UNIT 9 THEORIES OF CAPITAL STRUCTURE

9.1 INRODUCTION

In order to operate or manage a company, finance is required. The main sources of finance for the companies are debt and equity. The decision regarding the proportion of debt and equity is termed as capital structure. So the term capital structure refers to the relationship between various long term sources of financing such as equity share capital, preference share capital and debentures. Capital structure decision is the very crucial managerial decision as it influences the shareholders return and risk and consequently value of firm. The primary objective of financial management is to maximize shareholder's wealth, the main issue is: what is the relationship between capital structure and firm value? Also, what is relationship between capital structure and cost of capital? Important to remember is value of firm and cost of capital is inversely related. At a certain level value of earnings, value of firm is maximized when the cost of capital is minimized and vice-versa. There are different views on capital structure and value of firm. Some states that there is no relationship between value of firm and its capital structure. Other states that use of debt has a positive effect on firm value up to certain point and negative effect thereafter as more use of debt increase the financial risk and it increase the cost of equity of the firms.

In the previous unit you have learned about the term capitalization, capital structure and financial structure, importance of capital structure, determinants effects the capital structure decision of the company etc. In this unit you will learn about the different theories proposed by different authors to explain the relationship between capital structure, cost of capital and the value of the firm.

9.2 OBJECTIVES

After reading this unit you will be able to:

- Understand the various theories of capital structure
- Know the concept of capital gearing.
- Know about the different costs due to market imperfections
- Understand the Pecking Order Theory

9.3 THEORIES OF CAPITAL STRUCTURE

Capital structure of a company means the combination of financial mix used by the firm. Theory of capital structure is related to the cost of capital. The decision regarding the capital mix is based on the objective of achieving the maximization of shareholders wealth. Debt and equity are two major sources of funds for a company. The theories of capital structure states the proportion of debt and equity in the capital structure.

Assumptions

1. There are only two types of funds: debt and equity.
2. Total assets of the firm are given.
3. EBIT is given and remains constant.
4. Dividend payout ratio is 100% i.e. no retained earnings.
5. Business risk is not affected by any financing decision i.e. its constant.
6. No corporate and personal taxation.
7. The investors should bear the same subjective probability of expected operating profit of the firm.
8. Capital structure can be altered without incurring transaction cost.

Different theories of Capital Structure

- Net Income Approach
- Net Operating Income Approach
- The Traditional Approach
- Modigliani and Miller Approach
    a) Without taxes
    b) With taxes

9.3.1 NET INCOME APPROACH (THEORY OF RELEVANCE)

Net income approach is given by Durand. This approach suggest that a firm can minimize its weighted average cost of capital (WACC) and increase the value of firm as well as market price of share by employing more and more use of debt. So the theory propounds that a company can increase its value and decrease the overall cost of capital by increasing the proportion of debt in its capital structure. This approach is based on following assumptions;

1. Debt is the cheaper source of finance than equity.
2. There are no taxes levied.
3. Risk perception of investors does not change by use of more debt.

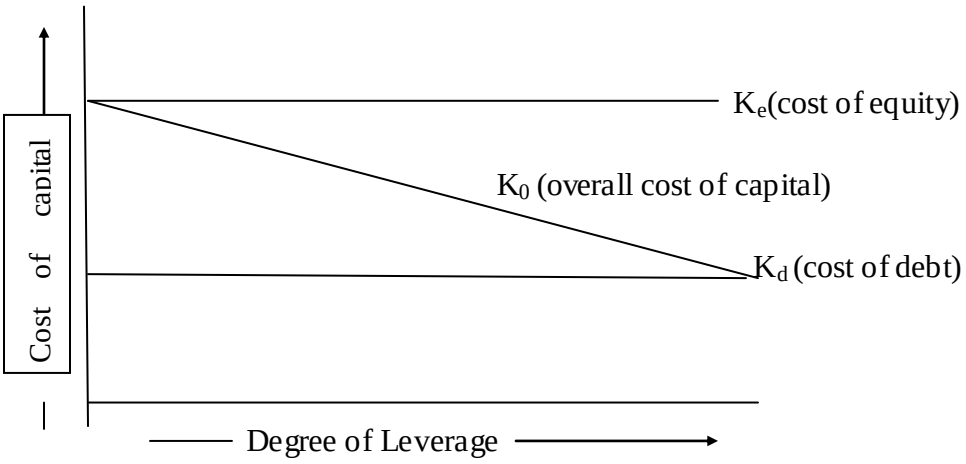


Fig 9.1 The NI approach: Effect of leverage on cost of equity

The argument in favor of net income approach is that as the share of debt financing increase in the capital structure, the proportion of less expensive source of fund increases. This result in decreasing in the overall Weighted Average Cost of Capital (WACC) leading to an increase in the value of firm. The reason for assuming cost of debt to be less than cost of equity is that interest rates are usually less than dividend due to element of risk (debt instruments are more safer than equity) and also they are tax deductible expense .

On the other hand when the amount of debt in capital structure decreases or when financial leverage is reduced, the weighted average cost of capital will increase and the value of firm will decrease. The net income approach showing the effect of leverage on overall cost of capital has been given following:

The total market value of firm on the basis of Net Income Approach can be ascertained as below;

V= S+D

Where, V = Market value of firm

S= Market value of equity shares

$$= \frac{\text{Earnings available to equity shareholders}}{Equity\ capitalisation\ rate}$$

D= Market value of debt

And, overall cost of capital or weighted cost of capital can be calculated as;

$K_0 = \frac{EBIT}{V}$

Illustration 1

a) A company is expecting a net income of Rs. 90,000. It has Rs. 2, 00,000, 8% debentures. The cost of equity or capitalization rate is 10%. Calculate the value of the firm and overall capitalization rate according to the Net Income Approach (ignoring income-tax).
b) If the debenture debt is increased to Rs. 3, 00,000, what shall be the value of firm and the overall capitalization rate?

Solution:

a) Calculation of the value of firm

Net Income	90,000
Less: interest on debentures	16,000
Earnings available for equity shareholders	74,000

Equity capitalization rate is 10%

Market value of Equity (S) = 74,000× $\frac{100}{10}$ = 7, 40,000

Market value of debentures (D) = 2, 00,000

Total value of firm(S+D) = 9, 40,000

Overall cost of capital = $\frac{90,000}{9,40,000}$ × 100 = 9.57%

b) Calculation of value of firm

Net Income	90,000
Less: Interest on debentures	24,000
Earnings available for equity shareholders	66,000

Equity capitalization rate is 10%

Market value of equity (S) = 66,000×$\frac{100}{10}$ = 6, 66,000

Market value of debentures (D) = 3, 00,000

Total value of firm (S+D) = 9, 66,000

Overall cost of capital = $\frac{90,000}{9,66,000}$×100 = 9.32%

Thus, it is clear that as we increase the debt financing value of firm increased and overall cost of capital decreased.

9.3.2 NET OPERATING INCOME APPROACH

This theory was also suggested by Durand and is opposite view of the net income approach. This approach suggests that capital structure decision of firm is irrelevant and any change in leverage or debt decision has no impact on the market value of a firm as well as the market price of equity shares. It implies that the overall cost of capital remains the same whether the debt-equity mix is 20: 80 or 50:50 or 100:0. The assumptions of this theory are;

1. The market capitalize the value of the firm as a whole;
2. The business risk remains constant at every level of debt equity mix;
3. There are no corporate taxes.

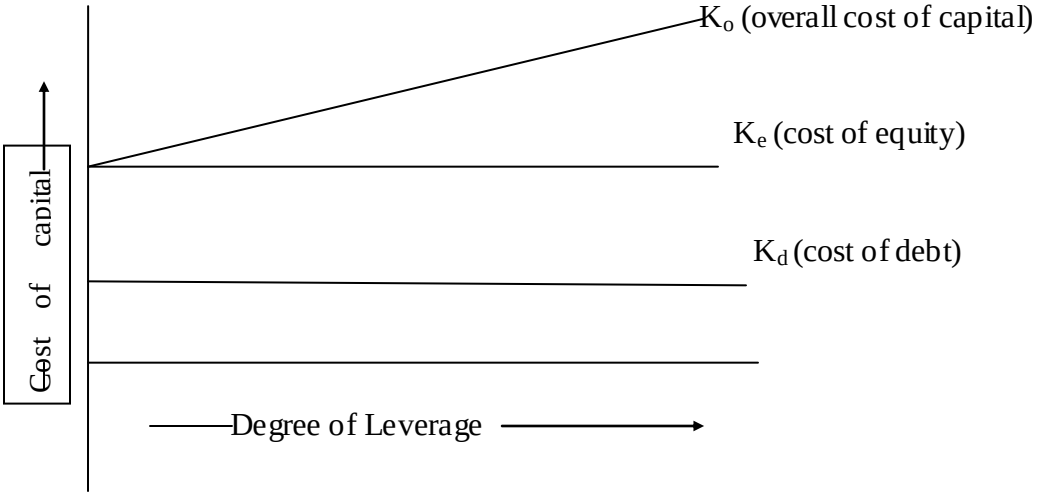


Fig 9.2 The NOI approach: Effect of leverage on cost of equity

The reasons propounded for such assumptions are that the increased use of debt increases the financial risk of the equity shareholders and hence the cost of equity increased. But on the other side cost of debt remains the same with the increasing proportion of debt as more use of debt does not increase the financial risk of the debt holders. So increased use of debt increases the cost of equity capital but cost of debt remains the same hence the benefits of infusing debts are negated by the simultaneously increase in the rate of return of equity shareholders. According to the Net Operating Income (NOI) approach, the financing mix is irrelevant and it does not affect the value of firm either way.

The Net Operating Income (NOI) Approach showing the effect of leverage on overall cost of capital has been given following;

The value of firm on the basis of Net Operating Income (NOI) Approach can be determined as below;

$$V = \frac{EBIT}{K_0}$$

Where, V is value of firm

EBIT= Net operating income or earnings before interest and tax.

K_0 = Overall cost of capital

The market value of equity, suggested by this approach is the residual value which is determined by deducting the market value of debentures from the total market value of the firm.

S= V-D

S= Market value of equity shares

V= Total market value of firm

D= Market value of debt

Equity cost of capital or overall capitalization rate can be calculated as;

$$\text{Cost of Equity or Capitalization rate } (K_e) = \frac{\text{Earnings after Interest and before tax}}{\text{Market value of firm- Market value of debt}}$$

Illustration-2

a) Net operating income a company is expecting is Rs.1, 00,000. It has Rs. 6, 00,000, 6% debentures. The overall capitalization rate is 10%. Calculate the value of firm and equity capitalization rate (cost of equity) according to the net operating income approach.
b) If debentures are increase to Rs. 8, 00,000. What will be the effect on the value of firm and the equity capitalization rate?

Solution:

Net operating income = 1, 00,000

Overall cost of capital is 10%

$$\text{Value of firm} = 1,00,000 \times \frac{100}{10} = 10,00,000$$

Value of firm	=	10, 00,000
Market value of debt	=	6, 00,000
Market value of equity	=	4, 00,000

$$\text{Cost of Equity or Capitalization rate } (K_e) = \frac{1,00,000 - 36,000}{10,00,000 - 6,00,000} \times 100$$

$$= 16\%$$

b) If debentures are increased to 8, 00,000, the value of firm will not change but cost of equity capital will increase to 26%.

$$\text{Cost of equity or capitalization rate } (K_e) = \frac{1,00,000 - 48,000}{10,00,000 - 8,00,000}$$

$$= \frac{52,000}{2,00,000} \times 100 = 26\%$$

9.3.3 THE TRADITIONAL APPROACH (INTERMEDIATE APPROACH)

Net Income Approach (NI) and Net Operating Income Approach are two extreme approaches. Traditional approach suggested by Ezra, Solomon and Fred is a mid way approach and is also known as intermediate approach. Traditional approach of capital structure states that there is right combination of debt-equity at which the weighted average cost of capital (WACC) is minimum and value of firm is maximum. As per this approach the debt should exist in the capital structure only up to specific limit beyond which the cost of capital would increase as the increased debt will increase the financial risk of the equity shareholders which subsequently increase the cost of equity capital and result in decrease in value of firm.

The traditional view point on the relationship between the leverage cost of capital and value of firm has been shown in the figure below;

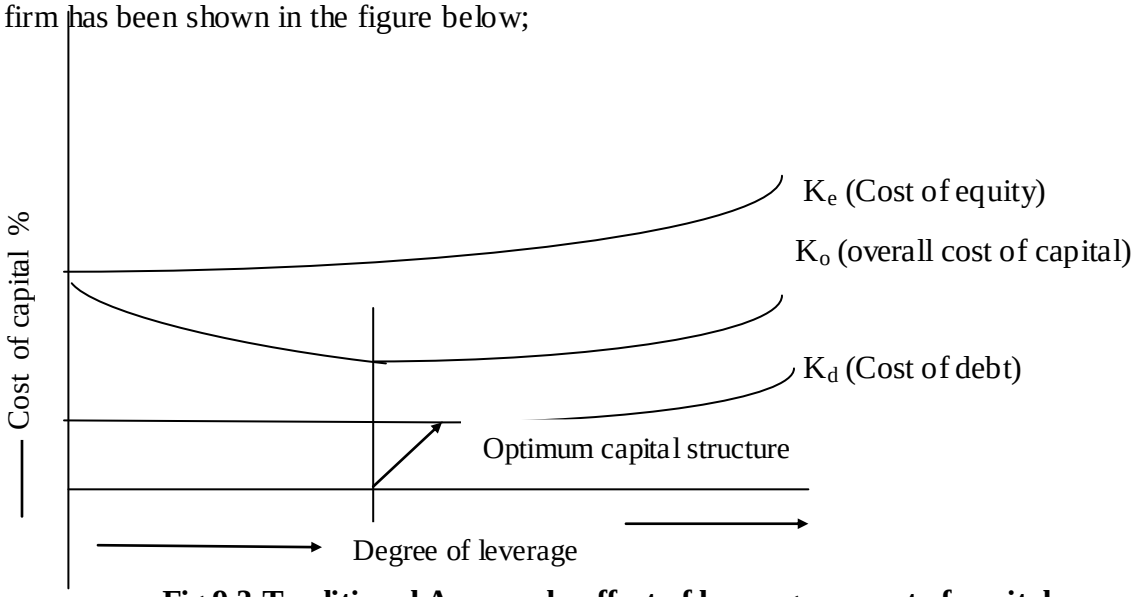


Fig 9.3 Traditional Approach: effect of leverage on cost of capital

Assumptions of Traditional Approach

1. The rate of interest on debt remains constant up to certain period and after that with increase in leverage cost of debt also increases.
2. The rate of return expected by equity shareholders remains constant or increase gradually. But after the optimal level financial risk increases and rate expected by equity shareholders increased rapidly.
3. As a result of the activity of rate of interest and rate of return the WACC of capital first decreases and then increases.

Illustration -3

Compute the market value of firm, value of shares and the average cost of capital from the following information;

EBIT	2, 00,000
Total investments	10, 00,000
Cost of equity	
a) No debt	10%
b) If firm uses Rs.4,50,000 debentures	11%
c) If firm uses Rs. 6,50,000 debentures	13%

Assume the Rs. 4, 50,000 debentures can be raised at 5% rate of interest where as Rs. 6, 50,000 debentures can be raised at 6% rate of interest.

Solution:

Calculation of market value of firm, market value of shares, Average cost of capital

	a) No Debt	b) 4,50,000 at 5%	c) 6,50,000 at 6%
EBIT	2,00,000	2,00,000	2,00,000
Less; Interest	-	22500	39000
Earnings available for equity shareholders	2,00,000	1,77,500	1,61,000
Cost of equity	10%	11%	13%
Market value of equity shares	2,00,000×100/10 = 20,00,000	2,00,000×100/11= 16,13,636	2,00,000×100/ 13= 12,38,461
Market value of debentures	-	4,50,000	6,50,000
Total value of firm	20,00,000	20,63,636	18,88,461

Average cost of capital = EBIT/ Total value of Firm	2,00,000/ 20,00,000 =10%	2,00,000/20,63,636 = 9.69%	2,00,000/18,88 ,461 = 10.59%

From above illustration it can be found that at 4, 50,000 debentures the value of firm is Rs. 20, 63,636 and cost of capital is 9.69% as the debentures increased to Rs. 6,50,000 the value of firm decreases to Rs. 18,88,461 and cost of capital increases to 10.59%.

9.3.4 MODIGLIANI AND MILLER APPROACH

M&M hypothesis is alike the Net operating Income approach if taxes are ignored. However, when taxes are assumed to exist, their hypothesis is similar to the net income approach.

a) In the absence of taxes. (irrelevance proposition) The theory proves that the cost of capital is not affected by the capital mix of the company or says that debt-equity mix has no impact on the total value of firm. The reason argued is that a debt is the cheaper source of finance than the equity and with the increase of debt in the capital structure as a source of finance, the cost of equity increases. And this increase of cost of equity offset the advantage of the low cost of debt. Thus, although the financial leverage affects the cost of equity, the overall cost of capital remains same. The theory emphasizes the fact that a firm's operating income is a determinant of its total value. This theory further states that after a certain limit of debt in the capital structure, the cost of debt increases but the cost of equity falls thereby balancing the two costs. M&M view states, two firms similar in all respects or two identical firms except in composition of their capital structure cannot have different market values or cost of capital because of arbitrage process. The shareholders of overvalued firm will dispose of their shares and will purchase the shares of undervalued firm and this process will go on till the two firms will attain the same market value.

Assumptions

1. There are no corporate taxes.
2. There is a perfect capital market.
3. Investors act rationally.
4. Dividend pay-out ratio is 100%
5. Expected yield/return of all the firms has identical risk factors.
6. The cut-off point of investment in a firm is a capitalization rate.

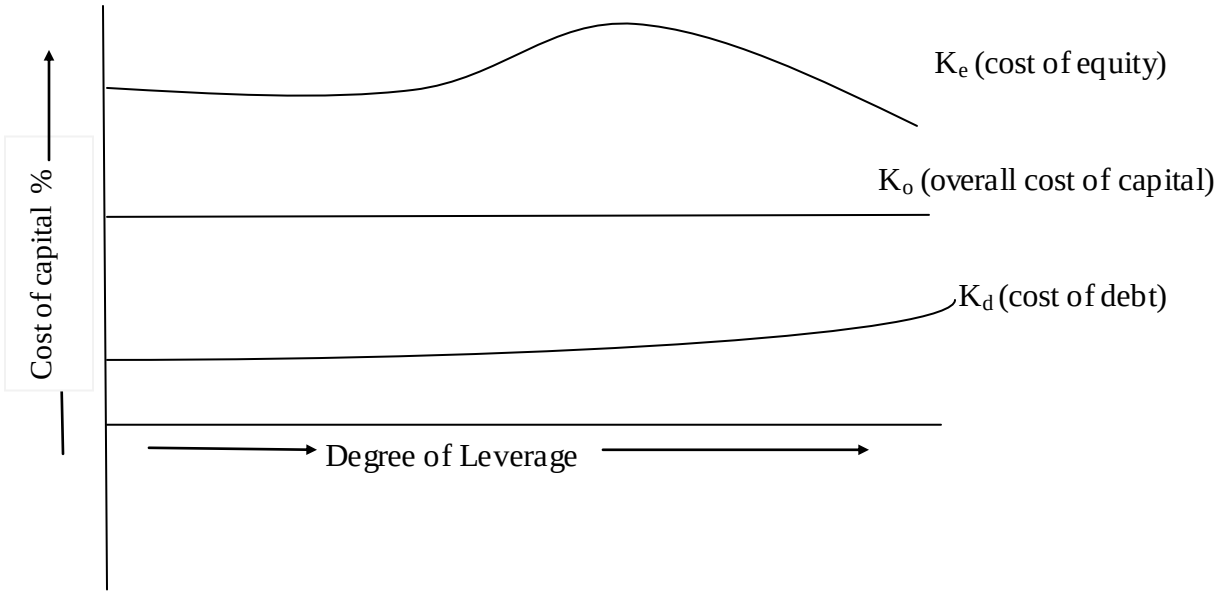


Fig 9.4 MM Theory of irrelevance: effect of leverage on cost of debt, equity and overall cost

Illustration -4

The given information available regarding Aspire Air Co. Ltd.

1. Aspire Ltd currently has no debt, it's totally Equity Company.
2. EBIT = Rs 24 Lakhs
3. There are no taxes , so T=0%
4. Company pays all its income as dividend.
5. If Aspire Ltd. begins to use debt, it can borrow at the rate of k_d = 9%. This rate is constant and independent of the amount of debt.
6. The required rate of return of shareholders K_e = 12% if no debt used.

Using MM model without taxes and assuming a debt of Rs. 1 crore, you are required to calculate.

a. Firm's total market value.
b. Firm's value of equity.
c. Firm's leverage cost of equity.

Solution :

a. Firm total market value

$V = \frac{EBIT}{K_e} = \frac{24,00,000}{.12}$ = 2 crore

b. Firm's market value of equity

S = V-D
= 2-1 = 1 crore

c. Firm's leverage cost of equity

Cost of equity + (cost of equity- cost of debt)
= 12% + (12%- 9%)
= 15%

b) When corporate taxes are assume to exist (relevance proposition). Modigliani and Miller in their article have recognized this that the value of firm will increase and cost of capital will decrease with the use of debt as interest on debt are the tax deductible expense. Thus the optimum capital structure can be achieved by maximizing the debt in the capital structure.

Value of unlevered firm (V_u) = $\frac{\text{Earnings before interest and tax}}{\text{overall cost of capital}}$ i.e. $\frac{EBIT}{K0}$ (1-t)

And, Value of levered firm is: $V_L = V_U + tD$

tD is the discounted present value of tax savings from the tax deductibility of interest charges , t is the rate of tax and D is the debt in the mix.

Value of levered and unlevered firm under the MM Model (assuming the corporate taxes exist) has been shown in the following figure.

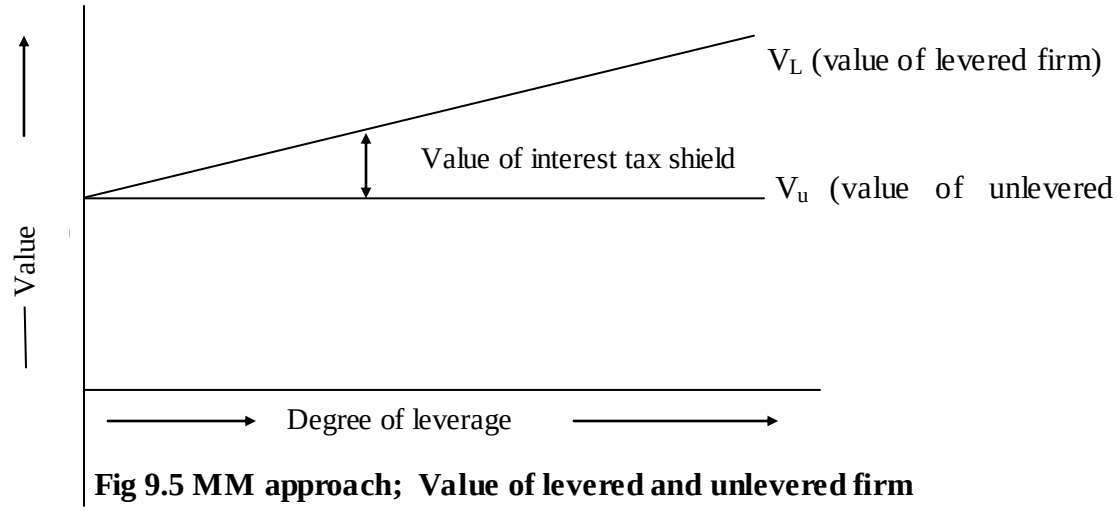


Fig 9.5 MM approach; Value of levered and unlevered firm

Illustration -5

There are two firms A and B identical in all respects except A does not use any debt financing, while B has Rs. 50,000 5% debentures in it capital mix. Both the firm have EBIT of Rs. 25,000 and equity capitalization rate is 10%. Assuming the corporation tax of 50% calculates the value of firm using M&M approach.

The market value of firm A which does not use any debt.

$$V_u = \frac{EBIT\,(1-t)}{K_0}$$

$$= \frac{25000}{10\%}\,(1-.5)$$

$$= \text{Rs. } 1,25,000$$

The market value of firm B which uses debt financing of Rs. 50,000

$V_L = V_u + t\,D$

$= 1,25,000 + .5 \times 50,000$

$= 1,25,000 + 25,000$

$= \text{Rs. } 1,50,000$

How does arbitrage process works

From the above illustration -5 we noticed that market value of firm B which uses debt financing also in its capital structure is higher than the market value of firm A which used only equity finance. According to M&M such situation cannot persist for a long period because of the arbitrage process. Equity investors of firm B will sell their equity and invest in firm A with personal leverage. When investors sell their equity in firm B and buy the equity in firm A , the market value of firm B will decline and market value of firm A tends to rise. This process continues until the market value of both the companies become equal because only then the possibility of earning a higher income, for a given level of investment and leverage, by arbitraging is eliminated. In arbitrage process, investors who switch their holdings will gain.

Illustration -6

The following is the data regarding two companies 'X' and 'Y' belonging to the same equivalent risk class;

	Company X	Company Y
Number of Ordinary shares	1,00,000	1,50,000
8% Debentures	50,000	-
Market Price per share	Rs. 1.30	Rs. 1.00
Profit before interest	Rs. 20,000	Rs. 20,000

All profits after paying debenture interest are distributed as dividends.
You are required to explain how under M&M approach, an investor holding 10% of shares in Company 'X' will be better off in switching his holding to company 'Y'.

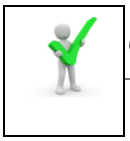
Solution; M&M approach holds the view that the two firms identical in all respects except the different capital structure cannot have different market values because the arbitrage process will take place and investor will engage in 'personal leverage' as against the 'corporate leverage' and derive the total value of two firms together. In the given problem, arbitrage will work out as below:

1. The investor will sell in the market 10% of shares in company X for Rs. 13,000 ($\frac{10}{100}\times$ 1,00,000×1.30)
2. Investor will raise a loan of Rs. 5,000 ($\frac{10}{100}\times$50,000) to take a advantage of personal leverage as against the corporate leverage as company Y does not use any debt content in its capital structure.
3. With total amount of Rs. 18,000 realized from 1 and 2 the investor will buy 18,000 shares in company 'Y'. Thus he will have 18,000 shares in company 'Y'.

The investor will gain by switching his holding as below;

	Rs.
Present income of the investor in company 'X';	
Profit before interest of the company	20,000
Less: Interest on debentures	4,000
Profit after interest	16,000
Share of the investor = 16,000× $\frac{10}{100}$	1600
Income of the investor after switching holding to company 'Y'	
Profit before interest for company	20,000
Less: Interest	nil
Profit after interest	20,000
Share of investor = 20,000 × $\frac{18,000}{1,50,000}$	2400
Less: interest paid on loan taken 8% of Rs. 5000	400
Net income of the investor	2000

As the net income of the investor in company ' Y' is higher than the income in company 'X' due to switching the holdings, the investor will gain switching his holding to company 'Y'.



Check Your Progress- A

Q1. What is capital structure?

Q2. What is optimal capital structure?

Q3. Name various theories of capital structure?

Q4. Discuss the relationship between leverage and cost of capital as per net income approach.

Q5. What are the assumptions of traditional approach?

Q6. Write a note on 'Arbitrage Process'.

Q7. A company is expecting a net income of Rs. 10,000. It has Rs. 50,000, 6% debentures. The cost of equity or capitalization rate is 10%. Calculate the value of the firm and overall capitalization rate according to the Net Income Approach.

9.4 CAPITAL GEARING

Capital gearing is the British term which states the amount of debt a company has relative to its equity. In United States capital gearing is also known as financial leverage. Companies with higher capital gearing will have large amount of debt relative to its equity. The Gearing ratio is the measure of financial risk and expresses the amount of company's debt relative to its equity.

The example given below illustrate clearly the terms of 'high gear' and 'low gear'.

Extracts of Balance sheet	(Rs.)	
Liabilities	X. Ltd	Y.Ltd.
Equity Share Capital	4,50,000	6,00,000
10%Preference share capital	2,50,000	2,00,000
7% debentures	3,00,000	2,00,000
Total Capitalization	10,00,000	10,00,000

The total capitalization of above two companies is the same, but the capital structure is different. X Ltd. is high geared as the ratio of equity capital in the total capitalization is only 45%. But Y Ltd. is low geared as its capital structure comprises of 60% equity capital and 40% of fixed income bearing securities.

Significance of Capital Gearing

A proper capital gearing is very important for the smooth running of an enterprise as it has a direct bearing on the divisible profits of a company. In a low geared company, fixed cost of capital by way of fixed dividend to preference shareholders and interest to debenture holders are low whereas in high geared company fixed cost is higher leaving lesser divisible profits for the equity shareholders.

Role of capital gearing in a company is as important as gears of an automobile. In automobiles, gears are used to maintain the desired speed. Initially, an automobile starts with low gear, but as soon as it gets momentum, the low gear is changed to the high gear to get better speed. Similarly, a company may be started with low gear i.e. high stake of equity share and as soon as the business gets the momentum, it may subsequently issue the fixed

cost securities i.e. preference shares and debentures. It may be noted that capital gearing affects not only the equity shareholders but the debenture holders, creditors, financial institutions, the financial managers and others are also affected with the capital gearing.

Capital Gearing and Trade Cycles

The techniques of capital gearing can be successfully employed by a company during various phases of trade cycles, i.e. during the conditions of inflation and deflation. The effect of capital gearing during various phases of trade cycle is discussed below;

1. During inflation or Boom period. During this period company should follow the policy of high gear as the profits of the company high and it can easily pay the fixed cost of debentures and preference shares. Further, during the boom period, the rate of earnings of the company is usually higher than the fixed rate of interest. By adopting the policy of high gear company can increase its earnings per share and thereby a higher rate of dividend.

2. During deflation and Depression period. During this period earnings of the company are low and it cannot meet the fixed cost without lowering the divisible profits and rate of dividend. It is, therefore, better for a company to remain in low gear and not to use the fixed interest bearing securities as source of finance during such period.

9.5 MARKET IMPERFECTIONS

There is a problem with M&M with-tax theory, because companies' capital structures are not always entirely made up of debt financing. Companies are discouraged from following this recommended theory because of the existence of factors like bankruptcy costs, agency costs and tax exhaustion. All factors which Modigliani and Miller failed to take in account.

Bankruptcy Cost

M&M approach assumes that there is a perfect capital market and therefore a company would always be able to raise funds and avoid bankruptcy. But in real world when a company employs more and more debt in its capital structure, financial risk of the company will increases. The major disadvantage of a company having high level of debt is that there is a possibility of company's failure on payment of its increased interest payments and hence being declared bankrupt. If shareholders and debenture holders become aware about the possibility of the bankruptcy risk, they will demand to be compensated for this additional bankruptcy risk. Therefore, the cost of equity and cost of debt will increase and therefore ultimately WACC will increase and share prices will reduce. It is interesting to note that shareholders are the one who are suffering from higher degree of bankruptcy risk as they come last in the creditor hierarchy on liquidation. The firm using the equity finance only may not have to face the bankruptcy cost because it may not pay the dividends to the shareholders if it has no sufficient profits. Although the use of debt provide the tax shield to the firm but the bankruptcy cost works against the advantage of leverage.

Agency Costs

Agency costs arise because of the conflict of interest between the principal and agents. In large companies, the fund providers (principals) are not able to actively manage the company. They employ 'agents' (managers) and it is possible for these agents to act in ways which are not always in the best interest of the equity holders or debt-holders. Since we are currently concerned with the issue of debt, we will assume there is no potential conflict of interest between shareholders and the management and that the management's primary objective is to maximize the shareholders wealth. Therefore, the management may take decisions that benefit the equity shareholders at the expense of the debt-holders. Management may raise funds from debt-holders stating that the funds will be invested in low-risk projects, but once they receive the funds they decide to invest in a high risk/high return projects. This action could potentially benefit shareholders as they may benefit from the higher returns, but the lenders would not get a share of the higher returns since their returns are not dependent on company performance. So to safeguard their investments, the suppliers of funds (lenders) put restrictive conditions in the loan agreement resulting into lesser freedom to the management (borrowers) in decision making called agency costs. These restrictive conditions include how much further debt can be raised, set a target gearing ratio, set a target current ratio, restrict the payment of excessive dividends, restrict the disposal of major assets or restrict the type of activity the company may engage in.

The agency costs increase with the increases of debt in the capital mix as more and more restrictions are put by the lenders to secure their investments in the firm. They may provide increased debt at a higher rate of interest. Thus a highly leveraged firm has more of agency costs as compared to a low geared firm.

Tax Exhaustion

Interest is tax-deductible expense means that as a company employs more debt (gears up), it's paying more interest and it shields more of its profits from corporate tax (reduce its taxable income). So the company can reduce its WACC by employing more debt over equity. But as a company use more debt and subsequently pay more interest , then at one time it reaches at a point where interest are equal to the profits and any interest payment beyond this level will not receive any tax relief.

This is the point where companies become tax - exhausted, i.e. interest payments are no longer tax deductible, as additional interest payments exceed profits and the cost of debt rises significantly from Kd (1-t) to Kd. Once this point is reached, debt loses its tax advantage and a company may restrict its level of gearing.

9.6 PECKING ORDER THEORY

The pecking order theory is in contrast to the other capital structure theories which are aimed to find the optimum capital structure by studying the trade –off between the advantages and disadvantages of debt finance. But in this theory, there is no search for an optimal capital structure. This theory was first suggested by Donaldson in 1961 and it was modified by Myers and Nicolas Majluf in 1984 (modified Pecking order theory) and made it more popular. According to Donaldson theory, a firm has well defined order of hierarchy for raising finance. They prioritize their source of financing (from internal to external) according to cost of financing, preferring to raise equity as financing means of last resort. So internal funds are used first. When they are depleted debt financing used and when it is not sensible according to managers to issue more debts then funds raised through the issue of equity shares.

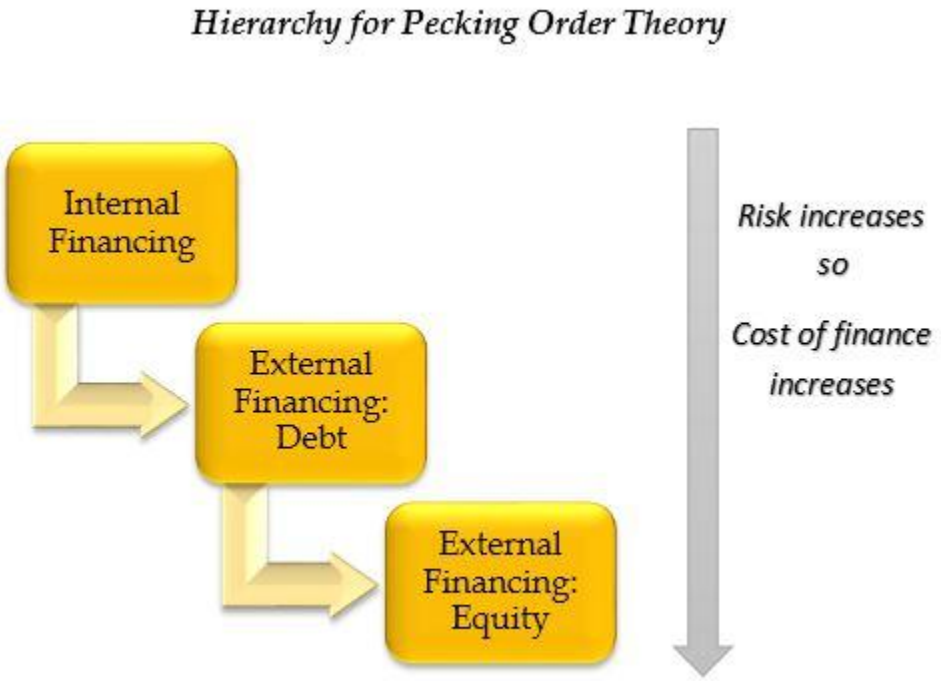


Fig 9.6 Hierarchy of Pecking Order Theory

Source: (https://efinancemanagement.com/financial-leverage/pecking-order-theory)

This order of preference is generally preferred because the internally generated funds have no issue cost and cost of equity issue is the highest. The theory presumes that;

i. The cost of using internally raised funds are minimum because they have no issue cost.
ii. Raising of debt is cheaper source of finance than the equity issue.
iii. Issue of new equity share involves heavy issue cost.
iv. Servicing of debt capital is relatively less as compared to servicing of equity capital.

The pecking order theory proposes that:

a) Firm's dividend policy decision depends upon its leverage position and investment decision.

b) Internally generated funds should be preferred than external financing.
c) If external financing is needed than debt should be preferred to equity.
d) Issue of new equity for raising additional funds is considered as a last resort.

According to the Modified Pecking order theory, as suggested by Myers in 1984, the order of raising finance arises because of the existence of asymmetric information between the market and the company. Asymmetric information is the unequal distribution of the information. The managers generally have more information about the true value of company's existing assets than the shareholders. Also managers know more about the true value of the company's potential investment project. So generally higher the asymmetry of information, higher is the risk in the company. Also, it is not possible for the shareholders to know everything about a company. So, there will always be some amount of information asymmetry in every company. If a creditor or an investor has less information about the company, he/she will claim higher returns against the risk taken. Along with providing higher returns, the company will have to incur costs to issue the debt and equity. So all these reasons make retained earnings a cheaper and convenient source of finance than external sources (debt and equity).

Signals from the choice of financing

Company decision to choose source of financing sends some signal in the market. If the company is financing itself through the retained earnings or internal financing it considered to be strong signal. It shows that company has enough funds to take care of its funding requirements. If firm raise funds through the debt issue then it is considered that management is confident enough that it will be able to meet its fixed expenses (interest payments). If the company finances itself through the equity issue then it is the negative signal. Equity issues are interpreted as a bad news, since company is motivated to make issue when the stock is overpriced. So all these logics are applied to develop the hierarchy of pecking order theory. This hierarchy should be followed while constructed the capital structure of the company.

Miscellaneous Illustrations

Illustration -7

Firm A has issued 12% of debentures of Rs.15 lakhs while B has issued only equity. Both the firms earn 30% before interest and taxes on their total assets of Rs. 25 lakhs. Assuming a tax rate of 50% and capitalization rate of 20% for an all-equity company, you are required to compute the value of two firms using 1) Net Income Approach, and 2) Net Operating Income Approach.

Solution;

Computation of total value of firms

1.

Net Income Approach	Levered Firm A	Unlevered Firm B
EBIT, 30% on Rs.25,00,000	7,50,000	7,50,000
Less; Interest on debentures	1,80,000	-
	5,70,000	7,50,000
Less: Tax at 50%	2,85,000	3,75,000
		3,75,000
Earnings available for equity shareholders	2,85,000	
Capitalized value of equity at 20%		-
Firm A : 2,85,000 $\times\frac{100}{20}$	14,25,000	18,75,000
		-
Firm B : 3,75,000 $\times\frac{100}{20}$	-	18,75,000
Add: value of debt	15,00,000	
Total value of firm	29,25,000	

2. Net Operating Income Approach;

Value of Unlevered Firm B (Vu) = $\frac{\text{EBIT (1-t)}}{\text{Ke}}$

= $\frac{\text{7, 50,000 (1-.5)}}{20\%}$

= Rs. 18, 75,000

Value of Levered Firm A(V_L) = V + t d

= 18, 75,000 + .5× 15, 00,000

= 18, 75,000 + 750,000

= Rs. 26, 25,000

Illustration -8

Levered Firm (L)

Value of levered firm = Rs. 1, 10,000

Equity = Rs.60, 000, Debt = Rs. 50,000

K_d = 5%, EBIT = Rs. 20,000

Investor holds 10% share capital

Unlevered Firm (U)

Value of un-levered firm = Rs. 1, 00,000

EBIT = Rs. 20,000

Investors hold 10% share capital

You are required to explain how under M&M approach, an investor holding 10% of shares in levered company will be better off in switching his holding to unlevered company.

Solution;

EBIT (L) = 20,000

Less: Interest ($50000\times\frac{5}{100}$) = 2,500

Profit after tax = 17,500

Share of investor 17,500× $\frac{10}{100}$ = 1750

Alternate Strategy

Sell share in levered company: 10% of 60,000 = 6000

Borrow (personal leverage) 10% of 50,000 = 5000

Total cash available = 11,000

Buy shares in (U) company

10% of 1, 00,000 = 10,000

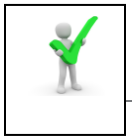
Return 10% of 20,000 = 2000

Less: interest on loan borrowed 5% of 5000 = 250

Net return available = 1750

Cash available 11000-10000 =1000

In the above situation if investor switches towards to the U company his return will remain the same and additional cash available to him is Rs. 1000.



Check Your Progress- B

Q1. Write a note on Pecking order theory of capital structure.

Q2. What do you understand by capital gearing?

Q3. What do you understand by 'high gear' and 'low gear'?

Q4. How do bankruptcy costs affect the company's capital structure?

Q5. What is 'Agency cost of Debt'?

Q6. What are principal- agent problem?

9.7 SUMMARY

Capital structure is defined as the way a company finances its operation through the combination of equity, debt or hybrid security. The importance of capital structure cannot be ignored as, any firm may it be small, medium or large firm. Different theories are discussed above stated the proportion of debt and equity mix used to attain the optimum capital structure. Optimum capital structure is the best mix of debt and equity financing that maximizes the company's share price and minimizes the cost. Debts are considered to be the cheaper source of finance than equity and use of debts reduce WACC. But companies need to avoid the situations of too little debt (where WACC can be decrease further) or too much use of debt (where companies suffer from bankruptcy cost, agency cost and tax exhaustion). Companies should be sensible enough while choosing the level of debt-equity mix. Companies should also be aware of Pecking Order Theory which totally ignores the search of an optimal capital structure. As per this theory, when company wants to raise finance it does so by using its retained earnings then debt financing and equity finance as a last resort.

9.8 GLOSSARY

Bankruptcy: A state in which a firm (or individual) is unable to meet its obligations and hence, its assets are surrendered to a court for administration.

Business Risk: The basic risks of company's operations

Capital Structure: The combination or weighting of different debts and equities used to finance a corporation.

EBIT: Abbreviation for earnings before interest and taxes.

Financial management: Financial management is the part of management activity which is concerned with the planning and controlling of firm's financial resources.

Financial Risk: the risk that arises when cash flow of an issuer will not be adequate to meet its financial obligations.

Financial Leverage: Amount of debt used in the capital structure of the company.

9.9 REFERENCES

- Prasanna Chandra (2003). Financial Management, theory and practice: Tata Mcgraw Hill
- I M Pandey (2005).Financial Management: Vikas Publishing House.
- M.Y Khan, P.K Jain (2013). Financial Management, Text Problem cases: Tata McGraw Hill.
- https://efinancemanagement.com/financial-leverage/pecking-order-theory
- https://www.accaglobal.com/in/en/student/exam-support-resources/fundamentals-exams-study-resources/f9/technical-articles/optimum-capital-structure.html
- https://www.wallstreetmojo.com/capital-gearing-ratio/
- http://shodhganga.inflibnet.ac.in/bitstream/10603/5253/10/11_chapter%203.pdf
- https://efinancemanagement.com/financial-leverage/capital-structure-theory-traditional- approach

9.10 SUGGESTED READINGS

1. "Prasanna Chandra", Projects-Planning Analysis, Selection, Financing, Implementation and Review, 6th edition, 2006.
2. "Gopalakrishnan", Project Management, TMH, 2007.
3. "H.R.Machiraju", Introduction to Project Finance, Vikas Publications, 2005.
4. "Bhavesh.M.Patel", Project Management, Vikas Publication, 2007.
5. "Samnel.J.Montel, Jack.R.Meredith an Scott.M.Shafer Margaret .M.sutton with M.R.Gopalan", Project Management,1st edition, Wiley India, 2006.
6. "Narendra singh", Project Management Control, 4th Revised edition, Himalaya Publishing House, 2007.
7. "Narendra Singh", Problems & solutions in Project Management and Control, 3rd edition,"Himalaya Publishing House, 2007.
8. "Prasanna Chandra", Project Management, TMH,2007.
9. "Chowdry", Project Management, TMH,2007.
10. "Clifford.F.Gray, Erik.W.Larson", Project Management the Managerial Process, 3rd edition
11. Basic Financial Management: M.Y. Khan and P.K. Jain, New Delhi, TMH 2000.

12. Financial Management: I.M. Pandey.

13. Financial Management: Theory and Practices- Prasanna Chandra.

14. Financial Management: Khan and Jain.

9.11 TERMINAL AND MODEL QUESTIONS

Q1. Give a critical appraisal of the traditional approach and the Modigliani- Millers approach to the problem of capital structure.

Q2. What do you understand by capital gearing? What is its significance?

Q3. Discuss the effects of high and low gearing on the financial position of company during various phases of trade cycle.