

Unit - 2

Objectives

The objectives of this unit are to

- understand the concept of leverage in finance and its types
- cognizant with capital structure, optimal capital structure, factors affecting capital structure and capital structure theories.
- commiserate with dividend policy and dividend theories

Introduction

The word 'Leverage' is a scientific term generally used in physics which means providing extra force/power to lift heavy weight with the help of lever. In other words if leverage force is not applied the accomplishment of certain purpose will be difficult. Concept of leverage is applicable in economic theory also. In finance discipline, the word leverage describes using borrowed funds and other assets by a company to create value for owners. In finance theory two types of leverage are used to increase the value of firm. First one is operating leverage which is concerned with the use of fixed cost assets and second one is financial leverage which occurs when the firm uses of fixed cost source of fund like debentures or bonds. The funds may be raised in the form of equity and debt. Finance manager has to show rationality while deciding the composition of debt and equity capital. Although total earnings of firm have no relationship with capital structure but earning per share is significantly affected by capital structure decisions. Fixed cost debt is used by a firm to increase earnings for common shareholders. Further, finance managers calculate composite leverage by combining both leverages to determine combined effect on earnings of the firm.

2.1 Financial Leverage/Trading on Equity

Financial Leverage: The capacity of a firm to use debt capital to increase earnings per share is called financial leverage. The coefficient of financial leverage measures the effect of a change in operating income on change in earning on equity share. It is computed by the following formulae

Degree of financial Leverage= $\frac{EBIT}{EBT}$ or $\frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$

Application of Financial Leverage: Knowledge of financial leverage is helpful to take the following decisions by financial manager:

- Planning of Capital Structure:** A finance manager apply the knowledge of financial leverage to analyze effects of debt on average cost of capital and financial risk while designing the capital structure of the firm i.e. proportion of debt and equity capital.
- Profit Planning:** Financial leverage has a strong bearing on EPS. In the time when the firm's profitability curve is shooting up then use of cheaper debt will enhance the availability of profits for owners. Finance executives use break-even analysis to understand financial leverage and profit planning.

2.2. Operating Leverage: Operating leverage is firm's capacity to use operating costs to increase the effects of changes in sales on its operating profit. When a firm incurs fixed costs in the production of goods/services operating leverage occurs. Higher proportion of fixed cost in total cost leads to higher degree of operating leverage and it invites more business risk. Formulas used to compute degree of operating leverage

a) When data is given for one year only

$$\text{Operating Leverage} = \text{Contribution} \div \text{EBIT (operating profit)}$$

b) When data is given for more than one year and comparison is possible

$$\text{Degree of Operating Leverage} = \text{Percentage change in EBIT} \div \text{Percentage in Sales}$$

Application of Operating Leverage: Business risk of a company is affected by operating leverage. A finance manager uses operating leverage to assess the business risk. When a firm has more share of fixed cost in its total costs of production, the percentage change in profits is more than the percentage change in sales, when sales volume rises high operating leverage is good. Opposite when the sales volume declines, the negative percentage change in profits is larger than the decline in sales then high operating leverage amplifies losses and causes large business risk for a company. Operating leverage serves as a tool to know future profitability of the firm and the level of risk.

2.3. Composite Leverage

The sum of both financial and operating leverage is named as combined/composite leverage. Composite leverage indicates the effect of both fixed costs and fixed financial charges (total risk) on the entire income of the firm. Further high degree of one leverage may be offset against low degree of other leverage and vice-versa.

$$\text{Degree of Composite Leverage} = \% \text{ change in EPS} \div \% \text{ change in Sales}$$

$$\text{Or, Degree of Composite Leverage} = \text{Operating Leverage} \times \text{Financial Leverage}$$

Example: Visaka Ltd. made sales of Rs 80 lakhs with variable costs of Rs. 56 lakhs and fixed cost 16 lakhs. The company issued 10% debentures of Rs 40 lakhs for technology upgradation. Compute all three leverages from above information

Particulars	Rs. (000)
Sales	80,00
Less: Variable Cost	<u>56,00</u>
Contribution	2400
Less: Fixed Cost	<u>1600</u>
EBIT	800
Less: Interest	<u>400</u>
EBT	400

SOLUTION:

$$\begin{aligned} \text{i) Operating Leverage} &= \text{Contribution} \div \text{EBIT} \\ &= 2400/800 = 3 \end{aligned}$$

Interpretation: Operating leverage of 3 indicates that 1% change in sales is likely to result in 3% of change in earnings before interest and tax.

$$\text{ii) Financial Leverage} = \text{EBIT} \div \text{EBT} = 800/400 = 2$$

Interpretation: The financial leverage of 2 indicates that 1% change in EBIT is likely to cause a change of 2% in the net income of the company.

$$\begin{aligned} \text{iii) Combined Leverage} &= \text{Operating leverage} \times \text{Financial leverage} \\ &= 3 \times 2 = 6 \end{aligned}$$

Interpretation: Combined leverage of 6 indicates that 1% change in sales is likely to result in 6% change in net income of the company.

2.4 Capital Structure: Capital structure is that part of financial structure of a company which represents all long-term sources of finance equity shares, preference shares, debentures/ bonds and reserves except all short-term credit. Financial structure includes both long-term as well as short-term sourced of funds by which assets of company are financed. Hence, capital structure is only a part of financial structure of a firm. In simple words capital structure refers to the composition of capitalization i.e. proportion between debt and equity.

Financial Break Even Point (FBEP): It is the point where EBIT and total financial charges (interest and preference dividend) are equal. At this point the earnings per share is zero. FBEP is a financial tool in the hands of manager to design optimal capital structure of a firm. If EBIT is less than FBEP, then EPS will be negative and it gives a signal to reduce debt and preference share capital of the firm. When EBIT is more than FBEP debt and preference share capital may be included in the capital structure.

Point of Indifference: It is that level of EBIT at which EPS remain unchanged irrespective of change in debt-equity mix. The return on capital employed and cost of debt are same at this level of EBIT. It works as breakeven level of EBIT for alternative financial plans. The following equation is used to compute point of indifference:

$$\frac{(X - I_1)(1 - t) - PD}{S_1} = \frac{(X - I_2)(1 - t) - PD}{S_2}$$

Where, X = Equivalency Point or Point of Indifference or Break Even EBIT Level.

I_1 = Interest under alternative financial plan 1.

I_2 = Interest under alternative financial plan 2.

t = Tax Rate

PD = Preference Dividend

S_1 = Number of equity shares or amount of equity share capital under alternative 1.

S_2 = Number of equity shares or amount of equity share capital under alternative 2.

2.5 Optimal Capital Structure: The value of firm is more or less influenced by the capital structure decision i.e. through the cost of capital and financial leverage. The optimum capital structure of a company may be defined that proportion of debt and equity which maximize its value. In layman language Optimal capital structure is the one which minimize its cost and maximize the value of firm/wealth of owners. Thus, finance managers of every firm try to obtain optimal level of capital structure and maintain it. The following points are adhered to try optimal capital structure level:

- i) The firm can use more debt capital if it is cheaper or cost of debts is less than return on capital employed to enhance EPS and market value of firm.
- ii) To take advantage of tax leverage a firm can use borrowed funds as interest is allowed as a deductible expense.
- iii) **Equity shareholders may perceive** financial risk by using more debt capital and that leads to fall in the market price of shares.
- iv) The capital structure should be flexible.

Features of an Ideal Capital Structure

1. **Profitability:** The most profitable capital structure is one that should generate maximum returns to owners without adding additional costs. In other words it should minimize cost of financing and maximize EPS.
2. **Flexibility:** Capital structure must not be rigid rather it ought to be flexible. Changes can be made in the components of capital structure as the situation demands
3. **Conservation:** Conservative capital structure means debt component in the capital structure should not exceed the limit of debt capacity.
4. **Solvency:** Solvency of the firms at risk when excessive debts are raised particularly in down turn of economy. Ratio of borrowed and equity funds be such that firm's solvency is maintained.
5. **Control:** Design of capital structure must not hamper the controlling power of common shareholders.

2.6 Factors Determining Capital Structure

Caring the objective of wealth maximization trade-off among different factors is required to design capital structure of a firm. The following factors are considered while designing optimal capital structure of a company:

1. **Financial leverage:** Inclusion of debt and preference share capital to enhance earnings for owners should done with caution . Financial leverage never be allowed to operate adversely.

2. Growth and Stability of Sales: If the sales curve of a firm indicates stability or growing it can raise more debts because it will not be difficult to such firm to pay interest and repayment of debts. Opposite if the sales curve of a firm is fluctuating or declining, it should avoid debt in its capital structure.

3. Cost of Capital: Overall cost of various sources of funds is called cost of capital. While mulling an idea to form optimal capital structure, every effort be made to minimize overall cost of capital.

4. Risk: The exercise of forming capital structure require assessment business risk and financial risk . A firm should follow balancing approach between the financial risk (arise by debt) and the risk of (non-employment of debt capital) to increase its market value.

5. Cash Flow Ability to Service Debt: A firm can raise more debt in its capital structure if it generates huge and constant cash inflows by its operations in contrast to that has unstable and lesser capacity to generate cash inflows.

6. Nature and Size of a Firm: Nature means firm is public utility or others and size refers small, medium or large. Public utility firms have more borrowed funds in their total capital because of stable, constant cash inflows/earnings contrast to others with fluctuating earnings/cash inflows rely mainly on equity capital. Small companies mainly depend upon equity finance comparing to large which have ways to raise debt on soft terms.

7. Control: Raising new equity capital dilutes the control of the existing shareholders. Debt financing is better option not to disturb the controlling power of common shareholders.

8. Economic Cycles: Economic cycles have strong impact on capital structure at a given point of time. In a depressed and pessimistic cycle debt financing is only the choice for company whereas in boom period, better response comes from equity investors.

9. Corporate Tax Rate: Employing more debt capital is better option when corporate taxes are levied at high rate, as interest is allowed as deductible expense and cost of raising debt is deductible in the year in which it is incurred.

2.7 Theories of Capital Structure

Financial wizards propounded principles and approaches on the basis of their research the effect of cost of capital on the value of the firm. Durand, Ezra, Solomon, Modigliani and Miller are chiefly propounders theories of capital structure. These are clubbed in the following four groups

1. Net Income Approach (Relevant)
2. Net Operating Income Approach. (Irrelevant)
3. The Traditional Approach (Neutral)
4. Modigliani and Miller Approach (Irrelevant)

1. Net Income Approach. According to this perspective by employing more debt funds, cost of capital decreases and value of firm increases. In support of above statement it assumptions are:

- (i) The cost of equity is more than the cost borrowed funds and cost of debt and equity remains constant.

ii) Non existence of corporate taxes.

(ii) By employing debt, equity investor's perception regarding financial risk unchanged.

The following figure reflects the effect of leverage on cost of capital as per Net Income approach:

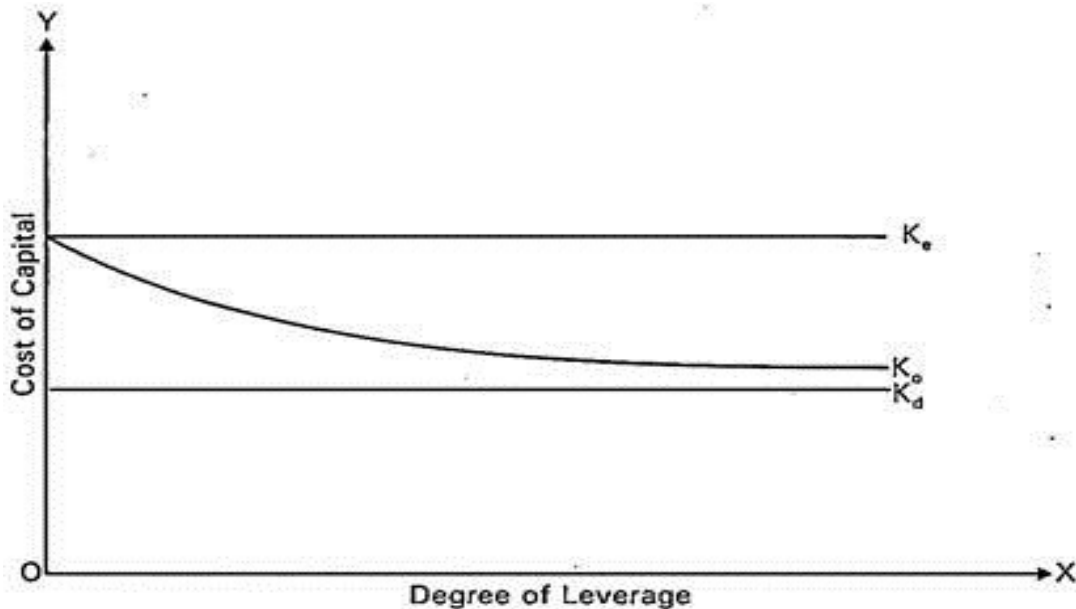


Fig. The effect of leverage on the cost of capital under NI Approach.

The following equation is used to derive market value of firm as per NI approach

$V = S + D$ Where, V stands for total market value of a firm, S stands for market value of equity capital and D stands for market value of debt

Suppose a company has expected EBIT of Rs.100,000. Cost of equity capital is 8% and it has Rs. 6% debentures of Rs.5,00,000. The value of firm as per NI theory is computed as:

$$\text{EBIT} = 1,00,000$$

$$\text{Interest on debentures or cost of debentures} = (5,00,000 \times 0.06) = 30,000$$

$$\text{Residue Income of equity shareholders, EBIT minus Interest} = \text{Rs } 70,000$$

$$\text{Market value of equity (Rs. } 70,000 / 0.08) = 8,75,000$$

$$\text{Market value of debentures (Rs. } 30,000 / 0.06) = 5,00,000$$

$$V = S + D \quad 13,75,000 = 8,75,000 + 5,00,000$$

$$\text{Overall cost of capital } K_o = \text{EBIT} / V = 100,000 / 13,75,000 = 0.072 = 7.2\%$$

2. Net Operating Income Approach. This approach is just opposite to the net income approach. It states that cost of capital and market value of firm remain unchanged irrespective of change in debt equity ratio in the capital structure of a firm. It rejects the idea of optimal capital structure. Assumptions of this approach are:

- (i) The value of the firm as a whole is maximize by the market.
- (ii) Cost of debt and overall cost of capital remain constant.
- (iii) Market value of equity is residue and there are no corporate tax exists.
- iv) The use of debt increase the risk perception of equity investors, thereby cost of equity increases
- v) The whole cheap debt advantage is offset by the increased cost of equity.

The following figure reflects the effect of leverage on the overall cost of capital as per NOI theory:

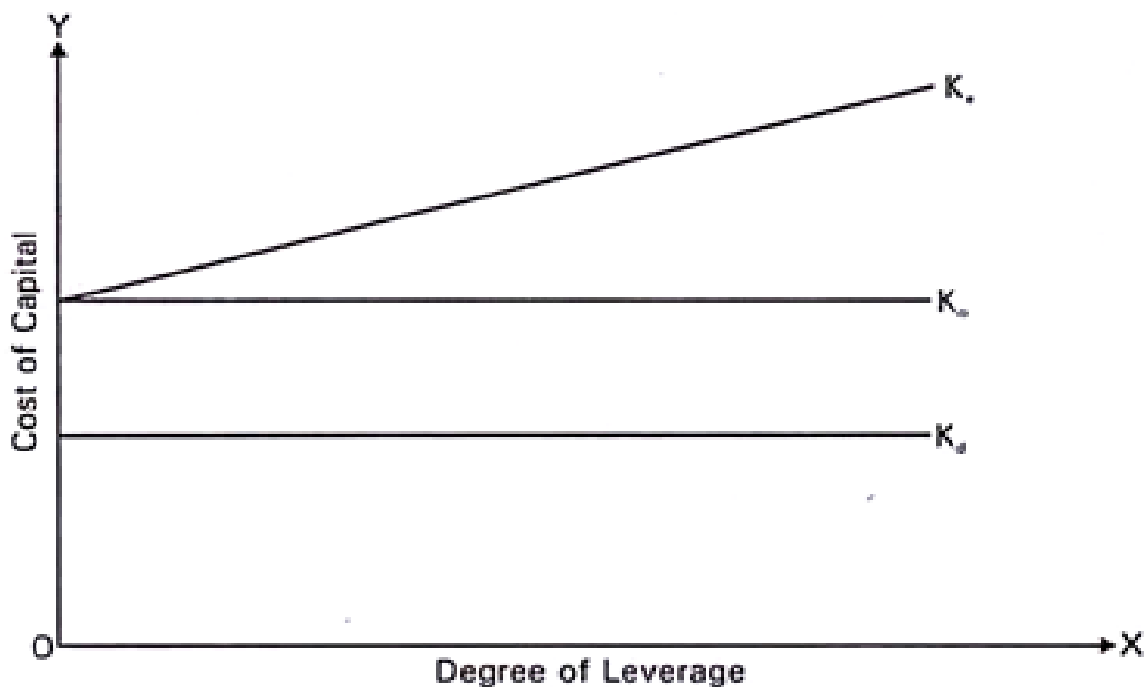


Fig. The effect of leverage on the cost of capital under NOI Approach.

The value of a firm according to NOI theory is computed as:

$$V = \frac{EBIT}{K_O} \quad \text{Where, } V \text{ stands for value of firm, EBIT stands for net operating income, } K_O \text{ stands for overall cost of capital}$$

The market value of equity, which is residue is derived by deducting the market value of debt from the total market value of the firm.

$$\text{Cost of equity } (K_e) = \frac{\text{Earnings after Interest and Before Tax}}{\text{Market Value Of Firm} - \text{Market Value of Debt}}$$

Example: A company expects EBIT of ₹1,00,000. It has borrowed ₹5,00,000, at 6% interest. Its overall cost of capital is 10%. The value of the firm and cost of equity as per NOI theory is computed as

EBIT = 1,00,000

Overall cost of capital = 10%

Market Value of the firm (V) = EBIT/overall cost of capital

= 1,00,000 /10% = ₹10,00,000

Total Market Value of Equity = Market Value of firm **minus** Market Value of Debentures

=10,00,000-500,000=Rs 5,00,000

$$\text{Equity capitalization } (K_e) = \frac{\text{Earnings after Interest and Before Tax}}{\text{Market Value Of Firm} - \text{Market Value of Debt}}$$

=70000/500000=.14 or 14%

3. The Traditional Approach. According to this theory initial use of cheap debt increases the value of the firm and decreases the cost of capital but beyond a certain level of employing debt the cost of equity increases by perceived financial risk of common shareholders. Thus the advantage of cheaper debt at this level of capital structure is offset by increased cost of equity. After this there comes a stage, when the increased cost of equity cannot be offset by the advantage of low-cost debt consequently, cost of capital rise and value of firm comes down. The traditional approach of capital structure is reflected by the following figure:

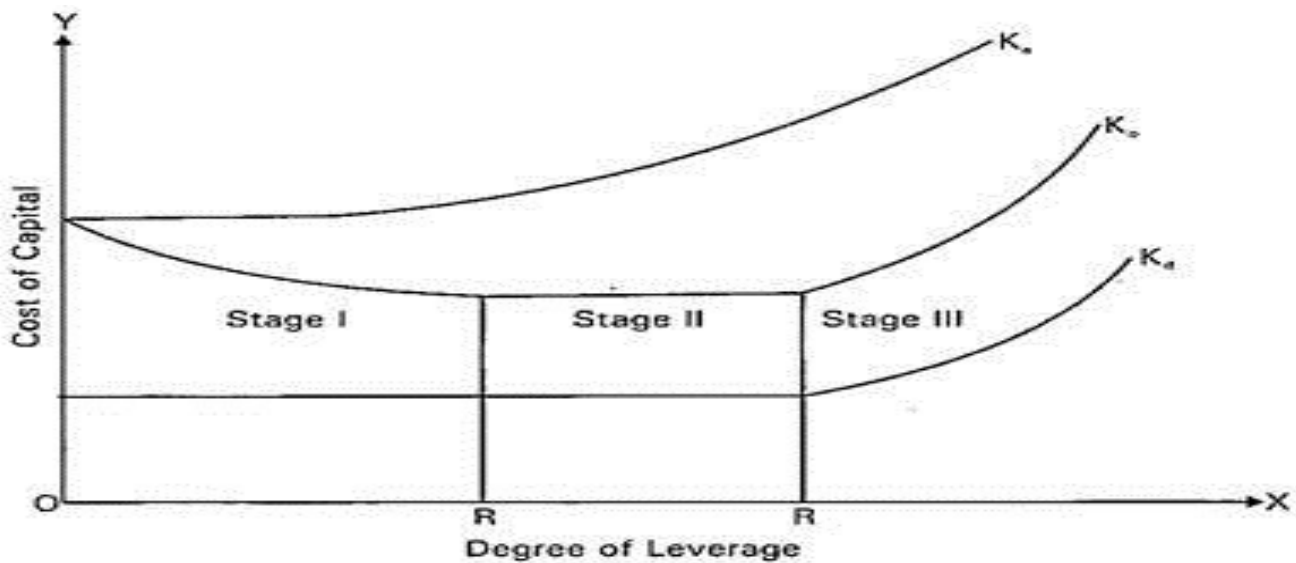


Fig. Traditional Approach.

Example: A company's (EBIT) is ₹8,00,000. It has ₹20 lakhs of 10% debt outstanding. Its cost of equity is 15%. The company is considering increasing its debt by raising additionally ₹10 lakhs and

utilizing these funds to retire the amount of equity. However, due to increased financial risk, the cost of entire debt is likely to increase 12% and the cost of equity 18%. Calculate the market value of the company using traditional model.

Computation of Market Value of the Company

	Present ₹20 lakhs Debt @ 10%	Proposed ₹30 lakhs Debt @12%
Net Operating Income (EBIT)	8,00,000	8,00,000
Less: Interest on Debt	<u>2,00,000</u>	<u>3,60,000</u>
Earnings available to equity shareholders	<u>6,00,000</u>	<u>4,40,000</u>
Equity capitalization rate	15%	18%
Market Value of Shares (Earnings/Cost of Equity)	40,00,000	24,44,444
Market Value of Debt	<u>20,00,000</u>	<u>30,00,000</u>
Market Value of Firm	₹60,00,000	₹54,44,444

4. Modigliani and Miller Approach. M&M hypothesis is identical with the Net Operating Income approach if taxes are ignored. However, when corporate taxes are assumed to exist, their hypothesis is similar to the Net Income Approach.

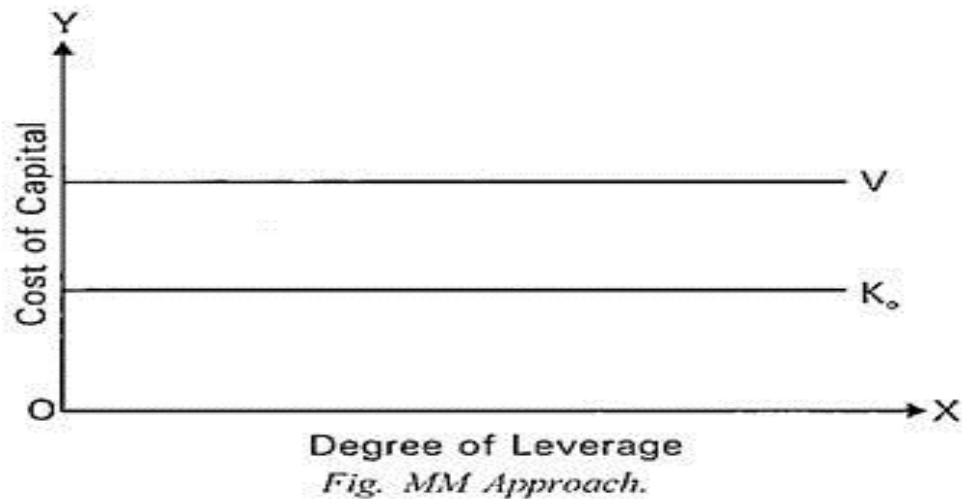
(a) **In the Absence of Taxes. (Theory of Irrelevance)** “The theory proves that the cost of capital is not affected by changes in the capital structure or says that the debt-equity mix is irrelevant in the determination of the total value of a firm. The reason argued is that though debt is cheaper to equity, with increased use of debt as a source of finance, the cost of equity increases. This increase in cost of equity offsets the advantage of the low cost of debt. Thus, although the financial leverage affects the cost of equity, the overall cost of capital remains constant. The theory emphasizes the fact that a firm's operating income is a determinant of its total value. The theory further propounds that beyond a certain limit of debt, the cost of debt increases (due to increased financial risk) but the cost of equity falls thereby again balancing the two costs. In the opinion of Modigliani & Miller, two identical firms in all respects except their capital structure cannot have different market values or cost of capital because of arbitrage process. In case two identical firms except for their capital structure have different market values or cost of capital, arbitrage will take place and the investors will engage in ‘personal leverage’ (i.e. they will buy equity of the other company in preference to the company having lesser value) as against the ‘corporate leverage’; and this will again render the two firms to have the same total value.”

The M&M approach is based upon the following assumptions:

- (i) Absence of corporate tax, transaction cost.
- (ii) Presence of perfect market and investors are rational and free to buy or sell securities.
- (iii) Hundred percent dividend pay out
- (iv) Investors can borrow on the same terms on which a firm can borrow without restrictions.

(v) EBIT is not affected by the use of debt

MM approach in the absence of taxes, i.e the theory of irrelevance of financing mix has been presented in the following figure.



Source: <http://www.shareyouressays.com/4-important-theories-of-capital-structure-explained>

Example: The following information is available regarding S Ltd. company:

It is an all equity firm but it can borrow at 10% constantly any amount. Funds raised by borrowings will be used to retire equity capital. Expected EBIT = 30 lakhs. Its equity capitalization rate is 14 %. Company borrows Rs. 2 crores. Using MM Model without corporate taxes:

- a) Compute firm's total market value and market value of equity;
- b) Compute firm's leverage cost of equity.

Solution

(a) Firm's Total Market Value:

$$V = \text{EBIT} / k_e = 30,00,000 / .14 = \text{Rs } 21,428,571$$

(b) Firm's Market Value of Equity:

$$S = V - D = 21,428,571 - 200,00,000 = \text{Rs. } 14,28,571$$

(c) Firm's Leverage Cost of Equity :

$$\begin{aligned} &= \text{Cost of Equity} + (\text{Cost of Equity} - \text{Cost of Debt}) \\ &= 14\% + (14\% - 10\%) \\ &= 18\% \end{aligned}$$

Source <http://sdeuoc.ac.in/Financial%20Management.pdf>

(b) When Corporate Taxes exists (Theory of Relevance): The second version of M M approach recognize the concept of optimal capital structure and states that employment of debt will create value for the firm and reduce the cost of capital as interest on debt is allowable expenses for corporate tax purpose. Value of debt employing firm would exceed that of the non debt employing firm by an amount equal to an amount of debt (debt employing firm) multiplied by the tax rate. Formulas for computing firm's value as per this approach are:

$$\text{Value of non employing debt (unlevered Firm) } V_U = \frac{EBIT}{K_0}(1 - t)$$

$$\text{Value of debt employing firm (levered Firm): } V_L = V_U + Dt$$

t= Tax rate

D = Debt of levered firm

Example: L and U firms are identical but U does not use any debt, while L has Rs. 1,00,000 5% Debentures in its balance sheet. Both firms have an EBIT of Rs.50,000 and their equity capitalization rate is 10%. Corporate tax rate is 50%. Calculate the value of the firms using M & M approach.

Solution: The market value of firm U (unlevered firm) which does not use any debt

$$V = EBIT \div K_0(1-t) = 50,000 / .10 \times (1-.50) = \text{Rs.}250,000$$

The market value of Firm L(levered) which has debentures of Rs. 1,00,000

$$V_L = V_U + D_T$$

$$= 250,000 + 0.5 \times 1,00,000$$

$$= 250,000 + 50,000 = \text{Rs.} 300,000.$$

Arbitrage Process under MM Approach: In above example the market value levered firm is higher than the market value of unlevered. As per M & M theory, this situation will change because of the arbitrage process. The investors of 'L' earning high rate of return will sell their shares and invest the same in company 'U'. Further, 'U' does not use any debt, perceived financial risk will be less, investors will borrow additional funds equivalent to their proportionate share in firm 'L's debt at the same rate of interest and invest the borrowed funds also in company 'U'. The arbitrage process will continue till the prices of shares of company 'L' falls and that of company 'U' rise so as to make the market value of the two firms same. Investors who switch their holdings from 'L' to 'U' benefited by arbitrage process.

2.8 Dividend Decisions

Dividend is that part of net profits which is divided among common shareholders of company. Dividend is one type of reward to the equity shareholders for risky investments. On one hand ordinary shareholders want maximum part of profits in the form of dividend but on the other hand, firm requires these profits for growth and expansion. If a company pays out its maximum profits as dividend, then for further financial requirements it has to depend on external resources of finance such raising new debts/ equity shares etc. The firm's decision to pay all profits as dividends or not to pay at all or some portion

of profit be retained in the business and leftover be distributed as dividends are covered under dividend decisions. Dividend policy of a firm decides what proportion of total net earnings be retained/plough back in the firm and what proportion be distributed as dividend to the equity shareholders. Dividend decision affects the value of the firm. Payment of dividends depends on firm's investment and financing decision.

Dividend Decisions and Valuation of Firms: The impacts of dividend decisions on the value of firm have drawn the attention of researchers in the past. On the basis of results of their research two conflicting views were formed namely, dividend payment affects the value of firm, dividend payout have no impact on the value of firm. We will discuss above views under the head, the relevance and irrelevance theory of dividend.

1. Relevance Theory of Dividend: The advocates of this theory (Myron Gordon, Jone Linter, James Walter and Richardson) hold that the value of the firm is affected considerably by its dividend policy. Accordingly high payment of dividend increases the value of firm while low dividend payment decreases firm's value. Two prime relevancy theories of dividend propounded by Walter and Gordon are explained below:

(i) Walter Approach: Prof. Walter's model support the view that dividend decisions/policy of a company affects its value. "The model is based on the relationship of 'r' internal rate of return/return on investment and 'k' cost of capital/required rate of return. According to Walter, If $r > k$ the firm should retain the entire earnings. Such firms are termed as growth firms and the optimum pay-out would be zero in their case. This would maximize the value of shares/firm. Where $r < k$ the firm would distribute its earnings. Such firms are termed as decline firm/ having no opportunity for profitable investment. The firms should distribute the entire earnings as dividend. In case of normal firms where $r = k$. For such firms, there is no optimum dividend payout and the value of the firm would not change with the change in dividend rate".

Assumption of Walter's Model

- i) Retained earnings are the only source for investments. No use external sources of funds.
- ii) The internal rate of return (r) and the cost of capital (k) of the firm are constant
- iii) Beginning earnings and dividends never change while determining the value.
- iv) The firm has perpetual life.

Walter's equation to derive market price of a share:

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

Where,

P = Market price per share

D = Dividend per share

r = Internal rate of return

E = Earnings per share

k = Cost of capital

Example: Z Ltd provides the following information to know the impact of dividend payout on the market price of share:

Capitalization rate = 9%

EPS = Rs. 20

Rate of return = 7%

Dividend payout ratio: Case A= 40%, Case B= 20%

SOLUTION:

Case A: D/P ratio = 40%

EPS =Rs. 20 then

DPS = Rs.8

$$P = 8 + (.07/.09)(20-8) \div .09$$

$$= \text{Rs. } 111.70$$

Case B:

D/P ratio = 25%

EPS = Rs. 20

then DPS = Rs. 5

$$P = 5 + (.07/.09)(20-5) \div .09$$

$$= \text{Rs. } 134.60$$

Criticism of Walter's Model: Walter's attracts criticisms because of wrong assumptions i.e. financing through retained earnings only, constant rate of return and cost of capital. These assumptions do not hold good.

(ii) Gordon's Approach: As per Gordon model a firm's share price is dependent on its dividend payout ratio. The model is also based on the relationship of 'r' return on investment and 'k' cost of capital. "Accordingly when $r > k$, the share price decreases with decrease in the retention ratio or increase in dividend payout ratio. Thus optimal dividend payout ratio is zero for growing firm. If $r = k$, the share price remain unaffected with decrease in retention ratio or increase in dividend payout ratio. Thus, for a normal firm there is no optimum dividend payout. When $r < k$, the share price increases with decrease in retention ratio and increase in dividend payout ratio. Thus, the optimum payout ratio is hundred percent for declining firm." For share valuation he has applied dividend capitalization approach with following assumptions:

- i) The firm has only equity in its capital structure.
- ii) Return on investment remains constant.
- iii) The retention ratio is constant.
- iv) Growth rate of the firm constant.
- iv) The cost of capital remains constant and it is more than growth rate
- v) Absence of corporate taxes.

Gordon's share valuation formula is:

$$P = \frac{E(1-b)}{k-b.r}$$

Where, P= Price of shares

E= Earnings per share

b= Retention ratio

k = Cost of equity capital

b.r =Growth rate X rate of return on investment of an all-equity firm.

Example: John Ltd. provides the following information to compute the market price of share as per Gordon model

Capitalization rate = 15%

EPS = Rs. 10

Return on investment = 14%

Retention ratio: Case A= 40% Case B= 60%

Case A $P = \frac{E(1-b)}{k-b.r} = \frac{10(1-.40)}{.15-.40 \times .14} = \text{Rs. } 39.94$

Case B $= \frac{10(1-.60)}{.15-.60 \times .14} = \text{Rs. } 26.58$

Source: Financial Management Principles and Practice by G Sudarshan Reddy 2010 page 684-685

2. Irrelevance Theory of Dividend : Modigliani and Miller have expressed the theory of irrelevance in most comprehensive manner. According to them firm's value depend on its earning power and its investment policy. Market price of share or value of the firm is not affected by dividend decisions. As observed by M.M. "Under conditions of perfect capital markets, discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of the shares."

Assumptions of MM Hypothesis:

- i) Existence of perfect capital markets and information are available free of cost.
- ii) There are no taxes, no floatation and transaction costs.
- iii) Investors are rational and no investor is can effect the market price of shares.

The Argument of MM: MM hypothesis states that the increase in the value of firm by payment of dividends is nullify exactly by falling in the market price of shares because of external financing costs, consequently there is no change in the value of firm/wealth of owners. Suppose, a firm with ample expansion programs, distributes all its profits among owners, then obviously it has to arrange additional funds from external sources for them. It will result into either increase in number of equity shares or payment of interest charges, consequently earnings per share will decline in future. Thus whatever increase in the market price of share on account of dividend payment is off set completely by the fall in

the market price of shares due to decline in expected future earnings per share. Mathematically the market price of a share in the beginning period is equal to the present value of dividends paid at the end of the period plus the market price of the share at the end of the period. This is explained by the following equation:

$$P_0 = \frac{D_1 + P_1}{1 + K_e}$$

P_0 - Market price per share at the beginning of the period

D_1 - Dividend to be received at the end of the period.

P_1 - Market price per share at the end of the period.

K_e - Cost of equity capital

The value of P, can be derived by the above equation as under:

$$P_1 = P_0 (1 + k_e) - D_1$$

Example: Rakshak Ltd. has outstanding shares of 50,000 selling at Rs.200 each. The company is expecting to pay a dividend of Rs. 5 per share at the end of the current financial year. The company's expected net earnings are ₹500,000 and its capitalization rate is 10%. The new proposed investment requires Rs.10, 00,000. Prove that the payment of dividend does not affect the value of the firm according to MM approach

SOLUTION:

1. Value of the firm when dividends are paid:

i. Price per share at the end of year 1:

$$P_0 = 1/(1 + k_e) \times (D_1 + P_1)$$

$$200 = 1/(1 + 0.10) \times (5 + P_1)$$

$$P_1 = \text{Rs. } 215$$

ii. Amount required to be raised from the issue of new shares:

$$\Delta n P_1 = I - (E - nD_1)$$

$$= 1000,000 - (500,000 - 250,000)$$

$$= \text{Rs. } 750,000$$

iii. Number of additional shares to be issued:

$$\Delta n = 750,000 / 215 = 3488.3720 \text{ shares}$$

iv. Value of the firm:

$$= \frac{(50,000 + 3488.3720) (215) - 1000,000 + 500,000}{(1 + 0.10)}$$

$$(1 + 0.10)$$

$$= \text{Rs. } 11,000,000$$

2. Value of the firm when dividends are not paid:

- i. Price per share at the end of year 1:

$$P_0 = 1/(1 + k_e) \times (D_1 + P_1)$$

$$200 = 1/(1 + 0.10) \times (0 + P_1)$$

$$P_1 = 220$$

- ii. Amount required to be raised from the issue of new shares:

$$= ₹1000,000 - (₹500,000 - 0) = ₹500,000$$

- iii. Number of additional shares to be issued:

$$= ₹500,000/220 = ₹2272.7273 \text{ shares (unrounded)}$$

- iv. Value of the firm:

$$\frac{(50,000 + 2272.7273) (220) - 1000,000 + 500,000}{(1 + 0.10)}$$

$$= \text{Rs. } 11,045,454$$

Criticism of MM Approach

MM hypothesis has been criticized on account of various unrealistic assumptions like presence of perfect capital market, absence of tax, floatation costs, transaction cost etc.

2.9 Determinants of Dividend Policy: The policy relating to payment of dividend and retention of profits vary from one company to other and changes from time to time. The following are the factors which influence the dividend policy of a firm:

1. **Legal Restrictions.** Dividend decisions are taken by following the guidelines prescribed by Companies Act. For example payment of dividend can be made only out profits after providing depreciation. .

2. **Shareholder's Preference for Dividend:** Declarations of payment of dividends depend on the discretion of Board of Directors. Albeit, the directors consider the choices of shareholders i.e whether they want their share of profit in form of dividend or capital appreciation on it.

3. **Nature of Industry.** Nature of industry also influences the dividend decisions of a firm. Certain industries produce such type goods/services whose demand is steady irrespective of any phase of business cycle. Firms operating in such industry expect regular and stable earnings and can follow a constant/liberal dividend policy. On the other hand, if the company belongs to an industry whose products/services demand affected by phases of trade cycle the earnings of such firm will be unstable and uncertain, in this case firm will follow conservative dividend policy.

4. **Age of the Company:** Dividend policy of an enterprise is also influenced by whether it is newly established or well established. A newly established firm has to retain all or substantial part of profits for its financing needs while older companies which have huge amount of reserves and surplus can follow liberal dividend policy.

6. Financial Needs of Company: Future financial requirements of the company are also considered while designing that dividend policy. The board of directors has to strike a balance between desire of shareholders to receive dividend and company's financial needs for future growth. If a company has highly profitable investment opportunities it can retain the earnings. Opposite when profitable investment opportunities do not exist then the company may distribute dividends.

7. Taxation Policy. Dividend policy of a company is also influenced by taxation policy of the state in which it operate. A high or low rate of corporate tax has strong bearing on net profits of company (after tax) and thereby its dividend decisions. Further, when shareholders have to pay higher rate of tax on dividend income they may not be interested in dividend and prefer company should retain earnings.

10. Control Objectives: A liberal dividend policy sometimes may dilute control of the existing shareholders. More dividend payment may compel the company to raise funds to meet its future finance requirement by issue of new equity shares. By doing so control of existing shareholders will be diluted if they are unable to invest in new shares. Moreover, issue of new shares will increase number of outstanding shares and consequently earnings per share will be less. To maintain control of the existing shareholders over company, low dividend payout policy is suitable

11. Requirements of Institutional Investors: Institutional investors such as financial institutions, banks, insurance companies, mutual funds etc. also have bearings on dividend decisions of a firm. These investors have agreements with company to make regular payment of dividends on equity shares.

13. Liquidity of Firm: A firm may have huge profits to declare dividends, but it faces difficulties to pay dividends because of insufficient liquid resources. In such situations a company is compelled to declare stock-dividend/ issue of bonus shares to the existing shareholders.

2.10 Types of Dividend Policy

1. Regular Dividend Policy

Payment of dividend at the usual rate is termed as regular dividend. Even if the company makes a loss, the shareholders will still be paid a dividend under the policy. The investors such as retired persons, prefer this policy. A regular dividend policy offers many advantages to company like creates confidence amongst the shareholders, stabilizes the market value of shares etc. Regular dividend policy suits only to those firms with long standing and stable earnings. A company desirous to follow this policy pay dividend regularly at a lower rate.

2. Stable Dividend Policy

Stable dividend policy implies payment of certain minimum amount of dividend regularly. A stable dividend policy may be followed in any three forms:

a) Constant Dividend Per Share. A company that follows this policy will pay a fixed amount per share as dividend. A policy of constant dividend per share is most suitable to concerns whose earnings are expected to remain stable over a number of years.

b) Constant Pay Out Ratio. Constant pay-out ratio means payment of a fixed percentage of profits as dividends every year. The amount of dividend in such a policy is directly proportionate to the earnings of the company. The policy is suitable to such companies which are not confident enough in getting stable earnings.

c) Stable Dividend Per Share plus Extra Dividend: A company may pay constant low dividend per share plus an additional dividend in the years of prosperity. This type of policy suits to a company which always maintains minimum level of earnings and over the minimum level, earnings fluctuate.

2.11 Forms of Dividend: Generally companies pay dividends in the form of cash. But cash form of dividends may take place only when the cash is available with the company. Sometimes companies have earned large amount of profit but it faces cash crunch in such situation firm may declare dividend in the form of scrip, bond, stock dividend. Dividends are classified on the basis of payment in which they are paid:

(a) Cash Dividend: A company which has earned huge amount of profits and sufficient liquidity may pay dividends in cash form. The shareholders have the liberty to invest the cash received in the form of dividend in any manner. It is the most popular practice to pay dividends provided company has adequate liquid resources at its disposal.

(b) Scrip or Bond Dividend: When a company faces short term liquidity crunch/insufficient funds to pay dividends in cash, it may issue promissory notes or bonds for amounts of dividend to equity shareholders. The prime objective of scrip dividend is to delay the immediate payment of cash.

(c) Stock Dividend: Stock dividend means the issue of new equity shares/ bonus shares for the amount of dividend to the existing shareholders. This practice is also adopted when a company does not liquid assets to pay cash dividend. Stock dividend amounts to capitalization of profits by distribution them among shareholders without affecting the cash position of the firm. Declaration of stock dividend will increase the paid up capital and reduce the retention of earnings. Paying dividend in the form of bonus shares/stock dividend requires compliance of legal provisions of capital market regulator and company laws.

BONUS ISSUE (STOCK DIVIDEND vs. STOCK SPLIT

Stock dividend means the issue of bonus shares to the existing shareholders of the company. It amounts to capitalization of earnings and distribution of profits among the existing shareholders without changing the cash position of the firm. Stock split on the other hand, means reducing the par value of the shares by increasing the number of shares proportionately viz. a share of 100 may be split into 10 shares of R. 10 each Thus, the two terms are quite different from each other. The effect of bonus issue is that it amounts to reduction in the amount of profits and reserves, whereas, stock split does not affect the accumulated profits at all. Further in bonus issues, the par value of the stock remains unchanged, whereas, it is reduced in case of stock split, However, in both the cases, the book value per share, earnings per share and the market price per share declines. That is why a stock dividend is considered very much like a stock split. The distinction between the two is of technical nature. A stock dividend is

reflected in the balance sheet by way of transfer from retained earnings to equity capital whereas a split is shown as a reduction in par value of each share, Although, it is generally said that neither an investor nor the company gains anything from stock dividend or stock split, yet there may be a positive effect of informational content of bonus/split announcement.

Self Assessment Questions

1. Explain financial and operating leverage and their application by firms
2. What is optimal capital structure. Discuss the relevant and irrelevant capital structure theories.
3. Discuss the factors affecting the dividend policy of a firm.
4. Briefly discuss the factors that affect capital structure determination.
5. What is MM Hypothesis? Give operational justification for MM Hypothesis regarding capital structure decisions.
6. Write notes on: Forms of dividend, Financial breakeven point, Combine leverage.
7. From the following information of DEXI Ltd. determine equity share price of as per Walter model:-
Earning per share Rs. 10,
Dividend per share Rs. 6
Cost of equity capital 15%,
Required rate of return 20%
8. A firm has Rs. 40 lacs sales, variable cost is 70% of sales and fixed cost is Rs. 8 lacs. Firm has debt of Rs. 20 lacs at 10% . Compute financial, operating and combined leverage.

Suggested Book Readings:

1. Financial Management:- By M Y Khan and P K Jain, Tata McGraw Hill Education Private Limited.
2. Financial Management:- By I M Pandey, Vikas Publishing House PVT. LTD.
3. Financial Management:- By G Sudarsana Reddy, Himalya Publishing House.
4. Financial Management:- By Shashi K Gupta and R K Sharma, Kalyani Publishers