Presentation on

Capital Structure

Part-II
For the students
of
Semester – VI
B.Com.(Hons. & General)

By

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Capital Structure Theory

Net Income (NI) Approach: NI Approach was offered by Durand. According to NI approach a firm may increase the total value of the firm by lowering its cost of capital.

When cost of capital is lowest and the value of the firm is greatest, we call it the optimum capital structure for the firm and, at this point, the market price per share is maximized.

The same is possible continuously by lowering its cost of capital by the use of debt capital. In other words, using more debt capital with a corresponding reduction in cost of capital, the value of the firm will increase.

Assumptions of Net Income approach

The same is possible only when:

(i) Cost of Debt (K_d) is less than Cost of Equity (K_e);

(ii) There are no taxes; and

(iii) Increase in debt will not affect the confidence levels of the investors

Since the amount of debt in the capital structure increases, weighted average cost of capital decreases which leads to increase the total value of the firm. So, the increased amount of debt with constant amount of cost of equity and cost of debt will highlight the earnings of the shareholders.

KKR Ltd. presents the following particulars : EBIT is ₹45,000, cost of equity (K_e) is 15%, cost of debt (K_d) is 10%. Total capital amounted to ₹3,00,000.

Calculate the cost of capital and the value of the firm for each of the following alternative leverage after applying the Net Income Approach.

Leverage (Debt to total capital) 0%, 20%, 50%, 70% and 100%.

Statement showing the Cost of Capital and the Value of the Firm

Particulars \ Degree of Leverage (D/V)	0 ₹	0.20 ₹	0.50 ₹	0.70 ₹	1.00 ₹
Equity Capital	3,00,000	2,40,000	1,50,000	90,000	—
Debt Capital	—	60,000	1,50,000	2,10,000	3,00,000
Total	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000
EBIT @ 15%	45,000	45,000	45,000	45,000	45,000
Less : Interest on Debt Capital	—	6,000	15,000	21,000	30,000
Earnings to Equity (E_e)	45,000	39,000	30,000	24,000	15,000
Market value of Debt	—	60,000	1,50,000	2,10,000	3,00,000
Market value of Equity $\left(\dfrac{E_e}{K_e}\right)$	3,00,000	2,60,000	2,00,000	1,60,000	1,00,000
Total value of the firm (V)	3,00,000	3,20,000	3,50,000	3,70,000	4,00,000
Cost of Debt (K_d) – Given	10%	10%	10%	10%	10%
Cost of Equity (K_e) – Given	15%	15%	15%	15%	15%
M/V = 1 – D/V	1	0.80	0.50	0.30	0
Average cost of capital $K_0 = \left(\dfrac{D}{V}\right)K_d + \left(\dfrac{M}{V}\right)K_e$	0 x 0.10 +1 x 0.15 = 0.15 i.e. 15%	0.20 x 0.10 +0.80 x 0.15 = 0.14 i.e.14%	0.50 x 0.10 +0.50 x 0.15 = 0.125 i.e.12.5%	0.70 x 0.10 +0.30 x 0.15 = 0.115 i.e.11.5%	1 x 0.10 +0 x 0.15 = 0.10 i.e. 10%

From the above table it is quite clear that the value of the firm (V) will be increased if there is a proportionate increase in debt capital but there will be a reduction in overall cost of capital. So, Cost of Capital is increased and the value of the firm is maximum if a firm uses 100% debt capital.

It is interesting to note the NI approach can also be graphically presented as under (with the help of the above illustration):
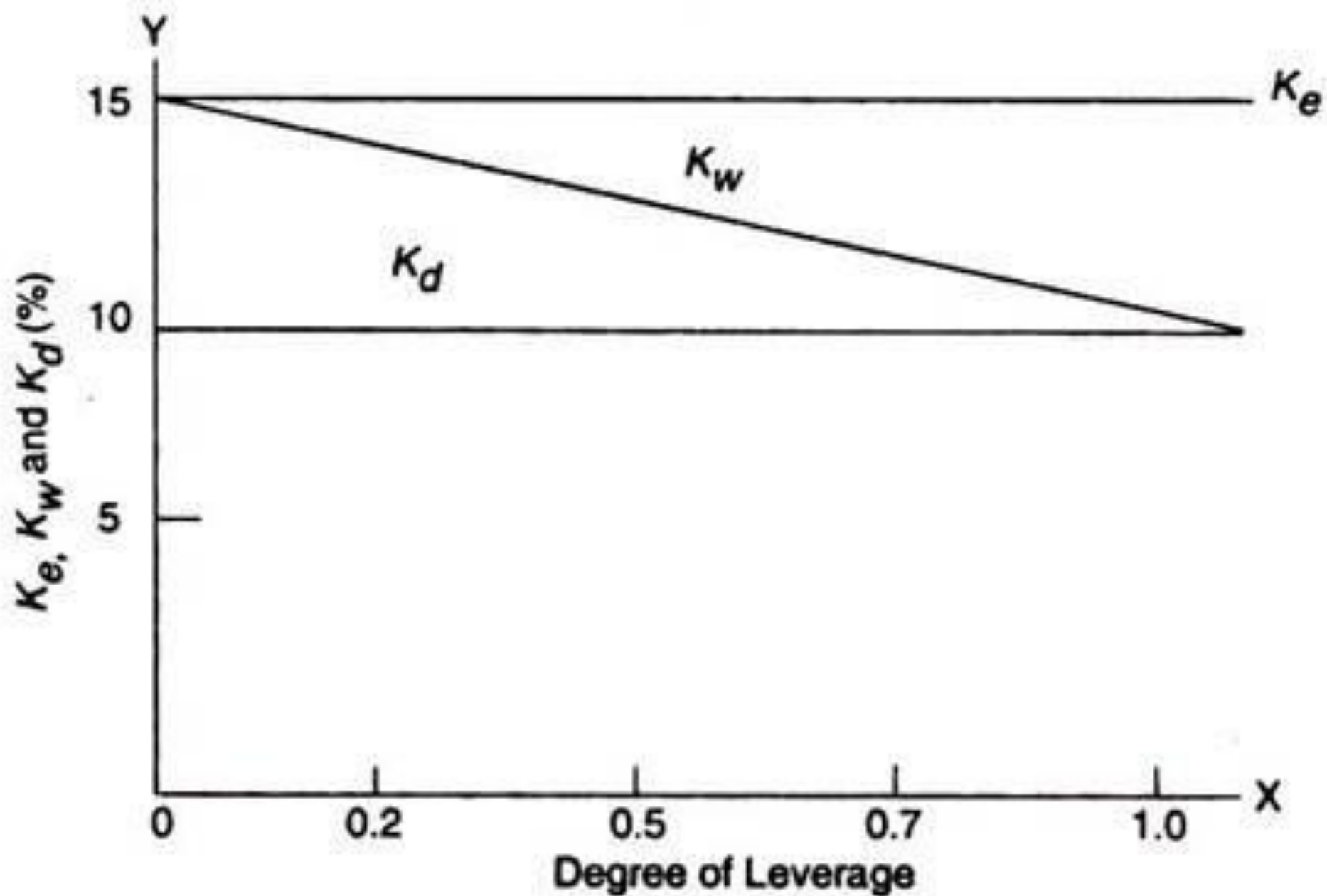
Fig. 2.1 : *Behaviour of K_e, K_w and K_d as per Net Income Approach*

The degree of leverage is plotted along the X-axis whereas K_e, K_w and K_d are on the Y-axis. It reveals that when the cheaper debt capital in the capital structure is proportionately increased, the weighted average cost of capital, K_w, decreases and consequently the cost of debt is K_d.

Thus, it is needless to say that the optimal capital structure is the minimum cost of capital if financial leverage is one; in other words, the maximum application of debt capital.

The value of the firm (V) will also be the maximum at this point.

Net operating income approach

This theory is also given by Durand. This theory is totally opposite to the net income approach. As per this approach with the change in capital structure there is no change in the value of firm and cost of capital. It means if debt-equity mix is 80:20, 40:60:, 60:40 the cost of capital(ko) remains the same. There is nothing like optimal capital structure.

Assumptions of Net operating Income approach

The approach is based upon following assumptions:-

a) there are no taxes

b) risk is same at all the levels of debt equity mix.

c) K_w remains constant.

CSK Ltd. presents the following particulars: Net operating Income (EBIT) ₹45,000, Total value of capital structure ₹3,00,000, cost of debt capital (K_d) 10%, Average cost of capital (K_0) 12%.

Calculate cost of Equity (K_e), Value of the firm (V) applying NOI approach under each of the following alternative leverages: Leverage (debt to the capital) 0%, 20%, 50%, 70% and 100%.

Solution:

Statement showing the Cost of Equity and the Value of the Firm

Degree of Leverage(D/V) / Particulars	0 ₹	0.20 ₹	0.50 ₹	0.70 ₹	1.00 ₹
Equity Capital	3,00,000	2,40,000	1,50,000	90,000	—
Debt Capital	—	60,000	1,50,000	2,10,000	3,00,000
Total	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000
EBIT	45,000	45,000	45,000	45,000	45,000
Less : Interest on debt capital (10%)	—	6,000	15,000	21,000	30,000
Earnings to Equity (E_e) (EBT)	45,000	39,000	30,000	24,000	15,000
Average cost of capital (K_0)	0.12	0.12	0.12	0.12	0.12
Value of the firm $(V) = \dfrac{EBIT}{K_0}$	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000
Less : Market value of debt	—	60,000	1,50,000	2,10,000	3,00,000
Market value of Equity (M)	3,75,000	3,15,000	2,25,000	1,65,000	75,000
Cost of Debt (K_d) – Given	10%	10%	10%	10%	10%
Average cost of capital (K_0) – Given	12%	12%	12%	12%	12%
Cost of Equity $(K_e) = \dfrac{EBIT}{M}$	12%	12.38%	13.33%	14.54%	20%

Although the value of the firm, Rs. 3,75,000 is constant at all levels, the cost of equity is increased with the corresponding increase in leverage. Thus, if the cheaper debt capital is used, that will be offset by the increase in the total cost of equity K_e, and, as such, both K_w and K_d remain unchanged for all degrees of leverage, i.e. if cheaper debt capital is proportionately increased and used, the same will offset the increase of cost of equity.

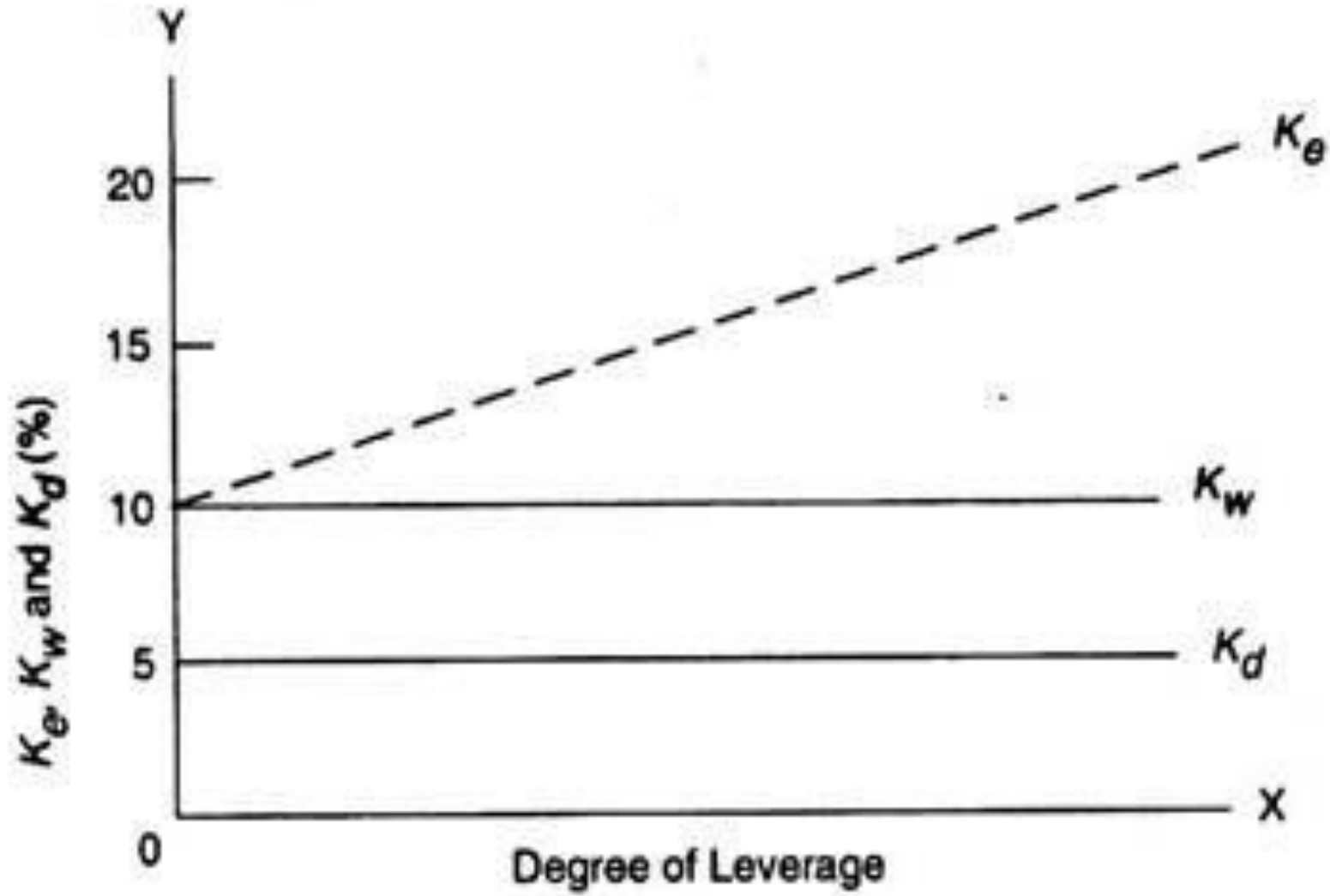**The NOI Approach can be illustrated with the help of the following diagram:**

Fig. 2.2 : Behaviours of K_e, K_w and K_d under Net Operating Income Approach

Under this approach, the most significant assumption is that the K_w is constant irrespective of the degree of leverage. The segregation of debt and equity is not important here and the market capitalises the value of the firm as a whole.

Thus, an increase in the use of apparently cheaper debt funds is offset exactly by the corresponding increase in the equity- capitalisation rate. So, the weighted average Cost of Capital K_w and K_d remain unchanged for all degrees of leverage.

This theory has been criticized on the grounds that **K_w** and **K_d** cannot remains constant at all the levels.