[Academic Script]

Theories of Capital Structure- Part-I

Subject:	Business Economics
Course:	B.A., 3rd Semester, Undergraduate
Paper No. & Title:	Paper – 303 Business Finance
Unit No. & Title:	Unit – 3 Cost of Capital and Financing Decision
Lecture No. & Title:	Lecture – 2 Theories of Capital Structure- Part-I

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1. Concept of Capital Structure

In this session we are going to discuss Theories of Capital Structure

Let us first discuss Concept of Capital Structure

There are three main decisions of financial management of any business firm namely investing decision, financing decision and dividend decision. After finalizing the investing decision to implement a project, the next step is to arrange the required capital for the project. Capital structure is a decision relating to arrangement of required capital through long term instruments i.e. debt or equity. The composition of long term financing in the form of equity, debt and retained earnings is known as capital structure. If the short-term sources of funds are also included in the financing decision for short-term requirement of capital, it is known as financial structure. Thus, the entire liabilities side of balance sheet represents the financial structure and if the short-term borrowings are excluded from the various long term as well as short terms means of financing, it is known as Capital Structure. As per I M Pandey (2005), "The term capital structure is used to represent the proportionate relationship between debts and equity. Equity includes paid-up share capital, share premium and reserves and surplus".

2. Factors affecting the decision of capital structure

Now let us see the factors affecting the decision of capital structure

Various Factors are considered before taking decision of capital structure like:

(i) Attitude of management

(ii) Situation of capital market

(iii) Guidelines issued by regulatory authorities

(iv) Terms and conditions of financing institutions

(v) Cost of equity

(vi) Cost of debt

(vii) Rate of return on investment

(viii) Tax shield on debt and operating expenses

(ix) Existing capital structure

(x) Dividend payout policy

(xi) Growth opportunities

(xii) Size of the firm

(xiii) Nature of business

(xiv) Liquidity

(xv) Rate of corporate tax

(xvi) Prevailing rate of interest

(xvii) Earning volatility

(xviii) Cash flow

(xix) Possibility of take over

Our next topic is Theories of Capital Structure

Various theories of capital structure have been propounded to explain the relationship between market value of the firm and its capital structure decision. There is unanimity in the opinion that the capital structure should be optimum. It is said theoretically that optimum capital structure implies a ratio of debt and equity at which weighted average cost of capital is minimum and the market value of the firm is maximum. However, there is no unanimity about which kind of capital structure is optimum. In practice, planning an optimum capital structure is the most difficult task as the decision is influenced by varies factors. These

factors are highly psychological, conflicting, complex, and qualitative in nature and sometimes beyond control also. One viewpoint is that, if there is change in the proportion of components of Capital Structure, it will affect earning per share and also the value of the firm while another view argues that the combination of debt and equity has no impact on the value of the firm and on shareholders' wealth. There is nothing like optimum Capital Structure. The other distinct view emphasizes on the agency which takes the decision of capital structure creates the vital impact on the blend of equity and debt for financing a project. On the basis of different viewpoints different theories of capital structure have been propounded over a period of time.

These theories are:

- Net Income Approach
- Net Operating Income (NOI) Approach
- Traditional Approach
- Modigliani Miller (MM) Approach
- MM hypothesis under Corporate Taxes
- Miller's Model under Corporate Taxes and personal taxes
- The Trade –Off Theory: Cost of Financial Distress and Agency Cost
- Pecking Order Theory
- Lemon Theory

Out of all these first four theories are widely discussed. We are going to discuss First two theories in this session and other two in the next session.

3. Net Income Approach

This approach has been propounded by Durand David in 1959 (Pandey, 2005). According to this approach, the market value of equity shares is based on the earning available for equity

shareholders after the payment of interest on debt if the debt is included in the Capital Structure. The earning of the firm after the payment of all other expenses except interest on debt is called Net Operating Income (NOI) and the earning available for equity shareholders after the payment of interest is called as "Net Income (NI). Therefore, Net Income = Net Operating Income (NOI) – Interest on debt (I).

As per the preposition of this theory, the market value of equity shares is decided on the basis of net income available for equity shareholders and hence, this theory is called as NI approach. As per this theory, the market value of the firm =Market value of debt + Market value of equity shares. As the net income and cost of capital differs with the use of debt in Capital Structure, the market value of the equity shares also changes accordingly. This phenomenon ultimately changes the market value of the firm and hence; as per this approach, capital structure decision becomes relevant to the valuation to the firm. According to this approach, as the debt increases, overall or weighted average cost of capital decreases and vice versa. Therefore increase in debt results in the increase in the value of the firm and consequently increases the value of the equity shares of the company.

Net Income approach is based on certain assumptions like:

(i) There are no corporate taxes.

(ii) The cost of debt is less than the cost of equity i.e. the capitalization rate of debt is less than the rate of equity capitalization. This prompts the firm to borrow.

(iii) The debt capitalization rate and the equity capitalization rate remain constant.

(iv) The proportion of the debt does not affect the risk perception of the investors. Investors are only concerned with their desired return.

(v) The cost of debt remains constant at any level of debt.

(vi) Dividend payout ratio is 100%.

As per this approach, the firms try to optimize the capital structure by introducing more and more debt having less cost than equity in the capital structure. Therefore, when the financial leverage is increased the proportion of cheaper source of funds i.e. debt increases and overall cost of capital declines which consequently increases the market value of the firm and also the value of the equity share of the firm. Hence, the optimum capital structure exists when the firm employs 100% debt or maximum debt in the capital structure.

According to this approach,

Market Value of the firm (V) = Market value of equity (E) + Market value of debt (D)

Market value of Equity (E) = $\frac{NI}{Ke}$ i.e.Net Income/Cost of Equity

Market Value of Debt (D)= $\frac{I}{Kd}$ i.e. Interest on Debt/Cost of Debt

Where,

NI = Net income available for equity share holders i.e. NOI-I

NOI =Net Operating Income

I = Interest on debt

Ke = Rate of equity capitalization (Cost of Equity)

Kd = Rate of debt capitalization (Cost of Debt)

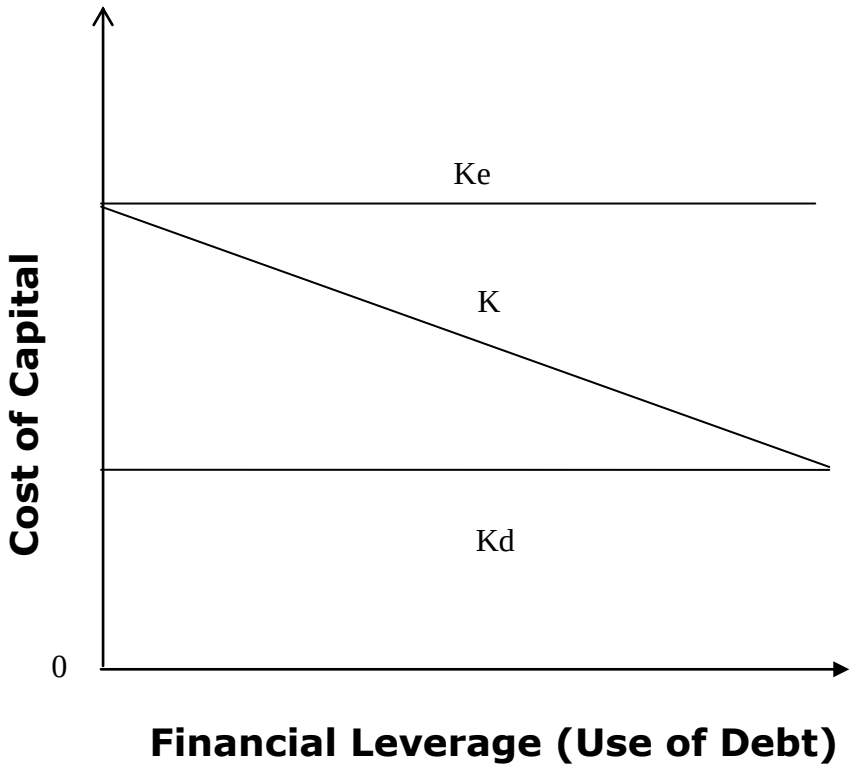
Cost of Capital (Ko) or Weighted Average Cost of Capital (WACC)

$$\text{Ko OR WACC} = \frac{\text{Net Operating Income (NOI)}}{\text{Market Value of the firm (V)}}$$

$$\text{Degree of Financial Leverage} = \frac{\text{Market Value of Debt (D)}}{\text{Market Value of firm(V)}}$$

The effect of leverage on the cost of capital under NI approach

can be explained with the help of diagram



The diagram states that as the debt is replaced by equity in the capital structure the weighted average cost of capital (Ko) decreases. The WACC decreases because the debt is cheaper than the equity and therefore as the debt increases and equity reduces, the funds having less cost is replaced by the funds having more cost.

Optimum Capital Structure under NI Approach

The capital structure is said to be optimum at that stage of debt-equity mix where the overall cost of capital is minimum. As per this approach the cost of capital is minimum at 100% level of

debt, therefore the capital structure is optimized at the 100% debt level.

Criticisms of NI Approach

The NI approach is criticized on the grounds such as:

(i) The assumption of constant cost of debt at any level of debt is not correct. The funds providers insist for more rate of interest above certain level of debt.

(ii) The assumption of risk perception of equity share holders is also not correct. As the debt increases the financial risk also increases and equity share holders will expect more return on their investment and hence the rate equity capitalization also increases with the increase in financial leverage.

(iii) 100% dividend payout and absence of corporate tax are not practically possible.

4. Net Operating Income (NOI) Approach

The next theory is Net Operating Income (NOI) Approach

This theory was also developed by David Durand (Pandey 2005). He probably realized the shortcomings of NI Approach and therefore, he modified the NI approach to NOI approach.

As per this approach, the market value of the firm is based on the earning available for debt and equity providers after paying all other expenses except interest on debt. The profit available for funds providers or for calculating the market value of the firm is termed as Net operating Income (NOI).

This theory is just opposite to NI approach. NI approach is relevant to capital structure decision. It means decision of debt equity mix does affect the WACC and value of the firm. As per NOI approach the capital structure decision is irrelevant and the

degree of financial leverage does not affect the WACC and market value of the firm.

The NOI approach is based on certain assumptions like:

(i) There are no corporate taxes.

(ii) Cost of debt remains constant at all level of debt.

(iii) Overall cost of capital remains constant.

(iv) Value of the firm depends on expected net operating income and overall capitalization rate or the opportunity cost of capital.

(v) Net operating income of the firm is not affected by the degree of financial leverage.

(vi) The operating risk or business risk does not change with the change in debt equity mix.

(vii) WACC does not change with the change in financial leverage.

The NOI approach is based on two prepositions.

Preposition I

As per NOI approach, the value of firm depends on the earning and business risk rather than the financial risk to finance the assets arising out of financial leverage. As per this proposition the market value of the firm is calculated by capitalizing the net operating income and not the Net Income, hence it is called as NOI approach.

Under NOI approach,

$$\text{Market value of the firm (V)} = \frac{\text{Net Operating Income (NOI)}}{\text{Market value of the firm (V)}}$$

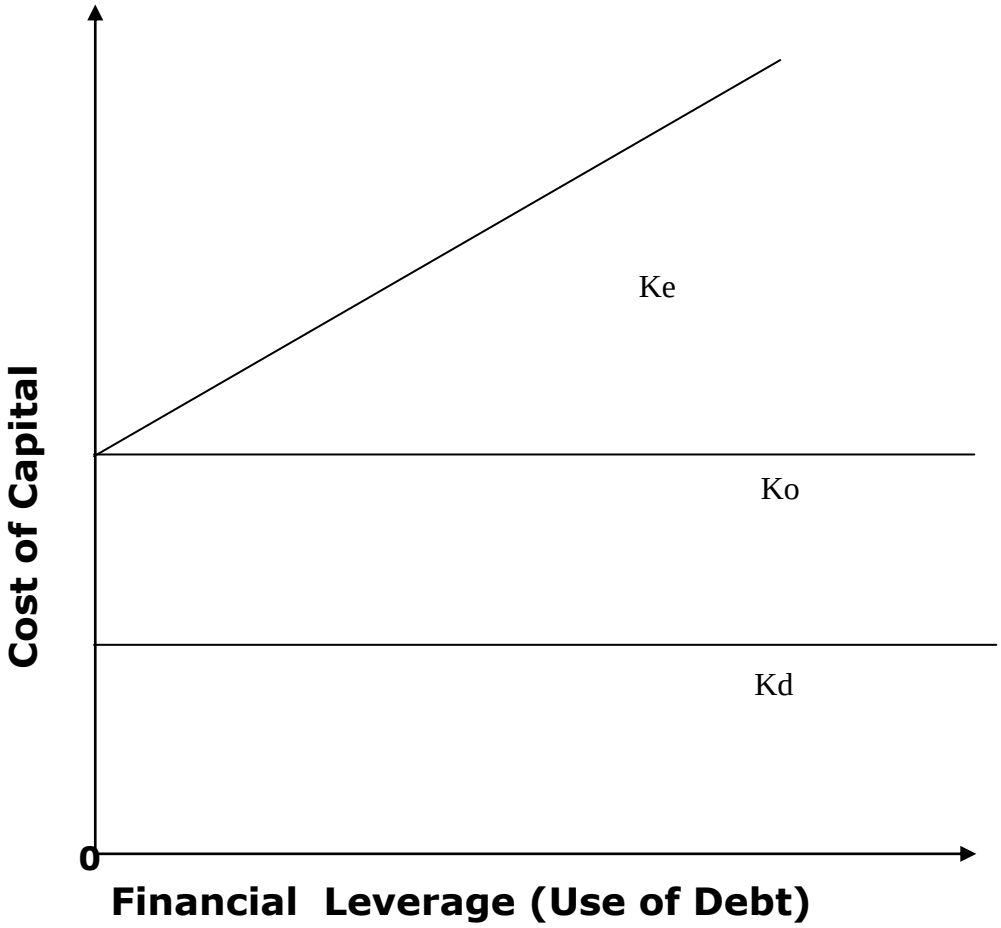
Under the core preposition of NOI approach, the overall cost of capital depends on the business risk of the firm, and business risk does not change with change in debt equity mix, hence overall cost of capital remains constant.

Preposition II

As per NOI approach, even if the firm uses more and more debt in the capital structure, the overall cost does not change even

though the debt is cheaper than equity. This is because the equity share holders increase their expectations of return on their investment with every increase in debt resulting in increased business risk. Consequently, the benefit of cheaper debt is offset by higher expected rate of return on equity and therefore overall cost of capital remains constant.

The Effect of Financial leverage on Cost of Equity, Cost of Debt and Overall Cost of Capital under NOI approach can be explained with the help of diagram.



It is clear from the diagram that with increase to financial leverage, the overall cost of capital (ko) and cost of debt (kd) remains at the same level but cost of equity increases with increase in financial leverage. This is because the expected rate of return on equity increases with the increase in financial risk in the business. Overall cost of capital remains constant because the

benefit of low cost of debt is neutralized by increase in the cost of equity.

Optimum capital structure under NOI Approach:

As per NOI approach the cost of debt, market value of the firm and the market value of the equity shares remain constant irrespective of change in the financial leverage and the benefit of low cost of debt is offset by the increased rate of return on equity with the increase in debt in the capital structure. Therefore, the overall all cost of capital remains the same at any level of debt; hence, the capital structure is optimum at any level of debt–equity mix. Under the circumstances, the optimum level of capital structure composed on debt-equity composition becomes indeterminate, as the impact of financial leverage is counter balanced by a corresponding change in Ke in the opposite direction.

Criticisms of NOI approach

The NOI approach is criticized on the grounds such as:

(i) The assumption of absence of corporate tax is not correct.

(ii) The cost of debt increases with the increase in the quantum of debt.

(iii) As the cost of debt increases with the increase in financial leverage, the overall cost of capital also increases with increase in financial leverage.

(iv) An investor values differently the firm having higher level of debt in its capital structure than the firm having less debt or no debt.

5. Summary

Let us end this session with a note that we discussed in this session the concept of capital structure, factors responsible for

taking decision of debt and equity blend in the capital structure and Net income approach and Net income Operating approach of capital structure. We shall discuss The Traditional approach and Modigliani Miller Approach in the next session.