Profit (after dep. \& tax)} \times 100}{\text{Net Investment in the Project}}$$

Exst. 9

(c) Return on Average Investment Method :-
On this method, the Return on average investment is calculated.

$$\text{Ret-on Average Investment} = \frac{\text{Total Profit after Dep. \& tax} \times 100}{\text{Total Net Investment}}$$

Exst. 11

Advantages :-

(i) It is very simple to understand & easy to operate.

(ii) It uses the entire earnings of a project in calculating rate of return and not only earnings up to pay back period.

(iii) This method is based on accounting concept, it can be readily calculated from the financial data.

(iv) Disadvantages :-

(i) This method also ignores Time Value of money.

(2) It does not take into consideration the cash flows which are more important than accounting profits.

(3) This method can not be applied to a situation where investment in a project is to be made in parts.

⇒ Time Adjusted or Discounted Cash Flow Methods :-

This method takes into consideration the time value of money. This method includes

(i) Net Present Value Method :-

The NPV method is a modern method of evaluating investment proposals.

↳ This method takes into consideration the time value of money.

↳ It recognizes the fact that a Rupee earned today is worth more than the same Rupee earned tomorrow.

↳ The following are the necessary steps:

(i) First of all calculate appropriate rate of interest that should be selected as the minimum required rate of return called Cut-off rate or discount rate.

(ii) Compute the Present Value of total investment outflow i.e. cash outflow at the determined discount rate.

(iii) Compute the Present Value of cash inflow (Profit before Dep. & after tax).

(iv) Calculate NPV of each project by subtracting Present Value of cash inflow from Present Value of cash outflow.

(V) If NPV is Positive or zero i.e., when Present value of cash inflows either exceeds or equal to the Present value of cash outflows, the proposal may be accepted.

↳ If NPV is Negative, the proposal may be rejected.

Advantages:-

- (1) It recognises the Time Value of money.
- (2) It takes into account the earnings over the entire life of the project and the True Profitability of the investment proposal can be evaluated.
- (3) It takes into consideration the objective of wealth maximization.

Disadvantages:-

- (1) As compared to the Traditional methods, the net present value method is more difficult to understand & operate.
- (2) It is also difficult to calculate the discount rate.
- (3) More caution to be used in case of mutually exclusive projects.

Illustration 14, 15, 16 ✓

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② Internal Rate of Return Method :-

IRR is also a modern technique of Capital Budgeting that also takes into account the time value of money.

↳ This method is also known as "Time adjusted Rate of Return", "Discounted Rate of Return", "Yield Method" and "Trial & Error Yield method".

↳ Under this method, the cash flows of a project are discounted at a suitable rate by hit and trial method, which equates the net present value so calculated to the amount of investment.

↳ Under this method, the discount rate is determined internally, so this method is called as internal rate of return method.

↳ The internal rate of return is defined as that discount rate at which the present value of cash inflows are equal to present value of cash outflow.

Calc. of IRR :-

(1) When annual net cash flows are equal

$$\text{Present value factor} = \frac{\text{Initial cash outflow}}{\text{Annual cash inflow}}$$

Illustration 17 &

Advantages:-

- (1) It takes into consideration - time value of money
- (2) It considers the profitability of the project for its entire economic life.
- (3) This method is better than NPV method.

Disadvantages:-

- (1) This method is difficult to understand and is the most difficult method of evaluation.
- (2) This method is based on the assumption relating to the choice of rate of return.
- (3) The results of NPV method & IRR may differ when the projects under evaluation differ in their size, life & timing of cash flows.

⑥ Profitability Index Method or

Benefit Cost Ratio :-

It is also the time-adjusted method of evaluating the investment proposals.

↳ This method is also called the Benefit-Cost Ratio (B/C) or Desirability Factor.

↳ It is defined as the relationship between Present value of Cash inflows and the Present value of Cash outflows.

$$\text{Profitability Index (P.I.)} = \frac{\text{Present value of Cash inflows}}{\text{Present value of Cash outflows}}$$

The Profitability Index may also be found out by net Present values of inflows.

$$P.I.(\text{Net}) = \frac{NPV}{\text{Cash outflow}}$$

The net P.I. can be found out by Profitability Index minus one.

$$\text{Net P.I.} = \text{Profitability Index} - 1$$

↳ The Proposal is accepted if Profitability Index is more than one and is rejected if Profitability Index is less than one.

Advantages :-

The advantages & disadvantages are same as that of Net Present Value method.

Note :-

P.I. is a slight modification of NPV method.

The major drawback of NPV is that

It is not easy to rank projects on

Basis of this method, when the costs of the projects differ significantly.

↳ To evaluate such projects, the P-I method is most suitable.

Capital Rationing:-

Capital Rationing refers to a situation where a firm is not in a position to invest in all profitable projects due to constraints on availability of funds.

↳ The resources are always limited and the demand for them far exceeds their availability. It is for this reason that the firm can not take up all the projects though profitable and has to select the combination of proposals that will yield the greatest profitability.

COST OF CAPITAL

- The cost of capital to a firm is the minimum rate of return expected by its investors. It is the weighted average cost of sources of finance used by a firm.
- Is the capital used by a firm may be in the form of debt, preference capital, retained earnings & equity shares.
- Is cost of capital is the minimum rate of return expected by its investors which will maintain the market value of shares at its present level.
- Is known to achieve the objective of a firm must earn rate of return more than its cost of capital.
- Is cost of capital for a firm may be defined as the cost of obtaining funds (i.e. the average rate of return that the investors in a firm would expect for supplying funds to the firm) is from the above definition, there are three basic aspects of the concept of cost of capital.
- (i) Cost of capital is not a cost as such - it is actually rate of return that a firm requires to earn from its projects.
- (ii) It is the minimum rate of return in order to maintain the market value of shares.
- (iii) It comprises of three components - a) The expected normal rate of return at zero risk level.

b) The Premium for business risk.

c) The Premium for financial risk. Symbolically cost of capital may be represented as.

$$K = R_a + b + f$$

K = cost of capital

R_a = Normal rate of return of 2000 etc level.
 b = Premium for business risk.
 f = Premium for financial risk.

Classification of cost :-

(i) Historical cost and Future cost :-

Historical costs are those costs which are related to the past.

Future costs are estimated costs for the future.

↳ In Financial Mgt, Future costs are more relevant than the historical costs.

(2) Specific cost and Composite cost :-

Specific costs are those costs which are related to specific source of capital.

Composite cost is defined as combined cost of various sources of capital. It is weighted average cost of capital.

↳ It more than one form of capital is used in the business, it is the composite cost which should be considered for decision making and not specific cost.

(3) Explicit cost and Implicit cost :-

Explicit cost is the discount rate which equates the present value of cash outflows

with the present value of cash outflows.

The explicit cost may be determined with the help of the following formula.

$$I_0 = \frac{O_1}{1+k} + \frac{O_2}{(1+k)^2} + \dots + \frac{O_n}{(1+k)^n} = \sum_{t=1}^n \frac{O_t}{(1+k)^t}$$

I_0 = Net cash inflow at zero time

O_t = out flow of cash

k = explicit cost of capital

Implicit cost :- (Hidden cost)

Implicit cost also known as the opportunity cost.

It is defined as the opportunity foregone in order to take up a particular project.

The implicit cost of obtained earnings is rate of return available to shareholders by investing the funds elsewhere.

(4) Average cost & Marginal cost :-

An average cost refers to the combined of various sources of capital such as debentures, Pref. Shares & equity shares.

↳ Marginal cost of a capital refers to the average cost of capital which has to be incurred to obtain additional funds required by a firm.

↳ On investment decision, it is marginal cost which should be taken into consideration.

Computation of Cost of Capital :-

(A) Computation of Specific Source of Finance

(1) Cost of Debt :-

(a) Cost of Perpetual/Irredeemable Debt :-

The cost of debt is the rate of interest payable on Debt. Eg, The before tax cost of debt is calculated as

$$K_{db} = \frac{I}{P} \quad [\text{At par}]$$

Where K_{db} = Before tax cost of debt

I = Interest

P = Principal

In case the debt is raised at Premium or discount, we should consider P as the amount of net proceeds received from the issue and not the face value of securities. The formula may be changed to

$$K_{db} = \frac{I}{NP}$$

Where NP = Net Proceeds

↳ 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. The after tax cost of debt may be calculated as

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

K_{da} = After tax cost of debt

t = Rate of tax

15) Cost of Redeemable Debt

The debt issued to be redeemed after a certain period during the life time of a firm. Such a debt is known as redeemable debt.

↳ The cost of redeemable debt may be computed by using Yield to maturity, or called internal rate of return or trial and error method. The cost of redeemable debt can also be computed by using Simple Shortcut method:

Q (1) Yield to Maturity or Trial & Error Method
① Before tax cost of redeemable debt:-

$$N_0 = \frac{I_1}{(1+k_d)^1} + \frac{I_2}{(1+k_d)^2} + \dots + \frac{I_n}{(1+k_d)^n} + \frac{V_n}{(1+k_d)^n}$$

$$\text{or } N_0 = \sum \frac{I}{(1+k_d)^n} + \frac{V_n}{(1+k_d)^n}$$

N_0 = Current Value of the Issue Price of debt

V_n = Redeemable Value of debt.

n = no. of years of redemption

② After Tax Cost of Redeemable debt:-

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

K_{da} = After Tax Cost of debt.

K_{db} = Before Tax cost of debt.

t = Tax rate

Page No.:

(b) Short cut Method to compute cost of

Redeemable Debt :-

In order to avoid the complex calculations of hit & trial method, a simple formula is used

(i) Before tax cost of Redeemable debt

$$K_{db} = \frac{I + \frac{1}{n} (RV - NP)}{\frac{1}{2} (RV + NP)}$$

Where,

I = Annual interest

n = no. of years in which debt is to be redeemed

RV = Redeemable value of debt

NP = Net Proceeds of Debentures

(ii) After tax cost of Redeemable debt

$$K_{da} = \frac{I(1-t) + \frac{1}{n} (RV - NP)}{\frac{1}{2} (RV + NP)}$$

Illustration 3

Illustration 4

Zero Coupon Bonds:-

Companies issue Bonds or Debentures at a discount from their maturity value having zero interest. No interest is payable on such debenture before their redemption and at the time of redemption the maturity value of the bond is to be paid to the investors. The cost of such debt can be calculated finding the present value of cash flows.

⇒ Real or Inflation Adjusted Cost of Debt:-

In case of inflation, the real cost of debt is much less than the nominal cost as the fixed amount is payable irrespective of the fall in the value of money because of price level changes. The real cost of debt can be calculated as

$$\text{Real cost of Debt} = \frac{1 + \text{Nominal Cost of Debt}}{1 + \text{Inflation Rate}}$$

Illustration NO 9 ✓

② Cost of Preference Capital :-

- The measurement of the cost of Preference Capital poses some conceptual difficulty.
- ↳ In case of debt there is a binding legal obligation on the firm to pay interest and the interest act as a basis to calculate the cost of debt.
 - ↳ However, in case of Preference Capital, Payment of dividend is not legally binding on the firm.
 - ↳ Thus, the cost of Preference Capital is a function of the dividend expected by investors.
 - ↳ In case dividends are not paid to Preference Shareholders, it will affect the fund raising capacity of the firm.
 - ↳ The cost of Pref. Capital which is perpetual can be calculated as:

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

K_p = Cost of Pref. Capital

D = Annual Pref. Dividend

P = Pref. Share Capital.

- ↳ If Pref. Shares are issued at premium or discount or when costs of flotation are incurred to issue Pref. Shares, then cost of Pref. Capital can be computed with the following formula:

$$K_p = \frac{D}{NP}$$

It may be noted that dividends are not allowed to be deducted in computation of tax. Therefore, no adjustment is required for taxes.

Some times Redeemable Pref. Shares are issued which can be redeemed on maturity date. The cost of Redeemable Pref. Shares Capital can be calculated as

$$K_{pr} = \frac{D + \frac{1}{n}(MV - NP)}{\frac{1}{2}(MV + NP)}$$

Where K_{pr} = cost of Redeemable Pref. Shares
 D = Annual Pref. Dividend
 MV = Market Value of Pref. Share
 NP = Net Proceeds of Pref. Shares

Illustration 10
 Illustration 11
 Illustration 12

$$K_{pr} = \frac{D + \frac{1}{n}(MV - NP)}{\frac{1}{2}(MV + NP)}$$

$$K_{pr} = \frac{D + \frac{1}{n}(MV - NP)}{\frac{1}{2}(MV + NP)}$$

③ Cost of Equity Share Capital :-

The cost of equity is the maximum rate of return that the company must earn on equity financed portion of its investment.

- ↳ Payment of Dividend is not a legal binding. It may or may not be paid.
- ↳ But it does not mean that equity share capital is a cost free capital.

- ↳ Shareholders invest money in equity shares on the expectation of getting dividend and the company must earn this minimum rate so that the market price of the shares remains unchanged.

- ↳ The cost of equity share capital can be computed in the following ways:

(1) Dividend Yield Method or Dividend / Price Ratio Method :-

According to this method, the cost of equity capital is the discount rate that equates the present value of expected future dividends per share with the net proceeds (or current market price) of a share.

$$K_e = \frac{D}{NP} \text{ or } \frac{D}{MP}$$

K_e = cost of equity capital

D = Expected dividend per share

NP = Net proceeds per share

MP = Market Price per share

Assumptions :-

(1) Investors give prime importance to dividends and risk in the firm remains unchanged.

Illustration 13 ✓

(1) Dividend Yield Plus Growth in Dividend method :-

When the dividends of the firms are expected to grow at a constant rate and the dividend pay out ratio is constant, this method may be used to compute the cost of equity capital.

According to this method, the cost of equity capital is based on the dividends and the growth rate.

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

$$= \frac{D_0(1+g)}{NP} + g$$

Where,

K_e = cost of equity capital

D_1 = Expected dividend per share at the end of the year

NP = Net Proceeds per share

g = Rate of growth in dividend

D_0 = Previous years dividend

In case cost of existing equity share is to be calculated, the NP should be changed with MP (Market Price per share) the above eqn.

$$K_e = \frac{D_1}{MP} + g = \frac{D_0(1+g)}{MP} + g$$

Illustration 14 ✓

15 ✓

16 ✓

(III) Earning Yield Method / Earning Price Ratio :-

As per this method, the cost of equity capital is the discount rate that equates the present value of expected future earnings per share with the net proceeds (or current market price) of a share. Symbolically,

$$K_e = \frac{\text{Earning per share}}{\text{Net Proceeds}}$$

$$K_e = \frac{EPS}{NP}$$

Cost of existing capital is to be calculated

$$K_e = \frac{EPS}{MP}$$

Assumptions :-

- (i) Earnings per share are expected to remain constant.
- (ii) Dividend Pay out ratio is 100% or Retention ratio is zero.
- (iii) The market price of the share is influenced only by Earning per share.

Illustration 16 ✓

(d) Realized yield method :-

There are some limitations while using dividend yield method or earnings yield method.

↳ The problems are estimating the expectations of the investors regarding future dividends and earnings correctly, both these depend up so many uncertain factors.

↳ To remove this drawback, realized yield method, which takes into account the actual average rate of return realized the past.

Assumptions :-

- a) The firm will remain in the same risk class over the period.
- b) The share holders expectations are based up on past realized yield.
- c) The investors get the same rate of return as the realized yield even if they invest else where.
- d) The market price of the shares do not change significantly.

④ Cost of Retained Earnings :-

- ↳ It is sometimes argued that retained earnings do not involve any cost because a firm is not required to pay dividends on retained earnings. But that is not true.
- ↳ The cost of retained earnings may be considered as the rate of return which the existing shareholders can obtain by investing the after-tax dividends in ~~the~~ alternative opportunity of equal quality.
- ↳ It is thus the opportunity cost of dividends foregone by the shareholders.
- ↳ Cost of retained earnings can be computed with the help of following formula:

$$K_2 = \frac{D_1}{NP} + g_1 \quad \text{or} \quad \left[\frac{D_1}{NP} + g_1 \right]$$

K_2 = Cost of retained earnings

D_1 = Expected Dividend at the end of the year

NP = Net Proceeds

g_1 = Rate of Growth

NP = Market Price per Share

However, if shareholders wish to invest their after-tax dividend income in alternative securities, they may have to incur some costs of purchasing the securities, such as brokerage.

↳ Hence the effective rate of return realized by the shareholders from the new investment will be somewhat lesser than their present return from the firm.

↳ For this following formula is used,

$$K_D = \left(\frac{D}{NP} + t \right) \times (1-t) \times (1-b)$$

$$K_D = K_E (1-t) (1-b)$$

K_D = Cost of Debt earnings

D = Preferred Dividend

K_E = Equity rate

NP = Net Proceeds

t = tax rate

b = Cost of Purchasing new securities or Storage costs.

K_E = Rate of return available to Shareholders

Computation of weighted Average cost of Capital :-

Capital Asset Pricing Model (CAPM) :-

↳ This model is used to calculate the cost of equity.

↳ The value of an equity share is a function of cash flows expected by the investors and the risk associated with the cash flows.

↳ It is calculated by discounting the future stream of dividends at the required rate of return, called the capitalization rate.

↳ The required rate of return depends on the element of risk associated with investment in shares.

↳ It will be equal to the risk-free rate of interest plus the premium for risk.

Thus, the required rate of return, k_e for a share is

$$k_e = \text{Risk-free rate of int} + \text{Premium for risk}$$

As per CAPM, the premium for risk is the difference b/w market return from a diversified portfolio and the risk free rate of return. It is indicated in terms of beta co-efficient (β_i).

$$\text{Risk Premium} = (\text{Market return} - \text{Risk free diversified portfolio risk return})$$

$$= \beta_i (R_m - R_f)$$

↳ Thus, cost of equity, according to CAPM can be calculated as below

$$k_e = R_f + \beta_i (R_m - R_f)$$

{ CAPITAL STRUCTURE }

Meaning of Capital Structure :-

The term "Capital Structure" refers to the proportion between the various long term sources of finance in the total capital of the firm.

- ↳ The major sources of long term finance include, Proprietor's funds and Borrowed funds.
- ↳ Proprietor's funds include Equity Capital, Preference Capital, Reserves & Surplus (i.e., retained earnings) and Borrowed funds include long term debts such as loans from financial institution, debentures etc.

Capitalisation, Capital Structure and Financial Structure :-

The term capitalisation, Cap. Structure & Financial Structure do not mean the same.

↳ Capitalisation :-

It is a quantitative aspect of the financial planning.

Capitalisation refers to the total amount of securities issued by a company.

② Capital Structure :-

Capital structure refers to the kinds of securities and the proportionate amounts that make up capitalisation.

③ Financial Structure :-

Financial Structure means the entire liabilities side of the balance sheet. That means Financial Structure refers to all the financial resources marshalled by the firm, short term as well as long term and all forms of debt as well as equity.

Forms / Patterns of Capital Structure:
The Capital Structure may consist of any of the following forms:

- (1) Equity shares only
- (2) Equity & Deb. Shares
- (3) Equity shares & Debentures
- (4) Equity shares, Deb. shares & Debentures

Importance of Capital Structure:-

(1) Capital structure determines the risk assumed by the firm.

(2) Capital structure determines the cost of capital of the firm.

(3) It affects the flexibility & liquidity of the firm.

(4) It affects the control of owners on the firm.

EBIT-EPD Analysis:-

EBIT-EPD analysis is an important test for analysing the impact of alternative methods of financing on the earning per share of a firm.

At particular level of earnings before interest & tax, the earnings available to share holders (or earning per share) may be different under different methods of mfg. formula is used for EBIT-EPD analysis, following formula

$$EPS = \frac{(EBIT - I)(1 - t) - PD}{n}$$

Capital Structure

Where, $EPS = \text{Earnings Per Share}$

$EBIT = \text{Earnings before interest \& tax}$

$I = \text{Int. charges per annum}$

$t = \text{tax rate}$

$PD = \text{Preference dividend, if any}$

$n = \text{no. of equity shares}$

Illustration no 2 ✓

Financial Break-Even Point :-

Financial Break even point may be defined as that level of EBIT which is just equal to pay the total financial charges i.e., Interest & Pref. Dividend

↳ At this point ~~the~~ or level of earnings before int & tax, the earnings per share equals to zero ($EPS = 0$).

↳ This point is known as Critical point in planning the capital structure of a firm.

↳ If EBIT is less than the financial break even point, the EPS shall be negative and hence int. bearing debt or Pref. St. Capital should be reduced in the capital of the firm.

↳ However, in case the level of EBIT ^{leads} exceeds the financial break even point, ~~the~~ EPS is positive and hence more of fixed cost funds may introduced in the capital structure.

6 The Financial BEP can be calculated as

(a) When the capital structure consists of equity share capital & debt only and no preference share capital is employed

Financial Break even point = Fixed Interest charges

(b) When capital structure consists of equity share capital, pref. share capital & debt.

$$\text{Financial BEP} = \frac{D_p}{1 + \frac{I}{(1-t)}}$$

where t = Fixed int. charges

D_p = Pref. Dividend

t = tax rate

Illustration no 7

⇒ Optimum Capital Structure :-

The capital structure which maximises the value of the firm is called optimum capital structure

↳ On other words, the capital structure is said to be optimum when cost of the capital is minimum and total value of the firm is maximum. Hence, in order to achieve the objective of maximisation of Shareholder's wealth, the financial manager should determine an optimum capital structure for the firm.

Risk-Return Trade off :-

The capital structure decision of a firm to use a certain proportion of debt involves two types of risks.

(1) Financial Risk :- The financial risk arises on account of the use of debt or fixed interest bearing securities in its capital.

↳ A co. with no debt financing has no financial risk.

↳ The extent of financial risk depends on leverage of the firm's capital structure.

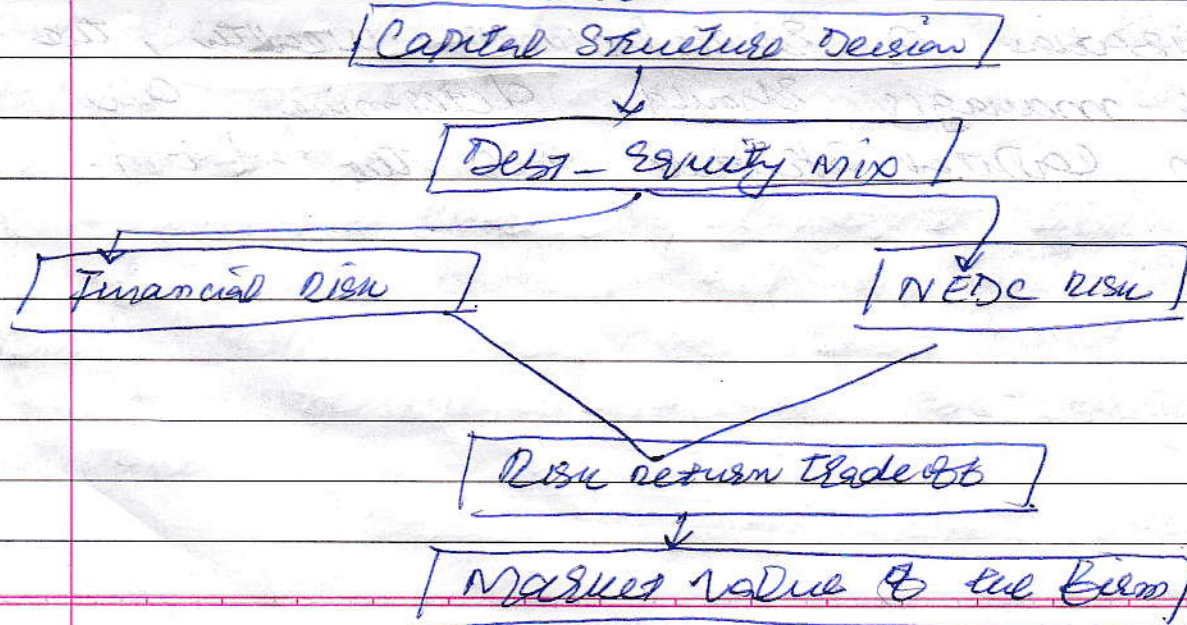
(2) Non-Employment of Debt Capital (NEDC) :-

If a firm does not use debt in its capital structure, it has to face the risk arising out of non-employment of debt capital.

↳ The NEDC risk has an inverse relation with the ratio of debt.

↳ Higher the debt-equity ratio or the leverage, lower is the NEDC risk & vice versa.

Thus the firm has to reach a balance (Trade off) between the financial risk and risk of non-employment of debt capital to increase its market value.



=> Theories of Capital Structure :-

Capital structure theories seek to explain the relationship between capital structure decision & the market value of the firm. There is a viewpoint that strongly supports the close relationship between capital structure decision & value of a firm. The important theories of capital structure are:

- (1) Net Income Approach
- (2) Net Operating Income Approach
- (3) Traditional Approach
- (4) Modigliani & Miller Approach

This theory was suggested by Durand. As per this theory, the capital structure decision is relevant for the valuation of the firm.

In other words, a change in the financial leverage (i.e. ratio of debt to equity) will lead to corresponding change in the value of the firm as well as overall cost of capital. As per NI approach, a company can increase its value and decrease the overall cost of capital by increasing the proportion of debt in the capital structure.

- (1) The cost of debt is less than cost of equity
- (2) The risk perception of investors

is not changed by use of debt.
(iii) There are no taxes.

The line of argument in favour of net income approach is that as proportion of debt financing in capital structure increases, the proportion of less expensive source of funds increases. The result is the decrease in overall cost of capital (weighted average) leading to increase in the value of the firm. The reason for assuming cost of debt to be less than the cost of equity are that interest rates are usually lower than dividend rates due to elements of risk and the benefit of tax.

On the other hand, if proportion of debt financing in the capital structure is reduced, the weighted average cost of capital will increase that leads to decrease in the total value of the firm. The total market value of the firm on the basis of NI approach is

$$[V = S + D]$$

V - Total value of the firm

S - Market value of equity shares

D - Market value of debt

$S =$ Earnings available to equity shareholders

Equity Capitalization rate

Overall cost/weighted average cost of capital can be calculated as:

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

Question No 11 ✓

② Net Operating Income Approach:-

Another theory of capital structure as suggested by Durand is the Net Operating Income (NOI) approach. It is diametrically opposite to the Net Income approach.

The essence of this approach is that the capital structure decision is a business irrelevant.

As per this theory, any change in the capital structure of a company does not affect the market value of the firm. And the overall cost of capital remains constant irrespective of the method of financing.

It implies that overall cost of capital remains the same whether debt-equity mix is 50:50 or 20:80 or 70:30 etc. Thus there is nothing as an optimal capital structure and every capital structure is the optimum capital structure.

Following assumption are used:
 1) The cost of debt is lower than cost of equity.

2) Risk Perception of lenders of a debt

do not change with the change in
 Financial leverage capitalises the value of
 firm as whole. Thus, the split between
 debt & equity is not important
 (iv) There are no corporate or personal
 income taxes ^{paying} affecting
 the net income (NI) approach
 that the cost of equity (ke) increases
 with the increase in the financial
 leverage. This is due to increased
 risk assumed by the equity share holders
 to the use of more debt by the firm
 to compensate for increased risk,
 share holders would expect a higher
 rate of return on their investments.
 As a result of increased financial
 leverage where as cost of debt remains
 constant as the financial risk of firm
 is not affected.
 Therefore, the advantage of using a
 source of funds i.e., the debt is exactly
 offset by the increased cost of equity.
 Consequently, the overall cost of capital
 remains constant. Therefore, the value of firm (V) and also
 remains same at all degrees of
 Financial leverage.

$$N = \frac{EBIT}{K_D}$$

N = Value of firm, K_D = cost of capital

Page No.: Page No.:
The cost of equity or equity capitalization rate can be calculated as below:

$$K_e = \frac{\text{Earning after interest \& before tax}}{\text{Market value of Firm} - \text{Market value Debt}}$$
$$= \frac{EBIT - I}{V - D}$$

③ The Traditional Approach :-

The traditional approach is a midway between the net income approach and the net operating income approach.

The traditional approach is also known as intermediate approach.

↳ According to this theory, the value of the firm can be increased initially or the cost of capital can be decreased by using more debt as the debt is cheaper source of funds than equity. Thus optimal capital structure can be reached by a proper debt-equity mix.

↳ Beyond a particular point, the cost of equity increases.