

FINANCING AND DIVIDEND DECISIONS



Next to the investment decision is the financing and dividend decisions. Financing decision of a firm deals with the determination of capital and financial structures of that firm. Here, the composition of the capital structure and financial structure is the vital one. Capital and financial structures of a firm may be composed of : (i) equity capital – internal and external; (ii) preferred capital and (iii) debt capital – short-term and long-term. The correct determination of capital structure is essential since it may lead to over-capitalization and/or under-capitalization of a firm. Both the over and under capitalization are harmful for a firm. Dividend decision deals with the formulation of dividend policy and paying out of dividend and retention of net profit in the firm for further investment. The correct formulation of dividend policy is the vital from the viewpoint of the maximization of the wealth of the shareholders, which is the key financial objective of a firm. Therefore, the financing and dividend decisions include the following major aspects presented in **UNIT#FOUR:**

1. Capital Structure Theory (Lesson: 1)
2. Capital Structure Decisions (Lesson: 2)
3. Measurement of Leverage and Its Analysis (Lesson: 3)
4. Dividend Theory (Lesson: 4)
5. Dividend Policy (Lesson: 5)

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Lesson-1: Capital Structure Theory

The main objectives of the lesson 1 are:

- To help perceiving the concept of capital structure and financial structure, pointing out their main differences;
- To help realizing the goal and significance of capital structure;
- To assist knowing the features, assumptions and criticisms of the various capital structure theories developed so far and
- To assist understanding the implications of the capital structure theories.

Concept of Capital Structure and Its Differences with Financial Structure

There are some confusion among the authors regarding the concept of the term “capital structure” and such confusions arise because some authors use the term in a narrow sense while others use the term in a broader sense. In a narrow sense, the authors of financial management define capital structure as the relative proportion of the long-term securities a firm has used and its equity capital. While, in a broader sense, the some other authors define capital structure as the permanent financing of a firm represented by long-term debts plus preferred stock and net worth. Net worth represents the equity capital, reserves and surplus, retained earnings and other funds of the ordinary or equity shareholders or stockholders. Thus, every definition whether in a narrow sense or in a broader sense has made reference to long-term debt and equity capital.

In a broader sense, the authors define capital structure as the permanent financing of a firm represented by long-term debts plus preferred stock and net worth.

Of the many decisions that are taken by the financial management of an enterprise, the capital structure and investment decisions are the most important in determining the long-term existence, profitability and growth of the enterprises. The capital structure decision determines the ownership for the providers of finance. Therefore, it can be said that capital structure decision involves the two main tasks namely planning of capital structure and financing of capital structure. Planning of capital structure includes fixation of capitalization policy i.e. policy governing the amount of total capital required for the enterprises to achieve their financial objectives. Fixation of an ideal capitalization is of crucial importance to every enterprise, whether manufacturing or service rendering, in one hand; and whether large scale or medium/ small scale, on the other. This is because of the fact that in case of the enterprises especially in the manufacturing ones, a huge amount of capital, both fixed and working is required to establish and to run successfully the operations of the enterprises. It is observed by an author that both the over-capitalization and under-capitalization have harmful effects on the financial performances of the enterprises. A firm is said to be over-capitalized when: i) capitalization exceeds the real economic value of net assets; ii) a fair return is not realized on capitalization and iii) the

Fixation of an ideal capitalization is of crucial importance to every enterprise.

business has more net assets than it needs. On the other hand, under-capitalization of a firm occurs as a result of: i) under estimation of future earnings at the time of promotion and/ or ii) unforeseeable increase in earnings resulting from later development.

It is not the choice between debt or/and equity finance; but the determination of their correct mix which attracts the attention of the financial management of the firms.

Financing of capital structure includes the proper selection of composition of fixed capital, both equity and debt. Both equity and debt forms of capital have certain advantages to the firm and a model capital structure requires that a balance needs to be maintained between debt and equity. That is, it is not the choice between debt or/and equity finance; but the determination of their correct mix which attracts the attention of the financial management of the firms.

The capital structure decision is one of the significant managerial decisions. The firms will have to plan its capital structure initially at the time of its establishment and subsequently, whenever funds have to be raised to finance investment; a capital structure decision is involved. A demand for raising funds generates a new capital structure since a decision has to be made as to the quantity and form of financing. The decision will involve an analysis of the existing capital structure and the factors, which will govern the decision at present. The new financing decision may affect the debt-equity mix. The debt-equity mix has implications for the shareholders' earning and risk, which, in turn, affects the cost of capital and market value of the firm.

Financial structure refers to the way the firm's assets are financed; it is the entire liabilities side of the balance sheet of the firm.

Financial structure may be defined as the total financing of the firm representing permanent financing in the forms long-term debt, preferred stock, common equity including net worth as well as temporary financing in the forms of short-term loans and credits. Financial structure refers to the way the firm's assets are financed; it is the entire liabilities side of the balance sheet of the firm. A firm procures its permanent fixed capital in the forms of long-term debt, preference share capital, equity share capital, retained earnings/undistributed profits and reserves and surplus. Again, it procures short-term working capital in the forms of short-term loans, credits for goods, credit for expenses etc. Each of this is the individual component which taken together would constitute a firm's financial structure. In the ultimate analysis, the financial structure may be divided into three main categories viz., owner's equity/net worth, debt capital and other short-term credits.

The main distinctions between Capital Structure and Financial Structure are pointed out as under:

Capital Structure	Financial Structure
i. <u>Definition</u> Capital structure represents only the permanent source of financing.	i. <u>Definition</u> Financial structure represents both the permanent and temporary source of financing.
ii. <u>Nature</u> It denotes to the left hand/ upper side of the Balance Sheet. So, it represent capital and debt.	ii. <u>Nature</u> It denotes to the right hand/lower side of the Balance Sheet. So, it represents property and assets.
iii. <u>Importance</u> It is important from the view point of capital and long-term debt.	iii. <u>Importance</u> It is important from the view point of property and assets.
iv. <u>Total/part financing</u> It is the part of total financing.	iv. <u>Total/part financing</u> It is the total or whole financing.

Goals and Significance of Capital Structure

The ultimate goal of capital structure of a firm is to formulate its debt-equity policy in such a way that maximizes the value of the firm. In order to achieve the main goal, the sub-goals of capital structure are as follows:

- i. To increase the equity shareholders' stock price by determining an ideal debt-equity mix;
- ii. To take advantage of favorable financial leverage;
- iii. To avoid using of high risky debt capital in capital structure and
- iv. To take advantage of corporate tax.

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Theories of Capital Structure and their Implications

So far, the following theories of capital structure have been developed in the literature of finance :

- i. Net Income Approach;
- ii. Net Operating Income Approach
- iii. Traditional Theory;
- iv. Modigliani and Miller Theory;
- v. The Trade Off Theory
- vi. The Pecking Order Theory and
- vii. Signaling Theory

The following sub-sections explain each of the theories of capital structure

Net Income Approach

The net income (NI) approach assumes that the only cost to debt capital is the rate of interest on such capital. That the cost of debt and cost of equity are expected to be independent of capital structure is the main thing of NI Approach. Thus, the weighted average cost of capital declines and the total value of the firm rises with changes in debt-equity ratio in the capital structure. In NI approach, the net income is capitalized to have the total market value of the stock/share. Thus, we get:

The net income (NI) approach assumes that the only cost to debt capital is the rate of interest on such capital.

$$S = \frac{\bar{X} - K_d \cdot D}{K_e} \quad K_e \dots \text{Constant}$$

In order to get the market value of the firm, the total market value of the debt is added to the market value of the shares. In equation form it may go as follows :

$$V = S + D = \frac{\bar{X} - K_d D}{K_e} + D = \frac{\bar{X}}{K_e} + \left(1 - \frac{K_d}{K_e}\right) D$$

$K_e \dots \text{Constant}$

NI approach assumes no penalty to compensate the new shareholders for extra financial risk. Any increase in Earnings Per Share (EPS) leads to increase the price of equity share/stock.

Net Operating Income Approach

The cost of equity capital is supposed to increase with leverage.

The approach holds that the implicit cost of debt is sufficient to ensure that there is no net advantage of debt capital on a pretax basis. The cost of equity capital is supposed to increase with leverage. As a result, the firm does not gain or lose by introducing any amount of debt in the capital structure. In NOI approach the value of the firm is found out by capitalizing the NOI. Thus,

$$V = \frac{\bar{X}}{K_0}$$

$K_0 \dots \text{Constant}$

The market value of equity is derived by subtracting the market value of debt from the total value of the firm's securities. That is :

$$S = \frac{\bar{X}}{K_0} - D$$

$K_0 \dots \text{Constant}$

Traditional Theory

According to this approach, the value of the firm can be increased or the cost of capital can be decreased by a judicious mix of debt and equity capital.

According to this approach, the value of the firm can be increased or the cost of capital can be decreased by a judicious mix of debt and equity capital. This approach clearly implies that the cost of capital decreases within the reasonable limit of debt and then increases with leverage. Thus, an optimal capital structure exists when the cost of capital is minimum or the value of the firm is maximum. In the capital structure of the firm, the market value of the firm will remain nearly constant for range $L_1 < L < L_2$

Under the assumption that K_e remains constant within the acceptable limit of debt, the value of the firm will be:

$$V = S + D = \frac{\bar{X} - KdD}{Ke} + \frac{KdD}{K_d}$$

or

$$V = \frac{\bar{X}}{Ke} + \left(1 - \frac{Kd}{Ke}\right)D$$

Criticism of Traditional Approach

The validity of the traditional view has been questioned on the ground that the market value of the firm depends upon the net operating income and risk. The form of financing can neither change the net operating income nor the risk involved in it. It can only change the way in which net operating income and risk are distributed between debt and equity. Thus, the firm with identical net operating income and risk but differing in modes of financing should have same market value. The traditional view is criticized because it implies that totality of risk incurred by all security holders of a firm can be altered by changing the manner in which the totality of risk is distributed among the various classes of security.

Modigliani and Miller Theory

Modigliani and Miller argued that the value of the firm and hence the cost of capital will be invariant with respect to capital structure. That is, the market value of the firm depends on its net operating income and risk involved in it, not on the form of financing. In a rational world, the traditional approach must be rejected. Because, the equity shareholders will not ignore small amount of debt; rather demand increasing expected returns for every incremental increase in financial risk. M-M approach is based on the following assumptions:

The market value of the firm depends on its net operating income and risk involved in it, not on the form of financing.

- (i) Investors can borrow or lend at the same market rate of interest;
- (ii) There is absence of bankruptcy costs;
- (iii) The capital market is highly competitive;
- (iv) The capital markets are efficient, so the information flows freely to the investors and there exists no transaction costs;
- (v) There is absence of tax;
- (vi) Investors are indifferent between dividend and retained earnings and
- (vii) There is co-incidence of expectation among investors.

Criticism of the M-M Thesis

The M-M Thesis has been criticized on the following main grounds:

- (i) In practice, there is the absence of perfect markets and rational investors. As a result, the investors may not have the requisite information.

- (ii) By avoiding taxes and transaction costs the model becomes too simplified to reflect the actual condition in the security market.
- (iii) The proof of proposition–1 assumes that investors are willing to pledge their stock as collateral to borrow money. But in reality, investors may not be willing to accept such a personal risk.
- (iv) The assumption that firms and individuals can borrow and also lend at the same rate of interest does not hold well in real situation.
- (v) The existence of transaction costs also interferes with working of arbitrage.
- (vi) Institutional restrictions also impede the working of arbitrage.
- (vii) It is incorrect to assume that personal home made leverage is a perfect substitute for corporate leverage.

The Trade Off Theory

The Trade Off Theory of capital structure suggests that target debt ratio may vary from firm to firm.

In case of capital structure decision under the firm's constant assets and investment policy, the optimal debt ratio is considered as a tradeoff between the costs and benefits of borrowings. The firm portrays as balancing the value of interest and tax shields against various cost of bankruptcy or financial distress. Until the value of the firm is maximized, the firm is supposed to substitute debt for equity or vice-versa.

The Trade Off Theory of capital structure suggests that target debt ratio may vary from firm to firm. While firms with safe tangible assets and enough taxable income to shield ought to have high target ratios, the unprofitable firms with risky intangible assets ought to rely on equity financing. In the absence of the cost of adjustment, each firm should be at its debt target ratio. The Trade Off avoids extreme predictions and rationalizes moderate debt ratio.

Pecking Order Theory

The Pecking Order Theory is based on : (a) preference for internal funds, (b) sticky dividend policy and (c) aversion to issuing equity.

Firms observed debt ratio reflects its cumulative requirements for external financing.

In Pecking Order Theory, there exists no predetermined debt-equity mix; because there are two kinds of equity : internal and external, one at the top of the Pecking and the other at the bottom. Firms observed debt ratio reflects its cumulative requirements for external financing. The Pecking Order explains why profitable firms generally borrow less – not because they have low target debt ratios, but because they do not require external fund. The less profitable firms issue debt because they do not have enough internal funds for investment and because debt financing is firstly on Peking Order of external financing some authors advocate for modified Pecking Order Theory.

Signaling Theory

The use of stock is a negative signal, while using debt is a positive or at least neutral signal.

An alternative (or, really, complementary) theory of capital structure relates to the signals given to investors by firm's decision to use debt or stock to raise new capital. The use of stock is a negative signal, while using debt is a positive or at least neutral signal. Therefore, companies

try to maintain a reserve borrowing capacity; and this means using less debt in “normal” times than the MM trade-off theory would suggest.

Implications of Capital Structure Theories

A great deal of controversy has developed over whether the capital structure of a firm, as determined by its financing decision, affects its overall value. Traditionalist’s arguer that the firm can lower its cost of capital and increase market value per share by the judicious use of leverage. Modigliani and Miller, on the other hand, argue that the absence of taxes and other market imperfections, the total value of the firm and its cost of capital are independent of capital structure. The position is based on the notion that there is a conservation of investment value. No matter how you divide the pie or investment value of the firm stays the same. Therefore, leverage is said to irrelevant. We saw that behavioral support for the MM position was based on the arbitrage process.

A combination of net tax effect with bankruptcy costs will result in an optimal capital structure.

In a world of corporate income taxes, there is a substantial advantage to the use of debt; and we showed how the present value of the tax shield might be measured. This advantage is lessened with tax shield uncertainty, particularly if leverage is high. When allow for personal income taxes and a higher personal tax rate on debt income than on stock income, we find the tax advantage of debt to be further reduced. Miller argues that it is zero, and his argument, as well as certain refuting evidence, was examined. Bankruptcy costs work to the disadvantage of leverage, particularly extreme leverage. A combination of net tax effect with bankruptcy costs will result in an optimal capital structure. Other market imperfections – such as institutional restrictions on lender and stock investor behavior – impede the equilibrium of security prices according to expected return and risk. As a result, leverage may affect the value of the firm.

Problems and Solutions

Problem - 1

Abacus Calculation Company and Zoom Calculators, Inc., are identical except for capital structures. Abacus has 50 percent debt and 50 percent equity, whereas Zoom has 20 percent debt and 80 percent equity. (All percentages are in market-value terms.) The borrowings rate for both companies is 8 percent in a no-tax world, and capital markets are assumed to be perfect.

- a. (1) If you own 2 percent of the stock of Abacus, what is dollar return if the company has net operating income of \$360,000 and the overall capitalization rate of the company, k_0 , is 18 percent ?
(2) What is the implied required rate of return on equity ?
- b. Zoom has the same net operating income as Abacus. (1) What is the implied required equity return of Zoom ? Why does it differ from that of Abacus ?

Solution

a. (1)

Net operating income	\$ 360,000
Overall capitalization rate	<u>0.18</u>
Overall value of firm $\left(\frac{360,000}{.18} \times 100\right)$	\$ 2,000,000
Market value of debt (50%)	1,000,000
Market value of stock (50%)	\$ <u>1,000,000</u>
Net operating income	\$ 360,000
Interest on debt (8%)	<u>80,000</u>
Earnings to common Stockholders	\$ <u>280,000</u>

2% of \$ 280,000 = \$ 5,600

(2) Implied required equity return = $\$280,000/\$1,000,000 = 28\%$

b. (1)

Total value of firm	\$ 2,000,000
Market value debt (20%)	<u>400,000</u>
Market value of equity (80%)	\$ <u>1,600,000</u>
Net operating income	\$ 360,000
Interest on debt (8%)	<u>32,000</u>
Earnings to common Stockholders	\$ <u>328,000</u>

Implied required equity return = $\$ 328,000/\$1,600,000 = 20.5\%$

(2) It is lower because Zoom uses less debt in its capita structure. As the equity capitalization is a linear function of the debt-to-equity ratio when use the net operating income approach, the decline in required equity return offsets exactly the disadvantage of not employing so much in the way of “cheaper” debt funds.

Problem - 2

Massey-Moss Corporation has earnings before interest and taxes of \$ 30 million and a 40 percent tax rate. Its required rate of return on equity in the absence of borrowing is 18 percent.

- a. In the absence of personal taxes, what is the value of the company in an MM world (1) with no leverage ? (2) with \$4 million in debt ? (3) with \$7 million in debt ?
- b. Personal as well as corporate tax now exist. The marginal personal tax rate on common stock income is 25 percent, and the marginal personal tax rate on debt income is 30 percent. Determine the value of the company for each of the three debt alternatives in part a. why do your answer differ?

Solution

2. a. (1) Value if unlevered (in thousands) :

EBIT	\$ 3,000	
Profit before taxes	3,000	
Taxes	<u>1,200</u>	
Profit after taxes	\$ <u>1,800</u>	
÷ Required equity return	.18	
Value if unlevered	<u>\$10,000</u>	or

- (2) Value with \$ 4 million in debt : (In thousands)

Value = Value if unlevered + Value of tax shield

$$\text{Value} = \$10,000 + .40 (\$ 4,000) = \$ 11,600$$

- (3) Value with \$ 7 million in debt : (In thousand)

$$\text{Value} = \$10,000 + .40(\$7,000) = \$12,800$$

Due to tax subsidy, the firm is able to increase its value in a linear manner with more debt.

- b. (1) Value if unlevered (in thousands) : the same as before, namely,

\$ 10,000 (10 million).

- (2) Value with \$ 4 million in debt :

$$\begin{aligned} \text{Value} &= \$ 10,000 + \left[1 - \frac{(1 - .40)(1 - .25)}{1 - .30} \right] \$ 4,000 \\ &= \$11,429 \end{aligned}$$

(3) Value with \$7 million in debt

$$\text{Value} = \$ 10,000 + \left[1 + \frac{(1 - .40)(1 - .25)}{1 - .30} \right] \$ 7,000$$

$$\text{Value} = 12,500$$

The presence of personal taxes reduces the tax advantage associated with corporate debt. As long as the personal tax on stock income is less than that on debt income, however, the net advantage to debt is positive. As a result, the value of the firm rises with more debt, but not as rapidly as if there were no personal taxes or if the personal tax rate on stock and debt income were the same.

Problem - 3

Given (i) the EBIT of Rs 2,00,000, (ii) the corporate tax rate of 35 percent, and (iii) the following data, determine the amount of debt that should be used by the firm in its capital structure to maximize the value of the firm.

Debt	K _i (before tax) (%)	K _e (%)
Nil	Nil	12.0
Rs 1,00,000	10.0	12.0
2,00,000	10.5	12.6
3,00,000	11.0	13.0
4,00,000	12.0	13.6
5,00,000	14.0	15.6
6,00,000	17.0	20.0

Solution

EBIT	I	NI	Taxes	EAT	kd	ke	D	$S = \frac{EAT}{k_e} \times 100$	V (D+S)
V			(f)	(NI - f)	(%)	(%)			
Rs2,00,000	-	Rs2,00,000	Rs 70,000	Rs1,30,000	-	12.0	-	Rs10,83,333	Rs10,83,333
2,00,000	Rs 10,000	1,90,000	66,500	1,23,500	6.5	12.0	Rs1,00,000	10,29,167	11,29,167
2,00,000	21,000	1,79,000	62,650	1,16,350	6.8	12.6	2,00,000	9,23,413	11,23,413
2,00,000	33,000	1,67,000	58,450	1,08,550	7.2	13.0	3,00,000	8,35,000	11,35,000
2,00,000	48,000	1,52,000	53,200	98,800	7.8	13.6	4,00,000	7,26,471	11,26,471
2,00,000	70,000	1,30,000	45,500	84,500	9.1	15.6	5,00,000	5,41,667	10,41,667
2,00,000	1,02,000	98,000	34,300	63,700	11.0	20.0	6,00,000	3,18,500	9,18,500

The firm should use Rs 3,00,000 debt to maximize the value of the firm.

Review Questions

Short Questions

1. What do you mean by Capital Structure?
2. What do you mean by Financial Structure?
3. Distinguish between Capital Structure and Financial Structure.
4. What are the goals of Capital Structure ?
5. Discuss the significance of Capital Structure.

Broad Questions

6. Explain in detail the following Capital Structure Approaches :
a) Net Income and (b) Net Operating Income
7. Discuss the Traditional Theory of Capital Structure. Compare and Contrast the theory with the Net Income and Net Operating Income Approaches.
8. What are the main arguments of MM Theory of Capital Structure ?
What are the assumptions on which MM theory is based ?
9. What are the criticisms against MM Theory ? Distinguish between MM Theory and Traditional Theory ?
10. Explain in detail the following Capital Structure Theories :
a) The Trade Theory; b) the Pecking Order Theory and
c) Signaling Theory.
11. Examine the main implications of Capital Structure Theories.

Review Problems

Problem - 1

Massey-Moss Corporation has earnings before interest and taxes of \$3 million and a 40 percent tax rate. Its required rate of return on equity in the absence of borrowing is 18 percent.

- a. In the absence of personal taxes, what is the value of the company in an MM world (1) with no leverage ? (2) with \$4 million in debt ? (3) with \$7 million in debt ?

Problem - 2

Kimbal Manufacturing Co. has a total capitalization of 1,00,00,000 and normally earns Tk. 10,00,000 (before interest and taxes). The financial manager of the firm wants to take a decision regarding the capital structure. After study of the capital market, he collected the following data :

Amount of debt (In Taka)	Interest Rate (%)	Equity capitalization Rate (At this level of financial risk) (%)
-	-	10.00
10,00,000	4.0	10.50
20,00,000	4.0	11.00
30,00,000	4.5	11.60
40,00,000	5.0	12.40
50,00,000	5.5	13.50
60,00,000	6.0	16.00
70,00,000	8.0	20.00

Required :

- a) What amount of debt should be employed, if the traditional approach is held valid ?
- b) If the MM approach is followed, what should be the equity capitalization rates ?

Assume that corporate taxes do not exist and the firm maintains its capital structure at book value.

Problem - 3

In considering the most desirable capital structure of a company the following data have been collected by the finance manager of the company from the capital market :

Debt as % of total capital	Cost of debt (In %)	Cost of equity (In %)
0	5.0	12.0
10	5.0	12.
20	5.0	12.5
30	5.5	13.0
40	6.0	14.0
50	6.5	16.0
60	7.0	20.0

You are required to determine the optimal debt equity mix for the company by computing composite cost of capital.

Lesson-2: Capital Structure Decisions

The major objectives of the lesson 2, are -

- To understand the main factors affecting the capital structure of a firm;
- To know how the capital structure is measured;
- To understand the Pecking Order of financing;
- To grasp the meaning and features of an optimal capital structure;
- To learn the technique of determining optimal capital structure and
- To know the technique of EBIT – EPS analysis.

Factors Affecting Capital Structure Decisions

A. Quantitative/ Financial Factors

i) Profitability Aspect

This determinant is the top-most one while determining capital structure of the enterprises. This signifies that the enterprises with higher profitability will prefer debt capital as compared to equity capital. This is because of the fact that interests on debt get exemption from tax burden and also because of comparatively cheaper source of capital and lower floatation costs involved in obtaining debt. On the other hand, enterprises with lower or negative profitability, having no other alternative, will take resort to equity capital.

The major financial factors are : profitability, growth rate, liquidity, costs of source, sales/investment stability, financial and operating risks and taxes.

ii) Growth Rate

The enterprises with higher growth rate will prefer debt capital as compared to equity capital. This is because of comparatively lower floatation cost involved in obtaining debt capital than issuing common stock and comparatively cheaper source of capital. On the other hand, the enterprises with lower, no or negative growth rate, having no other alternative, will take resort to equity capital.

iii) Liquidity Aspect

The enterprises with reasonable liquidity, nor too lower neither too higher will prefer debt capital to equity capital because of the advantages of debt capital of the enterprises mentioned earlier. On the other hand, the enterprises with either too lower or too higher liquidity, having no other alternative will go for equity capital.

iv) Relative Costs of Sources of Fund

Since the authors of corporate finance hold the view that the effective cost of debt capital is comparatively cheaper; the enterprises should prefer debt capital rather than equity capital; other conditions like

availability of fund, reasonable liquidity and higher profitability and growth rate remaining the same.

v) Stability of Sales/ Investments

The enterprises with more stable sales/ investments will prefer debt capital to equity capital because of the benefits attached to debt capital. On the other hand, the enterprises with less or unstable sales/ investments, having no other alternative will go for equity capital.

vi) Financial Risk

Financial risk is another important determinant while designing the capital structure of the enterprises. The enterprises with higher financial risk should use lower debt capital and higher equity capital. On the other hand, the enterprises with lower financial risk should use higher debt capital and lower equity capital.

(vii) Corporate Tax

The advantage of the presence of debt in capital structure in world of corporate taxes is that interest payments on debt are deductible as an expense. They elude taxation at the corporate level, whereas dividends on equity or retained earnings are not deductible for the tax purposes. Consequently, the total amount of payments available for debt holders and equity holders is greater if debt is employed in capital structure. Corporate taxes create an incentive for the debt holders through the deduction of interests as an expense. Therefore, one of the main reasons of using debt in capital structure of a firm is that interest on debt is deductible from calculation of taxable income, which lowers the effective cost of debt.

viii) Operating Risk

Operating risk or business risk, emanating from operating/ business leverage is influenced, among other things, largely by fixed costs. The more the fixed costs, the more will be the operating risk and vice-versa. The firms with higher operating risk should use lower debt and higher equity and vice-versa.

B. Qualitative/ Non-financial factors

i) Availability of Fund

The determination of capital structure of corporate industrial firm is largely influenced by the availability of fund, both home and abroad. If requisite fund is easily available in capital market on reasonable terms and conditions; the management of a firm may design its capital structure in targeted manner. On the other hand, if fund is not easily available in capital market with reasonable terms and conditions; the management will not be in a position to design its capital structure in a desired way. Funds may be procured from two main sources viz., internal sources and external sources. Internal sources include retained earnings/ accumulated profits, reserves and surplus and accumulated depreciation. The

The major non – financial factors are: availability of fund, proper timing, state of capital market, control of business, DFIs recommendations, regulations and restrictions and values and philosophy

availability of such internal sources mainly depends on profits earned and policies relating to dividend and retention and reserves and surplus. External sources include : equity share capital, preference share capital and long-term debts. The availability of such sources mainly depends on the efficient capital market of the country, which is examined under the sub-point state of capital market.

ii) Proper Timing

Closely related to flexibility in determining issue of securities is the factor of timing. Proper timing of security issue often brings substantial savings. Since it is known that securities market is dynamic, management has to make fair expectation regarding its future trends. After considering the factors of risk, income and control regarding the choice of a financing alternative; management may still pause in its decision if it feels that by waiting for a certain period the debenture or share issues can be made at a favorable price. The question of timing is equally relevant in case of issue of preference share and debentures. The enterprises which can follow proper timing while procuring their requisite fund are in a better position to employ debt capital with comparatively less cost of capital in their capital structure. On the other hand, in the enterprises where proper timing cannot be followed in the procurement of requisite fund; the use of debt capital may become comparatively costly to these enterprises.

iii) State of Capital Market

Capital markets are integral part of developed and industrialized economy. It augments the process of economic development by a number of ways namely : i) encouraging savings, ii) attracting more savers and users into investment process, iii) helping mobilization of non-financial resources, iv) attracting external resources and v) offering financial innovations to match the divers and changing needs of savers and users etc. In fact, capital market supplies cash capital as a long-term basis to the industrial entrepreneurs who, in turn, use the same for procuring other factors of production. When more factors of production are in use, more production is created, and as such, by supplying capital, a capital market helps create more productive capacity in the economy.

iv) Control of Business

The issue of ordinary shares involves the problem of control since each new share adds one new vote. To the extent that the additional issue of ordinary share is made to new shareholders as against the existing shareholders, there is a dilution in the control of the existing shareholders. On the other hand, the debt or debenture issue and preference share do not affect the control of existing group. The preference shareholders may have a right to elect a minority of directors in the event of lapse in dividend payment but this does not involve a major upset in control.

The impact of debt capital versus equity capital on the management's control position can influence the determination of capital structure. If management has majority voting control but not in a position to issue any more common stock/ share; it chooses debt capital in capital structure. On the other hand, management may decide to employ equity capital in capital structure if the firm's financial position is so weak that the use of debt might lead to serious risk of default.

v) DFIs' Recommendation

Capital structure of a private sector corporate industrial firm is also influenced by DFIs' recommendation. Therefore, DFIs' recommendation plays the vital role in designing capital structure of the corporate firms. If any DFIs recommends favorably to any firm for any bank loan; it becomes easy for that firm to employ more debt capital in its capital structure. On the other hand, if any DFIs' recommendation is not favorable to any firm; the firm, having no other alternative will use equity capital.

vi) Regulatory Framework of SEC

Regulatory framework of SEC also influences capital structure determination of the private sector corporate industrial firms if they are the members of DSE/ CSE. That is, the rules and regulations as framed by SEC will influence the capital structure determination. Hence, if these rules and regulations are not conducive to the enterprises; they prefer debt capital to equity capital. On the other hand, if these rules and regulations are favorable to the enterprises; they will prefer equity capital to debt capital.

vii) Restriction by Lenders

This determinant also influences the determination of capital structure of the enterprises using debt capital. In that case the borrowers can not borrow beyond the lenders' restrictions.

viii) Chief Executives' Values and Philosophy

This determinant may also influence the capital structure determination of a private sector corporate firm. If the chief executive's values and philosophy are positive for the use of debt capital; the enterprise will prefer debt capital. On the other hand, if the chief executive's values and philosophy are not positive for the use of debt capital; the firm will not prefer debt capital.

Capital Structure Determination

The necessity of measuring the capital structure arises because of the fact that the capital structure might affect the profitability mainly in terms of ROI, stock price and value of the firm. In one study, it is pointed out that the extent of capital structure is the most relevant measure depends on the objective of the analysis. The measurement of capital structure, the extent of debt is a critical point to the entrepreneurs as well as to the financial managers and executives. In such an issue various benchmarks

and tests have so far been developed, amongst which the following three approaches are normally used.

Capitalization Standard

In this case, debt capacity is expressed in terms of balance sheet relationship between long-term debt and total capitalization. Here, debt capacity refers to the ability of the firm to bear interest on debt without affecting its earnings seriously. Hence, debt capacity is the amount that a firm can service easily even under adverse conditions; it is the amount that the firm should employ. Other things remaining equal, firms with a lower probability of becoming acquisition targets are likely to issue less debt. On the other hand, an incumbent management facing an acquirer with higher bargaining power issues more debt. It is widely held that debt should not exceed 25-30 percent of the total capitalization in industrial companies.

Debt capacity refers to the ability of the firm to bear interest on debt without affecting its earnings seriously.

Earnings Coverage Standard

This is another important measure of capital structure. Earning coverage is the relationship of earnings available for debt servicing to the total amount of annual interest plus sinking fund charge, if any. This measure is also known as interest coverage ratio. This measure is more applicable in the case when capital structure is used as a means of transferring control. Earning, as used here, means net profits before interest and taxes. A ratio of 2:1 to 3:1 standard, leaving a margin of safety, is advocated for this earning coverage ratio by some authors.

Earning coverage is the relationship of earnings available for debt servicing to the total amount of annual interest plus sinking fund charge, if any.

Cash Adequacy Standard

Cash adequacy standard measure is based on the concept that debt limits should be determined by measuring risk of the firm facing shortage of cash. The analysis centers on the behavior of cash flows during recession period of a firm in order to determine the firm's capacity to bear incremental fixed cash outflows. One of the features of a sound capital structure is conservatism, which is related to the fixed charges created by the use of debt or preference capital in the capital structure, and the firm's ability to generate cash to meet this fixed charges. In practice, the question of the appropriate debt-equity mix boils down to the firm's ability to service debt without any threat and operating inflexibility. A firm is considered prudently financed if it is able to service its fixed charges under any reasonably predictable adverse conditions.

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Pecking Order Theory and Financing

Modern theories of capital structure can be classified into two categories viz., Static Trade Off Models and the Pecking Order Hypothesis. Static Trade Off Models suggest an optimal debt-equity mix or target capital structure; a trade off between costs and benefits of debt determines it. The Pecking Order Hypothesis implies that there is a preferred hierarchy in raising funds. Firms prefer internal to external financing and external funds, inter-se, debt is preferred to equity.

Firms prefer internal to external financing and external funds, inter-se, debt is preferred to equity.

However, the following are the main source of Pecking Order financing:

i) Internal Resource

It refers to the generation of funds internally through operations of business.

Internal resource is another important long-term source of finance to the corporate firms. It refers to the generation of funds internally through operations of business. Capital investment and accumulation is a dynamic process. A new corporate firm may be started by means of capital raised externally but much of its subsequent expansion proceeds from internal financing. Savings generated within the corporate firms and left in the form of retained earnings and amortization provisions constitute the main spring of their expansion. Internal resource includes retained earnings or accumulated profits, reserves and surplus of general type and accumulated depreciation. All these internal resources may be classified into two broad categories namely : (a) ploughing back profits and (b) depreciation provision. Each of these categories is briefly discussed below.

(a) Ploughing Back Profits

The process of creating corporate savings and their utilization in the business is technically termed as ploughing back of profits

The process of creating corporate savings and their utilization in the business is technically termed as ploughing back of profits. The retained earnings enable a firm to withstand seasonal reactions and business fluctuations. They create greater resistance power for the industry to face depression. Secondly, the large retained earnings facilitate a stable dividend policy and enhance the credit-standing of a company. Thirdly, they act as an important internal source of capital for expansion purpose and without creating a charge against the assets a company meets its requirements of finance internally for expansion and other development schemes. Fourthly, the deficiencies of depreciation, depletion and obsolescence can be made up by utilizing the retained earnings. The operating efficiency is thus maintained easily by the corporate savings. Lastly, the retained earnings can also be used for retiring the bonds, debentures etc. for creating sinking funds and for redeeming the debts. A firm can thus be relieved of the fixed burden of the interest charges.

(b) Depreciation Provision

Depreciation provision acts as a creation of fund from the operating profits of the firm.

Depreciation is the expiry of service potential or consumption of operating capacity and unless it is provided for, capital would not be taken to be maintained intact. In fact, the concept of depreciation derives from the desire to maintain capital intact. The main emphasis here is on the maintenance of assets or operating capacity therein. Charging depreciation against profits helps to retain a firm equal to profits, if profits are sufficient to cover all costs including losses related to the assets. The funds thus accumulated during the life time of an asset finally assist in maintenance of service potential through purchase of an identical asset or an asset having the same operating period.

At this stage, it is essential to examine the depreciation as an important source of fund. Depreciation is a non-cash expense; although it is a charge against profit. Charging depreciation against profit is nothing but an underestimation of profit by the amount of depreciation. But, the real

profit is more than the accounting profit by the amount of that depreciation. So, depreciation provision acts as a creation of fund from the operating profits of the firm. That is why, depreciation is added back with the operating profit in order to find out the fund or cash inflows of an enterprise. That is, for finding out fund from operations depreciation is added with the operating profits.

ii) Equity Capital

Equity capital refers to share capital or stock raised by a corporate firm by issuing ordinary/ equity shares/ stocks. The equity-holders have the residual claims over the profits and other properties and assets of the company. As a source of long-term funds, equity capital is very much important to the corporate firms mainly because of exercising voting control.

iii) Development Financial Institutions

DFIs play the significant role as the source of long-term fund for the corporate firms. In Bangladesh, DFIs include mainly Investment Corporation of Bangladesh, Bangladesh Shilpa Rin Sangstha, Bangladesh Shilpa Bank, House Building Finance Corporation, Bangladesh Krishi Bank, Bangladesh Insurance Corporation etc. But, in industrial sector, the first three are the important sources of long-term finance.

iv) Debenture and Bonds

Debenture and bonds also play important role as the source of long-term fund for the corporate firms. The firms preferred this source mainly because of lower costs of capital involved in such source.

v) Rights Issues and Bonus Shares

Rights issues/ bonus shares also play an important role as the source of long-term finance for the corporate firms. The corporate firms prefer this source mainly because of non-involvement of any floatation costs in this source.

vi) Bank and Other Loans

Bank and other loans also play the important role as the source of long-term finance for the corporate firms. Such loans include commercial bank loan, both nationalized and private, loans from insurance and leasing companies etc.

Concept and Features of Optimum Capital structure

The optimal capital structure is one that strikes a balance between risk and return to achieve our ultimate goal to maximizing the price of the stock. But it will become apparent that determining the exact optimal capital structure is not a science; so after analyzing a number of factors, a firm establishes a target capital structure which it believes as optimal capital structure. Therefore, target capital Structure refers to the mix of

The optimal capital structure is one that strikes a balance between risk and return to achieve our ultimate goal to maximizing the price of the stock.

debt, preferred stock and common equity with which the firm plans to finance its investments.

The features of an optimal capital structure differ from firm to firm, depending on the nature, size, products and markets, environments, specific and general etc. However, the following may be the general features of an optimal capital structure:

* **Return** : The capital structure of a company should be the most advantageous. Subject to other considerations, it should generate maximum returns to the shareholders without adding additional cost to them.

* **Risks** : The use of excessive debts threatens the solvency of a firm. To the point, debt does not add significant risk it should be used, otherwise its use should be avoided. Risk may be of two types, namely operating risk and financial risk. These types of risks, either negative or large enough than the standard norm of 2, as considered by some authors are regarded as unfavorable, thereby, leading to financial distress.

* **Flexibility**: The capital structure of a firm should be financially flexible in the sense that the firm is able to raise capital on reasonable terms under adverse conditions. Moreover, it should be possible for a company to adapt its capital structure with a minimum cost and delay if warranted by a changed situation. It should also be possible for the company to provide funds whenever needed to finance its profitable activities.

* **Capacity** : The capital structure should be determined within the debt capacity of the company, and this capacity should not be exceeded. The debt capacity of a company depends on its ability to generate future cash flows. It should have enough cash to pay creditors' fixed charges and principal sum.

* **Control** : The effect of debt versus stock on a management's control position can influence capital structure. Management may decide to use equity if the firm's financial situation is so weak that the use of debt might subject to serious risk of default, because if the firm goes into default, the managers will almost surely lose their jobs. However, if too little debt is used, management runs the risk of a takeover. Thus, control considerations could lead to the use of either debt or equity, the type of capital that best protects management will vary from situation to situation. In any event, if management is at all insecure, it will consider the control situation.

* **Tax position** : A major reason for using debt is that interest is deductible, which lowers the effective cost of debt. However, if most of a firm's income is already sheltered from taxes by depreciation tax shields, by interest on currently outstanding debt, or by tax loss carry forwards, its tax rate will be low. So additional debt will not be as advantageous as it would be to a firm with a higher effective tax rate.

* **Management attitude** : Some managers are more aggressive than others are; hence some firms are more inclined to use debt in an effort to boost profits. This factor does not affect the true optimal, or value-maximizing, capital structure, but it does influence the manager-determined target capital structure.

* **Sale stability** : A firm whose sales are relatively stable can safely take on more debt and incur higher fixed charges than a company with unstable sales. Utility companies, because of their stable demand, have historically been able to use more financial leverage than industrial firms have.

* **Asset structure** : Firms whose assets are suitable as security for loans tend to use debt rather heavily. General-purpose assets that can be used by many businesses make good collateral, whereas special purpose assets do not.

* **Growth rate** : Other things remaining the same, faster-growing firms must rely more heavily on external capital. Further, the floatation costs involved in selling common stock exceed those incurred when selling debt, which encourages rapidly growing firms to rely more heavily on debt. At the same time, however, these firms often face greater uncertainty, which tends to reduce their willingness to use debt.

* **Profitability** : One often observes that firms with very high rates of return on investment use relatively little debt. Although there is no theoretical justification for this fact, one practical explanation is that very profitable firms such as Intel, Microsoft, and Coca-Cola simply do not need to do much debt financing. Their high rates of return enable them to do most of their financing with internally generated funds.

* **Lender and rating agency attitudes** : Regardless of managers' one analysis of the proper leverage factors for their firms, lenders' and rating agencies' attitudes frequently influence financial structure decisions. In the majority of cases, the corporations discuss its capital structure with lenders and rating agencies and give much weight to their advice.

* **Market conditions** : Conditions in the stock and bond markets undergo both long- and short-run changes that can have an important bearing on a firm's optimal capital structure. For example, during the credit crunch, the junk bond market dried up, and there was simply no market at a "reasonable" interest rate for any new long-term bonds rated below triple B. Therefore, low-rated companies in need of capital were forced to go to the stock market, or to the short-term debt-market, regardless of their target capital structures. When conditions eased, however, these companies sold bonds to get their capital structures back on target.

* **Firm's internal conditions** : A firm's own internal condition can also have a bearing on its target capital structure. For example, suppose a firm has just successfully completed an R & D program, and it forecasts higher earnings in the immediate future. However, the new earnings are not yet anticipated by investors, hence are not reflected in the stock price.

This company would not want to issue stock – it would prefer to finance with debt until the higher earnings materialize and are reflected in the stock price. Then it could sell an issue of common stock, retire the debt, and return to its target capital structure.

All the above discussed features of capital structure are also known as factors influencing optimum capital structure of a firm.

Optimal Capital Structure Determination

The following two techniques are applied in the determination of an optimal capital structure :

a) Traditional Approach

Under traditional approach, optimal capital structure is that point where weighted average cost of capital (WACC) is the minimum.

Under traditional approach, optimal capital structure is that point where weighted average cost of capital (WACC) is the minimum. Algebraically -

$$K_0 = K_e \cdot W_e + K_d \cdot W_d$$

Where k_0 = WACC; k_e = equity capitalization rate; w_e = weights of equity capital to total capitalization; k_d = rate of interest on debt and w_d = weights of debt to total capitalization.

b) MM Approach

Under MM approach, cost of capital remains constant and the cost of equity increases linearly with the debt.

Under MM approach, cost of capital remains constant and the cost of equity increases linearly with the debt. Equity capitalization rate is calculated as follows :

$$K_e = K_0 + (K_0 - K_d) \text{ debt/equity}$$

Technique of EBIT-EPS Analysis

The EBIT-EPS analysis, involves the comparison of alternative methods of financing under various assumptions of EBIT.

The EBIT-EPS analysis, as a method to study the effect of leverage ,essentially involves the comparison of alternative methods of financing under various assumptions of EBIT. A firm has the choice to raise funds for financing its investment proposals from different sources in different proportions. For instance, it can (i) exclusively use equity capital, (ii) exclusively use debt, (iii) exclusively use preference capital (iv) use a combination of (i) and (ii) in different proportions; (v) a combination of (i),(ii) and (iii)in different proportions (vi) a combination of (i) and (iii) in different proportion and so on .The choice of the combination of the various sources would be one which, given the level of earnings before interest and taxes ,would ensure the largest EPS .

EPS Indifference Analysis

EPS indifference point refers to the level of sales at which EPS will be the same whether the firm uses debt or common stock financing.

The EPS indifference point is the point at which EPS is the same regardless of whether the firm uses debt or common stock. At a low level of sales, EPS is much higher if stock rather than debt is used. In operational terms, if the expected level is to exceed the indifference level of EBIT, the use of fixed-charge source of funds (debt) would be advantageous from the view point of EPS, that is, financial leverage will

be favorable and lead an increase in the EPS available to the shareholders. The capital structure should include debt. If, however, the expected level of EBIT is less than the indifference point, the advantage of EPS would be available from the use of equity capital.

Problems and Solutions

Problem - 1

Suppose a firm has a capital structure exclusively comprising of ordinary shares amounting to Rs 10,00,000. The firm now wishes to raise additional Rs 10,00,000 for expansion. The firm has four alternative financial plans :

- (A) It can raise the entire amount in the form of equity capital.
- (B) It can raise 50 percent as equity capital and 50 percent as 5% debentures.
- (C) It can raise the entire amount as 6% debentures.
- (D) It can raise 50 percent as equity capital and 50 percent as 5% preference capital.

Further assume that the existing EBIT are Rs 1,20,000, the tax rate is 35 percent, outstanding ordinary shares 10,000 and the market price per share is Rs 100 under all the four alternatives.

Which financing plan should the firm select ?

Solution

TABLE : EPS under Various Financial Plans

	Financing plans			
	A	B	C	D
EBIT	Rs1,20,000	Rs1,20,000	Rs1,20,000	Rs1,20,000
Less interest	-	<u>25,000</u>	<u>60,000</u>	-
Earnings before taxes	1,20,000	95,000	60,000	1,20,000
Taxes	<u>42,000</u>	<u>33,250</u>	<u>21,000</u>	<u>42,000</u>
Earnings after taxes	78,000	61,750	39,000	78,000
Less preference dividend	-	-	-	<u>25,000</u>
Earnings available to ordinary shareholders	78,000	61,750	39,000	53,000
Number of shares	20,000	15,000	10,000	15,000
Earnings per share EPS)	3.9	4.1	3.9	3.5

The calculations in the above table reveal that given a level of EBIT of Rs 1,20,000, the financing alternative B, which involves 75 percent ordinary shares and 25 percent debt, is the most favorable with respect to EPS. Another disclosure of the table is that although the proportion of ordinary shares in the total capitalization under the financing plan D is also 75 percent, that is, equal to plan B, EPS is considerably different (lowest). The difference in the plans B and D is due to the fact that interest on debt is tax-deductible while the dividend on preference shares is not. With 35 percent income tax, the explicit cost of preference shares would be higher than the cost of debt

Problem - 2

Dorsey Porridge Company presently has \$ 3 million in debt outstanding bearing an interest rate of 10 percent. It wishes to finance \$4 million expansion program and is considering three alternatives:

Additional debt at 12percent interest, preferred stock with an 11 percent dividend, and the sale of common stock at \$16 per share. The company presently has 800,000 shares of common stock outstanding and is in a 40 percent tax bracket.

- a) If earnings before interest and taxes are presently \$1.5 million, what would be earnings per share for the three alternatives, assuming no immediate increase in profitability ?
- b) Develop an indifference chart for these alternatives. What are the approximate indifference points ? To check one of these points, what is the indifference point mathematically between debt and common ?
- c) Which alternative do you prefer ? How much would EBIT need to increase before the next alternative would be best ?

Solution

(a)	I	II	III	(In thousands)
EBIT	\$1,500	\$1,500	\$1,500	\$1,500
Interest on existing debt	360	360	360	360
Interest on new debt	<u>480</u>	-	-	-
Profit before taxes	\$660	\$1,140	\$1,140	\$1,140
Taxes@40%	<u>264</u>	<u>456</u>	<u>456</u>	<u>456</u>
Profit after taxes	\$396	\$684	\$684	\$684
Preferred stock dividend	-	<u>440</u>	-	-
Earnings available to common Stockholders	\$396	\$244	\$684	\$684
Number of shares	800	800	1,050	1,050
Earnings per share	\$.495	\$.304	\$.651	\$.651

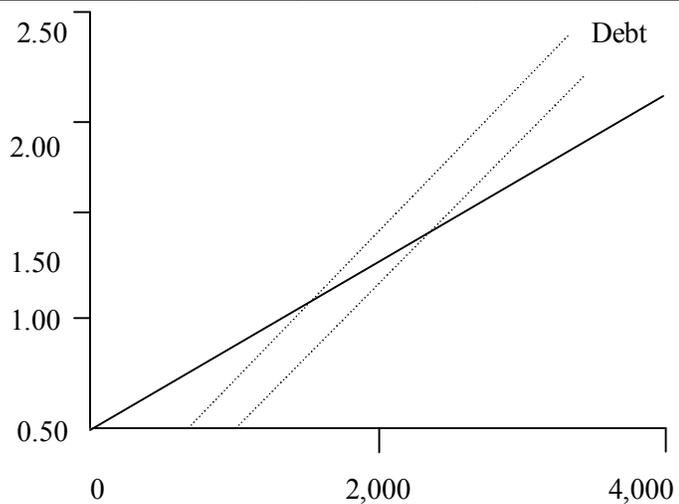


Figure: Indifference Chart

b) Approximate indifference points : debt and common, \$2.4 million in EBIT; preferred and common, \$3.3 million in EBIT; debt dominates preferred by the same margin throughout, there is no indifference point. Mathematically, the indifference point between debt and common is (in thousands) :

$$\frac{\text{EBIT} - \$840}{800} = \frac{\text{EBIT} - \$360}{1,050}$$

$$\text{EBIT} (1,050) - \$840 (1,050) = \text{EBIT} (800) - \$360 (800)$$

$$250 \text{ EBIT} = \$ 594,000$$

$$\text{EBIT} = \$ 2,376$$

Note that for the debt alternative, the total before-tax interest is \$840, and this is the intercept on the horizontal axis. For the preferred stock alternative, we divide \$440 by (1 - .40) to get \$733. When this is added to \$ 360 in interest on existing debt, the intercept becomes \$1,093.

c) For the present EBIT level, alternative III that is common stock is clearly preferable. EBIT would need to increase by \$2,376 - \$1,500 = \$876 before an indifference point with stock debt is reached. One would want to be comfortably above this indifference point before a strong case for debt should be made. The lower the probability that actual EBIT will fall below the indifference point, the stronger the case that can be made for debt, all other things remaining the same.

Problem - 3

The sources of funds of three companies viz., A, B and C are given below. If income tax rate of 30% is assumed, what is the rate of earnings after taxes on the ordinary shareholders equity in each case when net operating income (as determined before interest and taxes) is as follows :

1991 – Tk. 6,000	1993	Tk. 9,000
1992 – Tk. 4,000	1994	Tk. 15,000

Capital structure composition :

Company A :

4% Bond	Tk. 40,000
Ordinary equity	Tk. 60,000

Company B :

5% preferred share	Tk.40,000
Ordinary Equity	Tk. 60,000

Company C :

Ordinary equity only	Tk. 1,00,000
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Solution

Earnings per share (EPS) are determined as follows :

Company - A

Particulars	1991	1992	1993	1994
Earning before interest and taxes (EBIT)	6,000	4,000	9,000	15,000
Less interest (4% on Bond)	1,600	1,600	1,600	1,600
EBT (Earning before tax)	4,400	2,400	7,400	13,400
Less 30% Tax on Income	1,320	720	2,220	4,020
∴ Earnings to Equity Shareholders (ES)	3,080	1,680	5,180	9,380
Ordinary Equity	60,000	60,000	60,000	60,000
∴ EPS = $\frac{\text{Earning to ES}}{\text{Ordinary Equity}}$	5.13%	2.80%	8.63%	15.63%

Company - B

Particulars	1991	1992	1993	1994
Earning before interest and taxes (EBIT)	6,000	4,000	9,000	15,000
Less Tax @ 30%	1,800	1,200	2,700	4,500
EBT (Earning before tax)	4,200	2,800	4,300	10,500
Less preference dividend @ 5%	2,000	2,000	2,000	2,000
∴ Earnings to Equity Shareholders (ES)	2,000	800	4,300	8,500
Ordinary Equity	60,000	60,000	60,000	60,000
∴ EPS = $\frac{\text{Earning to ES}}{\text{Ordinary Equity}}$	3.67%	1.33%	7.17%	14.71%

Company - C

Particulars	1991	1992	1993	1994
Earning before interest and taxes (EBIT)	6,000	4,000	9,000	15,000
Less interest (4% on Bond)	-	-	-	-
EBT (Earning before tax)	6,000	4,000	9,000	15,000
Less 30% Tax on Income	1,800	1,200	2,700	4,500
∴ Earnings to Equity Shareholders (ES)	4,200	2,800	6,300	10,500
Ordinary Equity	1,00,000	1,00,000	1,00,000	1,00,000
∴ EPS = $\frac{\text{Earning to ES}}{\text{Ordinary Equity}}$	4.20%	2.80%	6.30%	10.50%

Comment

Having considered the position of EPS in each of the said years, it can be said that the overall position of EPS of company A is the best followed by company C and B. That is, the capital structure, composed of bond and ordinary equity of company A is the best followed by capital structure, composed only by ordinary equity of company C and capital structure composed by ordinary equity and preference share of company B.

Review Questions

Short Questions

1. What do you mean by an optimal capital structure ?
2. How would you determine an optima capital structure ?
3. Discuss the importance of the following factors in the context of capital structure determination: a) Operating risk, b) Financial risk and c) Profitability.
4. What is the importance of : a) availability of funds and b) proper timing while determining capital structure.
5. How do control of business and state of capital market affect capital structure determination?
6. What is internal sources of finance ? Discuss its main components.
7. How does depreciation act as an important internal source of fund?
8. Explain the EBIT – EPS analysis in the context of a corporate firm.
9. What is an EPS indifference analysis?

Broad Questions

10. Discuss the financial and non – financial factors influencing capital structure of corporate firm.
11. What are the various measures of capital structure of a corporate firm . Explain them.
12. Discuss the major features of a optimal capital structure
13. What is a Pecking Order financing ? Describe its major sources.

Review Problems

Problem - 1

A company has assets of Tk. 10 lacs financed wholly by equity share capital. There are 1 lac shares outstanding with a book value of Tk 10 per share. Last years profit before taxes was 2.5 lacs. The tax rate was 50%. The company is thinking of an expansion that will costs Tk. 5 lacs. The financial manager considered the following three financing plans :

- i) issuing 50,000 shares at Tk. 10
- ii) borrowing Tk 5 lacs at the rate of 7%
- i) issuing Tk. 5 lacs preference shares with 7% dividend.

Estimated EBIT Tk. 3.75 lacs after expansion.

Required :

- a) After tax rate of return on assets,
- b) Earning Per Share, and
- c) Rate of return on Common Stock.

Also suggest which alternative should be accepted by the Company.

Problem - 2

A company needs Tk. 5 lacs for construction of a new Plant. The following three financial plans are feasible :

- i) The company may issue 50,000 ordinary shares at Tk. 10,
- ii) The company may issue 25,000 ordinary share at Tk. 10, and 2,500 debentures of Tk. 100 at 8%
- iii) The company may issue 25,000 ordinary shares at Tk. 10 and 2,500 preference shares at Tk. 100 at 10% dividend.

Company's EBIT estimated to be Tk. 10,000, Tk. 20,000, Tk. 40,000, Tk. 60,000 and Tk. 1,00,000. What are the earnings per share under each of the three financial plans? What alternative would you recommended?

Case Study :

Te ABC Company plans to raise a net amount of Tk. 270 million to finance new equipment and working capital in early 2001. Two alternatives are being considered :

Common stock can be sold to net Tk. 60 per share or bonds yielding 12% can be issued. The balance sheet and income statement of the company are presented below :

The Balance Sheet, as of Dec. 31, 2000

(in million Tk.)

Current Assets	900	Accounts payable	172.5
Net Fixed assets	450	Notes payable	255
		Other Current liabilities	225
		Long – term debt (10%)	300
		Common Stock Tk. 3 par	60
		Retained earnings	<u>337.5</u>
Total	<u>1,350</u>	Total	<u>1,350</u>

Income Statement

December 31, 2000

(In million Tk.)

Sales	2475.0
Less operating costs	<u>2227.5</u>
EBIT	247.5
Less Interest on short – term debt	15
Less Interest on Long – term debt	<u>30</u>
EBT	02.5
Less Taxes (40%)	<u>81</u>
Net Income	<u>121.5</u>

The probability distribution for annual sales is as follows:

Probability	Sales
.3	2250
.4	2700
.3	3150

Assuming that EBIT is equal to 10% of sales, calculate earning per share under both debt financing and stock financing alternatives at each possible level of sales. The old debt will remain outstanding. Which financing method do you recommend and why ?

Lesson-3: Measurement of Leverage and Its Analysis

The main objectives of the lesson 3, are –

- To grasp the various concepts of leverage;
- To know the various types of leverage;
- To learn the various measures of leverage and
- To understand the relationship of leverage with related variables.

Concepts of Leverage

Leverage provides the framework for financing decision of a firm. It may be defined as the employment of an asset/ source of funds for which the firm has to pay a fixed return. It describes the ability of a firm to use fixed cost assets or funds to magnify the return to the stockholders. In another way it implies that, other thing remaining constant, a relatively small change in sales results in a large change in income i.e. EBT. Leverage is a two-edged sword producing highly favorable results when things go well, and quite the opposite under negative conditions. In business, leverage is a process of conscious risk assumption. Leverage may occur in varying degrees. The greater the degree of leverage, the greater is the risk. But, at the same time, it increases the possibility of higher rate of return to the shareholders. Due to this, leverage has sometimes been called trading on the equity. Trading on the equity arises whenever a firm uses capital other than that of the Common Shareholders. Such other capital is sometimes called “senior” capital since it usually has a claim on the assets and earnings. By putting up the value of the claim on assets or earnings as a buffer to protect the other claims, common shareholders said to be trading on their equity in business. Therefore, the use of borrowed capital in order to produce more gain for the residual shareholders is called trading on equity or leverage.

Leverage may be defined as the employment of an asset/ source of funds for which the firm has to pay a fixed return.

Types of Leverage

Broadly, there are two types of leverage namely operating and financial. The leverage associated with investment activities is referred to as operating leverage; whereas, leverage associated with financing activities is called financial leverage. Operating leverage involves the use of fixed operating costs, and not variable costs, in an effort to raise operating income or earnings before interest and taxes. Whereas, financial leverage involves the use of funds for which the firm pays a fixed cost in the hope of increasing the return to common stockholders. The leverage of a firm is essentially related to profit performance of the firm. It is the relationship between the equity share capital and debt capital showing valuable measures for a decision maker. Besides, operating and financial leverages, there are other types of leverages namely return on investment leverage and combined leverage. The return on investment is an important indicator of the performance of an enterprise. It is an index of

The leverage associated with investment activities is referred to as operating leverage; whereas, leverage associated with financing activities is called financial leverage.

operational efficiency. This leverage is also important in the context of analyzing financial leverage; because it has relation with earning coverage ratio. Combined leverage is the product of both the operating and the financial leverages. A number of different combinations of operating and financial leverages can produce the same degree of combined leverage. In addition to the aforesaid leverages, there is another type of leverage known as capital leverage. The degree to which debt and preferred stock is used in the financial structure is called capital leverage.

Measurement of Leverage

Measurement of ROI Leverage

ROI leverage is determined by dividing earnings before interest and taxes by the book value of total tangible assets

ROI leverage is determined by dividing earnings before interest and taxes by the book value of total tangible assets and the quotient is expressed in percentage by multiplying the quotient by 100 (one hundred).

A firm, which does not issue fixed charge securities, has an equity based capital structure only and does not have any financial leverage. But, it is found common that firms issue debt-securities in which case their financial leverage is either favorable or unfavorable. If ROI exceeds the rate of interest payable, a firm has favorable ROI leverage and is in a position to pass some advantages to equity-holders and vice-versa

Measurement of Operating Leverage

Operating leverage reflects the extent to which fixed assets and associated fixed costs are utilized in the business firms. A firm's operating costs may be classified into three groups, namely-(i) Variable costs, which tend to vary to the level of activity; (ii) Fixed costs, which tend to remain constant under certain given conditions and (iii) Semi-variable costs, which are partly variable and partly fixed. This leverage is related to fixed cost and shows the impact of changes in sales revenue on operating income. In practice, no firm likes to operate under high operating leverage in its uncertain market and unstable economy and business nature; because in such a situation a small rise in sales may enhance profits considerably; while a small decline in sales likewise may sharply reduce and even wipe out EBIT.

DOL may be defined as the operating change in EBIT, which takes place as a result of percentage change in sales volume.

The degree of operating leverage (DOL) is the measure of the operating leverage. It may be defined as the operating change in EBIT, which takes place as a result of percentage change in sales volume. It can be measured as follows :

$$(i) \text{ DOL} = \frac{\text{Percentage Change in Operating Income}}{\text{Percentage Change in Sales Volume}} > 1$$

or

$$(ii) \text{ DOL} = \frac{Q(S - V)}{Q(S - V) - F}$$

Where, Q is the units of output,
S is the unit selling price,
V is the unit variable cost and
F is the total fixed costs.

or

$$(iii) \text{ DOL} = \frac{\text{Contribution Margin (C. M)}}{\text{EBIT}}$$

Where, Contribution Margin = Sales - Variable Costs

Such C. M. is to cover fixed costs and earnings. Since, C. M. = EBIT + Fixed Costs; hence the above formula can also be expressed as follows :

$$(iv) \text{ DOL} = \frac{\text{EBIT} + \text{Fixed costs}}{\text{EBIT}}$$

The value of DOL must be greater than 1. If the value is exactly equal to 1; there exists no operating leverage. The higher the degree of operating leverage, the greater is the degree of operating risk and vice-versa. Operating risk is the risk of the firm not being able to cover its fixed operating costs. The larger is their magnitude, the greater is the sales volume required to cover its fixed costs. Thus, whenever sale revenues start to decrease, the possibility of incurring operating losses increase. As a result, no firm is willing to operate under condition of high operating leverage creating high-risk situation.

Measurement of Financial Leverage

Financial leverage is the magnification of the effect of changes in EBIT on the earnings per share of the common stock. Financial leverage arises when fixed costs bearing securities are used in the capital structure of the firm. The examples of fixed costs bearing securities are : (i) long-term debt including debentures, bonds, etc. and (ii) preference share capital. Long-term debts bear a fixed rate of interests; while preference share capital bears a fixed rate of dividends. Financial leverage occurs when fluctuation in EBIT is accompanied by disproportionate fluctuation in the firm's earning per share. The degree of financial leverage (DFL) is the proper measure of financial leverage. It may be defined as the ratio of percentage change in earnings per share available for common stockholders that is associated with a given percentage change in EBIT. Therefore, DFL can be expressed as follows :

DFL may be defined as the ratio of percentage change in earnings per share available for common stockholders that is associated with a given percentage change in EBIT.

$$\text{DFL} = \frac{\text{Percentage change in EPS}}{\text{Percentage change in EBIT}} > 1$$

Alternatively, DFL can be measured at any level of operating profit –

$$\text{DFL} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}} > 1$$

$$\text{or, DFL} = \frac{\text{EBIT}}{\text{EBT}} > 1$$

$$[\text{EBIT} - 1 = \text{EBT}]$$

Like the degree of operating leverage, DFL should be more than 1. The higher the DFL, the greater is the financial risk involved and vice-versa.

Measurement of Combined Leverage

Combined leverage measures the interaction on the firm of both operating and financial leverages.

Combined leverage measures the interaction on the firm of both operating and financial leverages. Therefore, if a firm uses a considerable amount of both operating and financial leverages; in that case, even small changes in the level of sales will produce wide fluctuations in earning per share. That is, combined leverage compares changes in sales revenues with changes in EBT. Hence, this leverage combines operating and fixed charges and gives rise to a separate leverage combining the effect of both operating and financial leverages.

The degree of combined leverage (DCL) is the measure of combined leverage, which can be computed by multiplying the two leverages. That is –

$$\text{DCL} = \text{DOL} \times \text{DFL}$$

A number of different combinations of operating and financial leverages could produce even the same DCL. Hence, to some degree, firms can make trade off between operating and financial leverages. A firm having a high degree of operating leverage is likely to use financial leverage to a lesser extent. Alternatively, a firm having a low degree of operating leverage might seek a high degree of financial leverage. Thus, maintaining an ideal situation would demand that a proper balance between operating and financial leverages is to be kept in order to maintain the risk profile of the firm within reasonable limit and maximize return to the shareholders.

Relationship of Leverage with Other Related Variables

The following statements indicate the relation of the leverage with related variables :

1.	Leverage increases with increases in profitability.
2.	Leverage decreases with decreases in profitability.
3.	Leverage decreases with decreases in volatility.
4.	Leverage is negatively correlated with interest coverage ratio.
5.	Leverage is positively correlated with firm value.
6.	Leverage increases with increases in operating risk.
7.	Leverage decreases with increases in firm size.
8.	Leverage increases with increases in free cash flow.
9.	Leverage increases with increases in liquidation value.
10.	Leverage increases with elasticity of demand for the product.
11.	Leverage decreases with increases in dispersion outside ownership.
12.	Leverage is negatively correlated with growth and risk.
13.	Leverage is positively correlated with firm age.
14.	Leverage is negatively correlated with product quality.
15.	Leverage is used to avoid takeovers.
16.	Leverage increases with decreases in free cash flow.

The analysis of the above statements reveals the following :

That leverage has positive correlation with : (i) profitability, (ii) return volatility, (iii) firm value, (iv) operating risk, (v) free cash flow, (vi) liquidation value, (vii) firm age has been supported by some authors; while this view has been refuted by some other authors.

That leverage has negative correlation with : (i) interest coverage ratio, (ii) firm size, (iii) dispersion outside ownership, (iv) growth and risk, (v) product quality and (vi) free cash flow has been supported by many authors; while a few authors have rejected the view.

Problems and Solutions

Problems - 1

Van Auken Lumber's 2000 income statement is shown here :

VAN AUKEN LUMBER :

INCOME STATEMENT FOR DECEMBER 31, 2000

(THOUSANDS OF DOLLARS)

Sales	\$36,000
Cost of goods sold	(25,200)
Gross profit	\$10,800
Fixed operating costs	(6,480)
Earnings before interest and taxes	\$ 4,320
Interest	(2,880)
Earnings before taxes	\$ 1,440
Taxes (40%)	(576)
Net income	\$ 864
Dividends (50%)	\$ 432

- Compute the degree of operating leverage (DOL), degree of financial leverage (DFL) and degree of total leverage (DTL) for Van Auken Lumber.
- Interpret the meaning of each of the numerical values you computed in part a.
- Briefly discuss some ways Van Auken can reduce its degree of total leverage.

Solution

$$\text{DOL} = \frac{\text{Contribution Margin}}{\text{EBIT}} \quad \text{Where : Contribution Margin} = \text{Sales} - \text{VC}$$

$$= \frac{(36,000 - 25,200)}{4,320} = \frac{10,800}{4,320} = \underline{2.5 \text{ times}}$$

$$\text{DFL} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}} = \frac{4,320}{4,320 - 2,880} = \frac{4,320}{1,440} = \underline{3 \text{ times}}$$

$$\text{DCL} = \text{DOL} \times \text{DFL} = 2.5 \times 3 = \underline{7.5 \text{ times}}$$

- DOL equal to 2.5 times appears to be higher, thereby signifying greater degree of operating risk in case of Van Auken Lumber. Similarly, DFL equal to 3 times seems to be higher; thereby implying greater degree of financial risk in case of the firm. Lastly, DCL equal equal to 7.5 times is much higher; thereby signifying greater total risk in case of the firm.

- c) Degree of total leverage of the firm can be reduced by (i) increasing contribution margin or (ii) decreasing interest amount and (iii) increasing EBIT or decreasing interest amount.

Problem - 2

The capital structure of the Progoti Corporation consists of an ordinary share capital of Tk. 10 lacs of Taka 100 par value and Tk. 10 lacs of 10 % debentures. Sales increased by 20% from 1 lac units to 1.2 lacs units, the selling price is Tk. 10 per unit, variable cost Tk. 6 per unit and fixed expenses Tk. 2 lacs. The income tax rate is assumed to be 50%.

- a) You are required to calculate the following :
- (i) Percentage increase in EPS;
 - (ii) DFL at 1 lac and 1.2 lacs units;
 - (iii) DOL at 1 lac and 1.2 lacs units.
- b) Comment on the behavior of FL and OL in relation to increase of production from 1 lac to 1.2 lacs units.

Solution

a) (i) Determination of EPS

Sales in units	1,00,000	1,20,000
Sales Revenues	10,00,000	12,00,000
Less variable costs	6,00,000	7,20,000
Less fixed costs	2,00,000	2,00,000
EBIT	2,00,000	2,80,000
Less interest	1,00,000	1,00,000
EBT	1,00,000	1,80,000
Less taxes @ 50%	50,000	90,000
Net Income	50,000	90,000
No. of equity shares	10,000	10,000
EPS	5	9

Therefore, percentage increase in EPS is $\text{Change in EPS} / \text{EPS} \times 100 = \text{Tk. } 4/5 \times 100 = 80\%$

(ii) DFL at 1 lac units = $\text{EBIT} / (\text{EBIT} - I) = \text{Tk. } 2,00,000 / \text{Tk. } 1,00,000 = 2$ times

DFL at 1.2 lacs units = $\text{EBIT} / (\text{EBIT} - I) = \text{Tk. } 2,80,000 / \text{Tk. } 1,80,000 = 1.56$ times

(iii) $DOL = (Sales - VC)/EBIT$

DOL at 1 lac units = Tk. 4,00,000/ Tk. 2,00,000 = 2 times

DOL at 1.2 lac units = Tk. 4,80,000/ Tk. 2,80,000 = 1.71 times

(b) An increase in production and sales from 1,00,000 units to 1,20,000 units has salutary effects on the EPS; the value of EPS has gone up by 80% (from Tk. 5 to Tk. 9). Moreover, there has been a decrease in both types of leverages – operating as well as financial - reflecting a decline in the total risk of the company. With a lower degree of risk in the capital market, the market price of its shares is likely to go up. The net income has gone up by Tk. 40,000 as a result of the increase in sales level. Such an increase can be attributed to the fact that there has been no increase in either fixed overheads or fixed interest cost.

Review Questions

Short Questions

1. Define leverage. Examine its significance.
2. What is (a) Operating leverage and (b) Financial leverage ?
3. Is there any distinction between leverage and trading on equity ?
4. Examine the impact of leverage on EPS

Broad Questions

5. What are various measures of leverage ? Explain each of them .
6. Examine the relationship of leverage with the related variables.
7. How would you compute the following types of leverages ?
a) DOL; b) DFL and c) DCL ?
8. What do the following statements imply ?
a) High degree of FL; b) High degree of OL and c) High degree of CL
Examine each of their impact.

Review Problems

Problem – 1

Olinde Electronics Inc. produces stereo components that sell for $P = \$100$. Olinde's fixed costs are \$200,000; 500 components are produced and sold each year; EBIT is currently \$50,000 and Olinde's assets (all equity financed) are \$500,000. Olinde estimates that it can change its production process, adding \$400,000 to investment and \$500,000 to fixed operating costs. This change will (i) reduce variable costs per unit by \$10 and (ii) increase output by 2,000 units, but (iii) the sales price on all units will have to be lowered to \$95 to permit sales of the additional output. Olinde has tax loss carryovers that cause its tax rates to be zero. Olinde uses no debt, and its average costs of capital is ten percent.

- a. Should Olinde make the change ?
- b. Would Olinde's degree of operating leverage increase or decrease if it made the change? What about its operating breakeven point ?
- c. Suppose Olinde were unable raise additional equity financing and had to borrow the \$400,000 to make the investment at an interest rate of eight percent. Use DuPont equation to find the expected return on total assets (ROA) of the investment. Should Olinde make the change if debt financing must be used ?
- d. What would Olinde's degree of financial leverage be if the \$400,000 was borrowed at the eight percent interest rate ?

Problem - 2

Gordon's Plants has the following partial income statement for 2000 :

Earnings before interest and taxes	\$ 4,500
Interest	<u>(2,000)</u>
Earnings before taxes	\$ 2,500
Taxes (40%)	<u>(1,000)</u>
Net income	<u>\$ 1,500</u>
Number of common shares	1,000

- a. If Gordon's has no preferred stock, what is its financial breakeven point ? Show that the amount you come up with actually is the financial breakeven by recreating the portion of the income statement shown here for the amount.
- b. What is the degree of financial leverage for Gordon's ? What does this value mean ?
- c. If Gordon's actually has preferred stock that requires payment of dividends equal to \$600, what would be the financial breakeven point ? Show that the amount you compute is the financial breakeven by recreating the portion of the income statement shown here for the amount. What is the degree of financial leverage in this case ?

Lesson-4: Dividend Theory

After successful completion of the lesson 4, you should be able :

- To understand the concept and various approaches of dividend;
- To know the pros and cons of the various theories of dividend, and
- To learn the techniques of valuation of the firm under the various dividend models.

Concept and Approaches of Dividend

There are two vital approaches of dividend namely (i) Stream of dividend approach and (ii) Stream of earning approach.

Stream of Dividend Approach

The Traditional School of Dividend Policy argues that the choice of dividend policy affects the stock price and value of the firm; since the investors prefer a current and certain return in the form of dividends to an uncertain prospect of future dividends. As a result the investors are willing to pay more for high yield ones. This hypothesis holds that the investors are primarily interested in immediate cash earnings rather than in distinct future gains in the form of capital gains. In specific terms the value will be expressed as follows :

The Traditional School of Dividend Policy argues that the choice of dividend policy affects the stock price and value of the firm

$$V(o) = \frac{d_1}{(1+k)} + \frac{d_2}{(1+k)^2}$$

Where, $V(o)$ is the present value of share, d_1 and d_2 are dividends for the first and second period and so forth, k is the rate at which dividends are discounted. Hence, in equation form the same can be expressed as under :

$$V(o) = \sum_{T=1} \frac{d(t)}{(1+K)^t}$$

Some authors hold that most people could object to the foregoing formula by saying that it should use the present worth of future earnings and not the future dividends as of opinion that the investors receive dividends in cash and retained earnings in a rise in price. If they desire for any additional cash, then they can sell a fraction of their respective equity.

Arguments in favor of dividend approach pointed out by some authors are as follows :

- Higher dividends tend to reduce the risk and uncertainty attached to a share/ stock;
- Investors' preference is for the current earnings rather than future ones and

- (iii) It relates to the informational contents of the dividend payout, since investors take dividends as a tangible evidence of earning capacity of a firm.

Stream of Earning Approach

This approach holds that higher share prices are nothing but the consequences of higher retained earnings.

This approach holds that higher share prices are nothing but the consequences of higher retained earnings. Retained earning is taken as an important source of internal financing and affects the share prices by their influences on future earnings. A stream of higher future earnings results in higher share prices. If the present value of profitability of future retained earnings in the investors’ calculation is higher than the current competitive return prevailing in the market; then an increase in share prices is likely to occur. Another argument favoring this hypothesis is that it reduces the tax burden of stockholders.

The value of the current common stock is a function of cash flows expected by the investors and the risk involved in these inflows. These inflows will include the dividends of the stock as well as the price from sale of stock. If the discount rate is known, the present value of a share /stock may be found out. This rate is defined as the required rate of return, which is the minimum rate of return essential to induce investors to buy or hold the security. The required rate will be equal to the risk free rate of interest (Ri) plus a risk premium (O) for the riskiness of the share. The required rate of return for different shares may calculated as follows:

$$P = R_i + O \dots\dots\dots(1)$$

When the rate of return exceeds the required rate, investor should buy; otherwise he should sell. The market will be in equilibrium when rate of return equates the required rate; the investors would be indifferent to buy or sell the share under this situation. The following equation (2) shows that P (t + 1) is the market required rate of return for any period t that equates the present value of the dividends at the end of period t, d (t + 1) and the price of the share at that time V (t + 1) to the current share price V (t). That is :

$$V (t) = \frac{1}{1 + P (t + 1)} X [d (t + 1) + V (t + 1)] \dots\dots\dots(2)$$

Pros and Cons of Dividend Theories: (Relevance & Irrelevance)

Dividend Irrelevance Theory

According to M-M, dividend policy of a firm is irrelevant as it does not affect the wealth of the shareholders.

The Dividend Irrelevance School of Thought is mainly associated with Modigliani and Miller who had argued in support of the irrelevance of the firm’s financing decision. They emphasize that under perfect market conditions where there exists one price for one commodity; a firm’s value is determined wholly by its investment portfolio and not by the manner of its financing arrangements. According to M-M, dividend policy of a firm is irrelevant as it does not affect the wealth of the shareholders. They advocated that the value of the firm depends on the

firm's earnings, which results from its investment policy. Thus, when the investment decision of a firm is given, dividend decision – the split of earnings between dividends and retained earnings – is of no significance in determining the value of the firm.

In the capital structure theory, the idea that corporate leverage might increase the value of the firm is rejected on the ground that the investor could engage in home made leverage. Moreover, the idea that corporate diversification might increase the value of the firm is rejected on the principle that investors can diversify their risks through their own portfolio. M-M also hold that the effect of dividend payments on shareholders wealth is offset exactly by other means of financing. Furthermore, M-M suggest that the sum of discounted value per share after payment of dividend and making use of external financing is the same as the discounted value before payment of dividend.

Under, M-M thesis, the 0 period shares is defined as equal to the present value of the dividend paid at the end of the year plus the price of share at the end of the year. Thus :

$$P_0 = \frac{1}{1+r} (D_1 + P_1)$$

Where, D_1 = Dividend at the end of the year

P_1 = Share price of the end of the year

r = Discount rate

P_0 = Current price of 0 period share.

M-M conclude that the value of the firm is independent of its dividend policy i.e. shareholders are indifferent to dividends.

Some authors hold that the total market value of shares outstanding at the starting period t is completely independent of dividend to be declared by the directors at period $t+1$. They concluded that given its operating i.e. production investment decision, the market value of a firm at any period is independent of its financing decision; thus, operating decisions need not be affected by financing decisions.

The Relevance of Dividend Policy

M-M hypothesis of dividend irrelevance is based on some assumptions, namely, existence of perfect capital markets, absence of taxes and transaction costs, presence of fixed investment policy and non-existence of risk of uncertainty. But these assumptions may not always be found correct and valid. Because of the unrealistic nature of the assumptions, M-M's hypothesis is alleged to lack practical relevance. This suggests that internal financing and external financing are not equivalent. Dividend policy of the firm does not affect the perception of shareholders, and, therefore, they do not remain indifferent between dividends and capital gains resulting from influencing the wealth of the shareholders. The dividend policy influences the value of the firm. There

exists three principal arguments in support of dividend relevance viz. (a) investors are in favor of current income, (b) investors prefer certainly cash in hand, rather than equivalent amount as retained by the firm and (c) dividend announcements have important information containing management's expectation of the future. Thus, if dividend policy matters to the investors; it is mainly because of imperfection in the market.

Gordon and Lintner argued that the required rate of return on equity decreases as the dividend payout is increased.

Gordon and Lintner advocated the relevance theory of dividend policy. They argued that the required rate of return on equity decreases as the dividend payout is increased; because investors are less certain of getting the capital gains which are supposed to result from retained earnings than they are of receiving dividends, In effect, they said that investors value of a dollar of expected dividends is more higher than a dollar of expected capital gains, because the dividend yield component, D_1/P_0 is less risky than the growth component in the total expected return equation,

$$K_e = D_1/P_0 + g.$$

The above discussions on irrelevance and relevance of dividend policy reveal that dividend policy is controversial. Many implausible reasons are given for why dividend policy might be important and many of the claims made about dividend policy are economically illogical. Now, the question arises as to decide which of the above conflicting theories of dividend is better. The most logical way to proceed is to test theories empirically. Many such tests have been conducted; but their results have been unclear. There are two reasons for this namely : (i) for a valid statistical test, things other than dividend policy must be held constant, that is, the sample companies must differ only in their dividend policies and (ii) each firm's cost of equity must be subject to measure with a high degree of accuracy. But, neither of these two conditions holds. It is not possible to find a set of publicly owned firms that differ only in their dividend policies, nor can precise estimates of cost of equity be obtained. Therefore, no one can establish a clear relationship between dividend policy and the cost of equity. Investors in the aggregate cannot be seen to uniformly prefer either higher or lower dividends. Nevertheless, individual investors do have strong preferences. Some prefer high dividends, while others prefer all capital gains. These differences among individuals help to explain why it is difficult to reach any definite conclusions regarding the optimal dividend payout. Even so, both evidence and logic suggest that investors prefer firms that follow a stable and predictable dividend policy (regardless of the payout level).

Techniques of Valuation of a Firm: Various Models

Under M-M Model

Step – 1 : The market price of a share in the beginning of the 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. Symbolically,

$$P_0 = \frac{D_1 + P_1}{(1 + k_e)} \dots\dots\dots(i)$$

Where P_0 = Prevailing market price of a share

K_e = Cost of equity capital

D_1 = Dividend to be received at the end of period 1

P_1 = Market price of a share at the end of period 1

Step – 2 : If the firm were to finance all investment proposals, the total amount raised through new shares issued would be given in the following equation :

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

Where $\Delta n P_1$ = Amount obtained from the sale of new shares.

I = Total amount/ required of capital budget

E = Earnings of the firm during the period

nD_1 = Total dividends paid

$E - nD_1$ = Retained Earnings

Step – 3 : There is a positive nD_1 and negative nD_1 . Therefore nD_1 cancels. We then have

$$nP_0 = \frac{(n + \Delta n) P_1 - I + E}{(1 + k_e)} \dots\dots\dots(iii)$$

Step -4 : Since dividend (D) are not found in Eq. (iii), Modigliani and Miller conclude that dividends do not count and that dividend policy has no effect on the share price.

Under Walter’s Model

Under Walter Model the valuation of a firm may be made by using the following formula :

$$P = \frac{D + r/k_e (E - D)}{k_e} \dots\dots\dots(iv)$$

Equation (iv) shows that the value of a share is the present value of all dividends plus the present value of all capital gains.

According to Gordon, the market value of a share is equal to the present value of future streams of dividends.

Under Gordon Model

According to Gordon, the market value of a share is equal to the present value of future streams of dividends. Symbolically, this model can be expressed as follows:

$$P = \frac{E(1 - b)}{K_e - br}$$

Where

P = Price of a share

E = Earnings per share

b = Retention ratio or percentage of earnings distributed as dividends

1 - b = D/P ratio, i.e., percentage of earnings distributed as dividends

ke = capitalization rate/ cost of capital

br = g = Growth rate = rate of return on investment of an all-equity firm.

Problems and Solutions

Problem - 1

Asbestos company belongs to a risk class of which the appropriate capitalization rate is 15 percent. It currently has 1,00,000 shares selling at Tk. 100 each. The firm is contemplating the declaration of a Tk. 8 dividend at the end of the current financial year, which has just begun. Answer the following questions based on M-M model :

- a. What will be the price of the shares at the end of the year , if the dividend is not declared and if the dividend is declared ?
- b. Assuming that the firm pays dividend and has a net income of Tk. 20 lacs and makes new investment of Tk. 40 lacs during the period, how many new shares must be issued ?

Solution

a. (i) Price of the share, when dividend is declared : $P_0 = \frac{D_1 + P_1}{(1 + k_e)}$, Tk. 100 = $\frac{P_1 + Tk. 8}{1.15}$

Tk. 115 = P₁+8 =P₁=Tk 115-8=Tk 107

(ii) Price of the share, when dividends are not paid : Tk. 100 = $\frac{P_1 + 0}{1.15}$, So, P₁ = Tk 115

b. Number of new shares to be issued :

$$= \frac{I - (E - nD_1)}{P_1} = \frac{Tk. 40,00,000 - (Tk. 20,00,000 - 8,00,000)}{Tk. 107} = \underline{26,168 \text{ shares}}$$

Problem - 2

- (a) Pran Company earns Tk. 7 Per share, is capitalized at a rate of 12 percent and has a rate of return on investment of 20 percent.

According to Walter's model, what should be the price per share at 25 percent dividend payout ratio ? Is this the optimum payout ratio according to Walter ?

- (b) Bata Company has cost of equity capital of 15 percent, the current market value of the firm (V) is Tk. 40,00,000 (@ Tk. 40 per share. Assume values for I (new investment), Y (earnings) and D (dividends) at the end of the year as I = Tk. 8,80,000, Y = 2,50,000 and D = Tk. 2 per share. Show that under the M-M assumptions, the payment of the dividend does not affect the value of the firm.

Solution

- (a)

$$P = \frac{D + r/k_e (E - D)}{K_e} = \frac{\text{Tk. } 1.75 + (0.20/0.12) (\text{Tk. } 7.0 - \text{Tk. } 1.75)}{0.12} = \underline{\text{Tk. } 87.65}$$

This is not the dividend payout ratio in situations where $r > k_e$ to maximize the value of the firm. At this ratio, the value of the share would be maximum, that is Tk. 88.

- (b) Value of the firm, **when dividends are paid** (MM assumptions):

(i) Market price of the share ; $P_0 = \frac{1}{(1 + k_e)} (D_1 + P_1) = \text{Tk. } 40 = \frac{(P_1 + \text{Tk. } 2)}{1.15}$

Tk. $40 \times 1.15 = P_1 + \text{Tk. } 2$ So, $P_1 = \text{Tk. } 44$

- (ii) Amount required for new financing : $I - (Y - nD_1)$

= Tk. $8,80,000 - (\text{Tk. } 2,50,000 - \text{Tk. } 2,00,000)$

= Tk. 8,30,000

(iii) Number of shares to be issued : $= \frac{\text{Tk. } 8,30,000}{\text{Tk. } 44} = 18,864 \text{ shares}$

$(n + \Delta n) P_1 - I + E$

(iv) Value of the firm : $nP_0 = \frac{\text{-----}}{(1 + k_e)}$

$= \frac{(1,00,000 + 18,864) 44 - 8,80,000 + 2,50,000}{(1 + 0.15)}$

$$\begin{aligned}
 & (1,18,864 \times 44) - 8,80,000 + 2,50,000 \\
 & = \frac{\quad}{1.15} \\
 & 52,30,016 - 8,80,000 + 2,50,000 \\
 & = \frac{\quad}{1.15} = \underline{\underline{\text{Tk. 40,00,014}}}
 \end{aligned}$$

Problem - 3

- a) The X Company which earns Tk. 6 per share, is capitalized at 15 percent and has a return on investment of 18 percent. Using Walter’s dividend policy model, determine (i) the optimum payout, (ii) the price of share at this payout.
- b) The Shine Chemicals Company belongs to as risk class for which the appropriate capitalization rate is 12 percent. It currently has 2,00,000 shares selling at Tk 100 each. The firm contemplating the declaration of Tk. 6 as dividend at the end of the current financial year, which has just begun. What will be the price of the share at the end of the year, if a dividend is not declared ? What will it be if it is paid ? Answer these on the basis of Modigliani and Miller model and assume no taxes.

Solution

a) (i) According to Walter’s formula, the optimum dividend payout ratio would be zero as $r > k_e$ because the value of the share of the firm would be maximum.

$$\text{(ii) } P = \frac{D + r/k_e (E - D)}{k_e} = \frac{(0.18/0.15)(\text{Tk. } 6)}{0.15} = \underline{\underline{\text{Tk. } 48}}$$

b) (i) Price of the share when dividends are declared (M-M assumptions):

$$P_1 = \frac{1}{(1 + k_e)} (D_1 + P_1)$$

$$\text{Tk. } 100 = \frac{1}{1.12} (\text{Tk. } 6 + P_1), \quad P_1 = 112 - \text{Tk. } 6 = \underline{\underline{\text{Tk. } 106}}$$

$$\begin{aligned}
 \text{(ii) Price of shares when dividends are not declared : } & \text{Tk. } 100 = \frac{(\text{Tk. } 0 + P_1)}{1.12} \\
 & = P_1 = \text{Tk. } 112
 \end{aligned}$$

Review Questions

Short Questions

1. Explain the theme of stream of dividend approach.
2. What are the arguments in favor of dividend approach ?
3. What is the theme of stream of earning approach ?
4. What are the arguments in favor of stream of earning approach ?
5. What are the central themes of : (a) The irrelevance of dividend policy and (b) The relevance of dividend policy ?
6. Under M_M Model, how market price per share is determined ? Explain.
7. What are the arguments in favor of dividend relevance ?
8. What are the assumptions of M-M Model of Dividend ?
9. What are the arguments against MM Model of Dividend ?
10. What are the critical assumptions of Walter Model ?
11. What are the assumptions of Gordon Model ?

Broad Questions

12. Examine the pros and cons of Dividend Theories, so far developed.
13. What assumptions and arguments are used by M-M in support of Irrelevance of Dividends ? Are dividends really irrelevant ? If not, what are the arguments for the relevance of dividend policy ?
14. Examine the various techniques of valuation of a firm under -
(a) MM Model; (b) Walter Model and (c) Gordon Model.

Review Problems

Problem - 1

A textile company belongs to a risk class for which the appropriate P/E ratio is 10. It currently has 60,000 outstanding shares selling at Tk. 100 each. The firm is contemplating the declaration the declaration of Tk. 10 dividend at the end of the current fiscal year which has started. Given the assumptions of Modigliani and Miller, answer the following questions :

- (a) What will be the price at the end of the year (i) if a dividend is declared and (ii) if a dividend is not declared ?
- (b) Assuming that the firm pays the dividend, has net income of Tk. 10,00,000 and makes new investments of Tk. 20,00,000 during the period, how many new shares must be issued ?
- (c) What will be the value of the firm (i) if dividend is declared (ii) if a dividend is not declared ?

Problem - 2

Following are the details regarding three companies A Ltd., B Ltd. and C Ltd.

	A Ltd.	B Ltd.	C Ltd.
Internal rate of return	15	12	10
Cost of equity capital	10	10	10
Earnings per share	8	8	8

Calculate the value of an equity share of each of these companies applying Walter's formulae when dividend payment ratio (D/P ratio) is (a) 0.50, (b) 0.75 and (c) 0.25. What conclusions do you draw?

Lesson-5: Dividend Policy

After successful completion of this lesson 5, you should be able -

- To understand the concept and objectives of dividend policy of a corporate firm;
- To identify the factors that influence the dividend policy of a corporate firm;
- To understand the major types of dividend policy of a corporate firm;
- To know the pros and cons of various forms of dividend of a corporate firm;
- To grasp the significance and implications of stock splits, dividend reinvestment and share repurchase plans and
- To identify the significance and forms of stability of dividend.

Concept and Objectives of Dividend Policy

The objective of the firm is to maximize the wealth of the shareholders/ stockholders. Sound and successful investment decisions generate positive net cash flow, which is used either for payment of interest or dividends or retention within the firm to finance new investments. The important aspect of a dividend decision is to determine the amount of earnings to be distributed to the shareholders, in one hand, and the amount to be retained in the firm, on the other. The dividend decision is regarded as the financing decision since the payment of cash dividend reduces amount of cash available for investment and the firm may have to make a new issue of share or debt.

Dividend decision is the core of the financial management; since it affects capital structure decision and, in turn, investment decision of that firm. The most significant aspect of the dividend policy is to determine the amount of earnings to be distributed to the shareholders and the amount to be retained in the firm. Retained earnings are the most important internal sources of financing the growth of the firm. On the other hand, dividends are considered desirable from the shareholders point of view, as they tend to increase their current wealth. Dividends constitute the use of the firm's funds. A firm intending to pay dividends also needs the funds to finance its investment opportunities will have to use the external sources of financing namely, issue of new common shares/ stocks or issue of debt. Dividend policy of the firm thus, has its effects on both the long-term financing and wealth of the shareholders. As a result, the firm's decision to pay dividends may be shaped by the following two possible viewpoints.

The most significant aspect of the dividend policy is to determine the amount of earnings to be distributed to the shareholders and the amount to be retained in the firm.

Long-term Financing Decision

With this approach, dividends will be paid only when the firm does not have profitable investment opportunities.

When dividend decision is treated as a long-term financing decision, the net earnings of the firm may be considered as a source of long-term funds. With this approach, dividends will be paid only when the firm does not have profitable investment opportunities. A firm should reinvest its earnings if the prospective returns are greater than that of the shareholder's cost of capital or required rate of return. If the corporate managers can maximize the market value of the firm by manipulating dividend payment; then they should do so. The firm grows at a faster rate when it accepts highly profitable investment projects. External equity could be raised to finance investments. But the retained earnings are preferable because, unlike external equity they do not have any floatation costs. The distribution of cash dividends causes a reduction in internal funds available to finance profitable investment opportunities and thus, either constrains the growth or requires the firm to find other costly sources of financing. Thus, earnings may remain undistributed as the part of a long-term financing decision. The dividends paid to shareholders represent a distribution of earnings that cannot be profitably reinvested by the firm. With this approach dividend decision is viewed merely as a residual decision.

Wealth Maximization Decision

The payment of current dividends may significantly affect the market price of the share.

One may argue that capital markets are not perfect; therefore, shareholders are not indifferent between dividends and retained earnings. Because of the market imperfections and uncertainty, shareholders may give a higher value to the near future than the future dividends and capital gains. Some authors hold that one dollar of current dividend is worth approximately three dollars of retained cash flows in the form of capital gains and future dividend. Thus, the payment of current dividends may significantly affect the market price of the share. Higher dividends increase the value of the shares and low dividends reduce the same value. In order to maximize wealth under uncertainty, the firm must pay enough dividends to satisfy investors. Under conditions of uncertainty; it is argued that shareholders are not indifferent to split between dividends and retention. Since dividends are more certain than capital gains, it is believed that the shareholders are ready to pay a higher price for a share paying current dividends as compared to another firm within the same risk class but paying lower dividends. Thus, the rate of return required by the shareholders would rise with percentage of retention.

Factors Affecting Dividend Policy

The factors determining the dividend policy of a firm, for purpose of exposition, be classified into :

(a) Dividend payout (D/P) ratio, (b) Stability of dividends, (c) Legal, contractual and internal constraints and restrictions, (d) Owner's considerations, (e) Capital market considerations and (f) Inflation.

(a) Dividend Payout (D/P) Ratio

A major aspect of the dividend policy of a firm is its dividend payout (D/P) ratio, that is, the percentage share of the earnings distributed to the shareholders as dividends.

Dividend policy involves the decision to payout earnings or to retain them for reinvestment in the firm. The retained earnings constitute a source of financing. The payment of dividends results in the reduction of cash, and therefore, is a depletion of total assets. In order to maintain the asset level, as well as to finance investment opportunities, the firm must obtain funds from the issue of additional equity or debt. If the firm is unable to raise external funds, its growth would be affected. Thus, dividends imply outflow of cash and lower future growth. In other words, the dividend policy of the firm affects both the shareholders' wealth and the long-term growth of the firm. The optimum dividend policy should strike the balance between current dividends and future growth which maximizes the price of the firm's shares. The D/P ratio of a firm should be determined with reference to two basic objectives – maximizing the wealth of the firm's owners and providing sufficient funds to finance growth.

The retained earnings constitute a source of financing.

(b) Stability of Dividends

The second major aspect of the dividend policy of a firm is the stability of dividends. The investors favor a stable dividend as much as they favor the payment of dividends (D/P ratio). The term *dividend stability* refers to the consistency or lack of variability in the stream of dividends. In more precise terms, it means that a certain minimum amount of dividend is paid out regularly.

It means that a certain minimum amount of dividend is paid out regularly.

(c) Legal, Contractual and Internal Constraints and Restrictions

The dividend decision is also affected by certain legal, contractual, and internal requirements and constraints. The legal factors stem from certain statutory requirements, the contractual restrictions arise from certain loan covenants and the internal constraints are the result of the firm's liquidity position.

Legal Requirements Legal stipulations do not require a dividend declaration but they specify the conditions under which dividends must be paid. Such conditions pertain to (i) capital impairment, (ii) net profits and (iii) insolvency.

(d) Contractual Requirements

Important restrictions on the payment dividend may be accepted by a firm when obtaining external capital either by loan agreement, a debenture indenture, a preference share agreement or a lease agreement. Such restrictions may cause the firm to restrict payment of cash dividends until a certain level of earnings has been achieved or limit the amount of dividends paid to a certain amount or percentage of earnings.

(e) Internal Constraints

These factors are unique to a firm which include (i) liquid assets, (ii) growth prospects, (iii) financial requirements (iv) availability of funds, (v) earnings stability and (vi) control.

(f) Owner's Considerations

The dividend policy of a firm is likely to be affected by the owner's considerations of : (i) the tax status of the shareholders, (ii) their opportunities of investments and (iii) dilution of ownership. The firm must aim at dividend policy which has a beneficial effect on the wealth of the majority of the shareholders

(g) Capital Market Considerations

If a firm has only limited access to capital markets, it is likely to follow low dividend payout ratio. They are likely to rely more heavily on retained earnings as a source of financing their investments. Firms which lean heavily on financial institutions for raising funds, declare a minimum dividend so that they can remain on the eligible list these institutions.

If a firm has only limited access to capital markets, it is likely to follow low dividend payout ratio.

Major Types of Dividend Policy

The various types of dividend policy are discussed below :

Residual Dividend Policy

It is a policy in which the dividend paid is set equal to the actual earnings as reduced by the amount of retained earnings necessary to finance the firm's optimal capital budget. The basis of the policy is that the investors prefer to have the firm retain and reinvest earnings rather than paying them as dividends.

Stable Dividend Policy

Such dividend policy refers to payment of a specific amount of dividend each year or periodically increasing the dividends at a constant rate. In such a policy the annual Dollar/Taka dividend is relatively predictable by investors.

Constant Payout Ratio Policy

Such a dividend policy refers to payment of a constant percentage of earnings as dividends each financial year. But in practice, because firm's earnings surely will fluctuate, this policy would mean that the amount of dividend would also vary.

Payment of Regular Dividend Plus Extra

A policy of paying a low regular dividend plus a year-end extra in good years is a compromise between a stable dividend and a constant payout rate. Such a policy gives the firm flexibility, yet investors can count on receiving at least a minimum dividend. Therefore, it is supplemental dividend paid in good years and excess funds are available for distribution.

Stability of Dividends

Stability or regularity of dividends is considered as a desirable policy by the management of most companies in practice. Shareholders also seem generally to favor this policy and value stable dividends higher than the fluctuating ones. All other things being the same, stable dividend may have a positive impact on the market price of the share.

All other things being the same, stable dividend may have a positive impact on the market price of the share.

Stability of dividends sometimes means regularity in paying some dividend annually, even though the amount of dividend may fluctuate over years, and may not be related with earnings. There are a number of companies which have records of paying some dividend for a long unbroken period. More precisely, stability of dividends refers to the amounts paid out regularly. Three distinct forms of such stability may be distinguished :

- Constant dividend per share or dividend rate
- Constant payout
- Constant dividend per share plus extra dividend.

1. Constant Dividend Per Share or Dividend Rate

A number of companies follow the policy of paying a fixed amount per share or fixed rate on paid-up capital as dividend every year, irrespective of the fluctuations in the earnings. This policy does not imply that the dividend per share or dividend rate will never be increased. When the company reaches new levels of earnings and expects to maintain it, the annual dividend per share (or dividend rate) may be increased. The earnings per share and the dividend per share relationship under this policy is depicted in Figure – 26.1

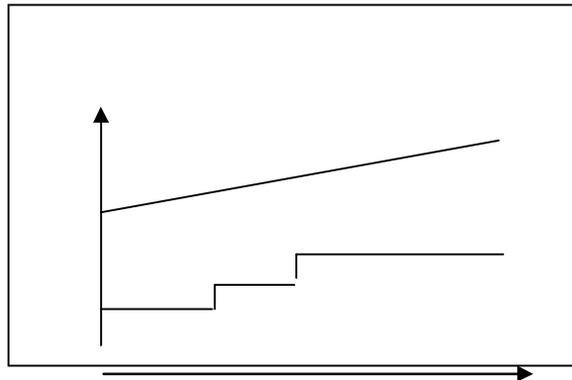


Figure- 26.1 : Constant dividend per share policy

It is easy to follow this policy when earnings are stable. However, if the earnings pattern of a company showed wide fluctuations, it is difficult to maintain such a policy. With earnings fluctuating from year to year, it is essential for a company which wants to follow this policy to build up surpluses in years of higher than average earnings to maintain dividends in years of below average earnings. In practice, when a company retains earnings in good years for this purpose, it earmarks this surplus as *reserve for dividend equalization*. These funds are invested in current

assets like tradable (marketable) securities, so that they may easily be converted into cash at the time of paying dividends in bad years.

2. Constant Payout

The ratio of dividend to earnings is known as payout ratio. Some companies may follow a policy of Constant Payout Ratio, i.e., paying a fixed percentage of net earnings every year. With this policy the amount of dividend will fluctuate in direct proportion to earnings. If a company adopts a 40 percent payout ratio, then 40 percent of every Taka of net earnings will be paid out. For example, if the company earns Tk. 2 per share, the dividend per share will be Tk. 0.80 and if it earns Tk. 1.50 per share the dividend per share will be Re0.60. The relation between the earnings per share and the dividend per share under this policy is exhibited in Figure-26.2.

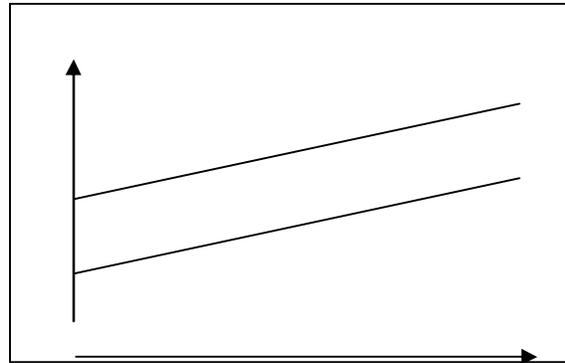


Figure-26.2 : Dividend policy of Constant Payout ratio

This policy is related to a company's ability to pay dividends. If the company incurs losses, no dividends shall be paid regardless of the desires of shareholders. Internal financing with retained earnings is automatic when this policy is followed. At any given payout ratio, the amount of dividends and the additions to retained earnings increase with increasing earnings and decrease with decreasing earnings. This policy does not put any pressure on a company's liquidity since dividends are distributed only when the company has profits.

3. Small Constant Dividend Per Share Plus Extra Dividend

Under the constant dividend per share policy, the amount of dividend is set at a high level, and this policy is usually adopted by the companies with stable earnings. For companies with fluctuating earnings, the policy to pay a minimum dividend per share with a step-up feature is desirable. The small amount of dividend is fixed to reduce the possibility of ever missing a dividend payment. By paying extra dividend (a number of companies in Bangladesh pay an interim dividend followed by regular, *final dividend*). In periods of prosperity, an attempt is made to prevent investors from expecting that the dividend represents an increase in the established dividend amount. This type of a policy enables a company to pay constant amount of dividend regularly without a default and allows a

great deal of flexibility for supplementing the income of shareholders only when the company's earnings are higher than the usual, without committing itself to make larger payments as a part of the future fixed dividend. Certain shareholders like this policy because of the certain cash flow in the form of regular dividend and the option of earning extra dividend occasionally.

We have discussed three forms of stability of dividends. Generally, when we refer to a stable dividend policy, we refer to the first form of paying constant dividend per share. A firm pursuing a policy of stable dividend, as shown in Figure-26.1, may command a higher price for its shares than a firm which varies dividend, amount with cyclical fluctuations in the earnings as depicted in Figure-26.2.

Significance of Stability of Dividends

The stability of dividends has several advantages as discussed below:

- Resolution of investors' uncertainty
- Investors' desire for current income
- Institutional investors' requirements
- Raising additional finances.

Resolution of Investors' Uncertainty

When a company follows a policy of stable dividends, it will not change the amount of dividends if there are temporary changes in its earnings. Thus, when the earnings of a company fall and it continues to pay same amount of dividends as in the past, it conveys to investors that the future of the company is brighter than suggested by the drop in earnings. Similarly, the amount of dividends is increased with increased earnings level only when it is possible to maintain it in future. On the other hand, if a company follows a policy of changing dividends with cyclical changes in the earnings, shareholders would not be certain about the amount of dividends.

Investors' Desire for Current Income

There are many investors, such as old and retired persons, women etc., who desire to receive regular periodic income. They invest their savings in the shares with a view to use dividends as source of income to meet their living expenses. These investors, who desire to receive a regular dividend income, will prefer a company with stable dividends to the one with fluctuating dividends.

Institutional Investors' Requirements

Shares of the company are not only purchased by individuals but also by financial, educational and social institutions and unit trusts. In Bangladesh, financial institutions such as BSB, BSRS, and ICB are some of the largest investors in corporate securities. Every company is

To cater the requirement of institutional investors, a company prefers to follow a stable dividend policy.

interested to have these financial institutions in the list of their investors. These institutions generally invest in the shares of those companies which have a record of paying regular dividends. A company which has a history of adopting an erratic dividend policy may not be preferred by these institutional investors. Thus, to cater the requirement of institutional investors, a company prefers to follow a stable dividend policy.

Raising Additional Finance

A stable dividend policy is also advantageous to the company in its efforts to raise external finances. Stable and regular dividend policy tends to make the share of a company as quality investment rather than the speculation. Investors purchasing these shares intend to hold them for long periods of time. The loyalty goodwill of shareholders towards a company increases with stable dividend policy.

Forms of Dividend: Cash and Stock

The usual practice is to pay dividends in cash. Other option is payment of the bonus shares or stock dividend.

Cash Dividend

Most companies pay dividends in cash. Sometimes cash dividend may be supplemented by a bonus issue (stock dividend). A company should have enough cash in its bank account when cash dividends are declared. If it does not have enough bank balance, arrangement should be made to borrow funds. When the company follows a stable dividend policy, it should prepare a cash budget for the coming period to indicate the necessary funds which would be needed to meet the regular dividend payments of the company. It is relatively difficult to make cash planning in anticipation of dividend needs when an unstable policy is followed.

The cash account and the reserves account of a company will be reduced when the cash dividend is paid.

The cash account and the reserves account of a company will be reduced when the cash dividend is paid. Thus, both the total assets and the net worth of the company are reduced when the cash dividend is distributed. The market price of the share drops in most cases by the amount of the cash dividend distributed.

An issue of bonus share represents a distribution of shares in addition to the cash dividend

Stock Dividend (Bonus Shares)

An issue of bonus share represents a distribution of shares in addition to the cash dividend (known as stock dividend in the U.S.A.) to the existing shareholders. This has the effect of increasing the number of outstanding shares of the company. The shares are distributed proportionately. Thus, a shareholder retains his proportionate ownership of the company. For example, if a shareholder owns 100 shares at the time when a 10 per cent (i.e., 1:10) bonus issue is made, he will receive 10 additional shares. The declaration of the bonus shares will increase the paid-up share capital and reduce the reserves and surplus (retained earnings) of the company. The total net worth is not affected by the bonus issue. In fact, a bonus issue represents a recapitalization of the owners' equity portion, i.e., the

reserves and surplus merely an accounting transfer from reserves and surplus to paid-up capital.

Implications of Stock Dividend and Stock Split

Definition of Stock Dividend and Stock Split

A stock dividend refers to that dividend which is paid in the form of additional shares of stock rather than cash. But a stock split is an action taken by a firm to increase the number of shares outstanding. It is nothing but splitting of existing shares into more shares. Stock split can be of any size – for example, the stock could be split 2 for 1, 3 for 1, 4 for 1 or in any other way.

A stock dividend refers to that dividend which is paid in the form of additional shares of stock rather than cash.

Stock Dividend vs. Stock Split

A stock split is a method to increase the number of outstanding shares through a proportional reduction in the par value of the share. A stock split affects only the par value in the number of outstanding shares, the shareholders' total fund remains unaltered. As with stock dividend the total net worth does not change and the number of outstanding stock increases substantially with the stock split. The stock dividend and stock split are similar except for the difference in their accounting treatment. In the case of stock dividend the balance of the reserves and surplus account decreases due to transfer to the equity capital and the share premium accounts. The par value per stock remains unaffected, with a stock split, the balance of the equity accounts does not change, but the par value per stock changes. The earnings per share will be diluted and the market price per share will fall proportionately with stock split. But, the total value of the holdings of a stock holder remains unaffected with a stock split.

A stock split is a method to increase the number of outstanding shares through a proportional reduction in the par value of the share.

Reasons for Stock Split

The following are reasons for splitting of a firm's common stock:

- To make trading in shares attractive
- To signal the possibility of higher profits in the future
- To give higher dividend to the shareholder

However, the following paragraph discusses each of the reasons briefly:

To make trading in shares attractive : The main purpose of a stock split is to reduce the market price of the stock in order to make it attractive to the investors. With reduction in the market price of the stock, the stocks of the company are placed in a more popular trading range.

To signal the possibility of higher profits in the future: The stock splits are used by the company management to inform to the investors that the company is expected to earn higher profits in future. The market price of the high – growth firm's stocks increases very fast.

To give higher dividend to the shareholder: When the stock is split, seldom does a company reduce or increase the cash dividend per share

proportionately. However, the total dividends of a shareholder increase after a stock split.

Effects of Stock Dividend and Stock Split

Stock dividend and stock split can have their effects on Balance Sheet and price of the firms which are examined below :

Balance Sheet effects : Although the economic effects of stock split and stock dividend are virtually identical, accountants treat them somewhat differently. As for example, on a 2 for 1 stock split, the shares outstanding become doubled and the stock's per value becomes halved. With a stock dividend, the par value is not reduced, but an accounting entry is made transferring capital from the retained earnings account to common stock and paid in capital accounts. The transfer from retained earnings is calculated as follows :

Dollars transferred

from retained earnings

$$= \left[\left(\begin{array}{c} \text{Number of shares} \\ \text{outstanding} \end{array} \right) \times \left(\begin{array}{c} \text{Stock dividend} \\ \text{as a percent} \end{array} \right) \times \left(\begin{array}{c} \text{Market price of} \\ \text{the stock} \end{array} \right) \right]$$

Price Effects: Several empirical studies have examined the effects of stock splits and stock dividends on stock prices. These studies suggest the investors see stock splits and stock dividends for what they are – *simply additional pieces of paper*. If stock dividends and splits are accompanied by higher earnings and cash dividends, then investors will bid up the price of the stock. However, if stock dividends are not accompanied by increases in earnings and cash dividends, the dilution of earnings and dividends per share causes the price of the stock to drop by the same percentage as the stock dividend. Thus, the fundamental determinants of price are the underlying earnings and cash dividends per share, and stock splits and stock dividends merely cut the pie into thinner slices.

Dividend Reinvestment and Share Repurchase Plans

Most large companies offer dividend reinvestment plans whereby stockholders can automatically reinvest dividends received in the stock of the paying corporation. That is, it is a plan that enables a stockholder to automatically reinvest dividends received back into stock of the paying firm. There are two types of dividend reinvestment plans, refer to as “drips” : (i) plans that involve only old stock that already is outstanding and traded in the financial markets and (ii) plans that involves newly issued stock.

It is a plan that enables a stockholder to automatically reinvest dividends received back into stock of the paying firm.

Instead of dividend, a company can repurchase its own stock. There are three methods of share repurchase : (i) fixed price tender offers, (ii) Dutch-option tender offers and (iii) open market purchases. Of these three methods, the second one is most widely used by the companies. In

the absence of a tax differential between capital gain and dividend, the monetary value of share repurchase or cash dividend should be the same.

Problems and Solutions

Problem - 1

The Soda Limited is fast growing manufacturing firm. It earns above industry return on its investment. It has been earning a rate in excess of 25% on its investments in the past and has good prospects of earnings at the same rate in the future as well. The company has been following a dividend policy of paying 70 percent of the earnings to the shareholders and retaining the remaining 30% . The dividend policy is justified on the grounds that the sole objective of the company is to pay dividend having positive impact on the price of the share.

If most of the company's shareholders are young wealthy persons in high tax brackets, is the current dividend policy of the company justified ?

Solution

The current dividend policy of the company is not justified on the following two grounds:

- (i) The company is earning a high rate of return on its investment, which the shareholders are unlikely to earn themselves and
- (ii) Shareholders are wealthy persons in high tax brackets; therefore, they would prefer greater retention resulting in future capital gains than current dividend. The current dividend policy results into a growth of 7.5 % only ($.25 \times 3 = .075$). If the company retains more say 70%, its growth rate would be 17.5% ($.25 \times .7 = .175$ or 17.5%) which reflect in high share price. Thus, shareholders can earn high capital gains on which tax rate is lower than the ordinary income.

Problem - 2

X and Y are two fast growing companies in the engineering industry. They are close competitors to each other. There is a difference between them from the dividend policy. The company X attempts to maintain a non decreasing dividend per share; while the company Y maintains a constant dividend payout ratio. Their EPS, dividend per share and share per price are as follows:

	Company X (In Tk.)			Company Y (In Tk.)		
Year	EPS	DPS	P (range)	EPS	DPS	P (range)
1	9.30	2.00	75-90	9.50	1.90	60-80
2	7.40	2.00	55-80	7.00	1.40	25-65
3	10.50	2.00	70-110	10.50	2.10	35-80
4	12.75	2.25	85-135	12.25	2.45	80-120
5	20.00	2.50	135-200	20.25	4.05	110-225
6	16.00	2.50	150-190	17.00	3.40	140-180
7	19.00	2.50	155-210	20.00	4.00	130-190

In all the calculations below that require a share price, use the average of the two prices given in the share price range.

- (a) Determine the dividend payout ratio and price-earning ratio.
- (b) Determine the average payout and price earning ratios for both the companies over the period.
- (c) The management of the Company Y is anxious as to why their share prices are lower than those of Company X, in spite of the better profitability of the past three years. As financial consultant how would explain the situation?

Solution

(a) and (b) and P/E Ratios

Year	Company X					Company Y				
	EPS Tk.	DPS Tk.	D/P Ratio (%)	P (Tk.)	P/E Ratio	EPS Tk.	DPS Tk.	D/P Ratio (%)	P (Tk.)	P/E Ratio
1	9.30	2.00	21.5	82.50	8.87	9.50	1.90	20	70	7.37
2	7.40	2.00	27.0	67.50	9.12	7.00	1.40	20	45	6.43
3	10.50	2.00	19.0	90.00	8.57	10.50	2.10	20	57.50	5.48
4	12.75	2.25	17.6	110.00	8.63	12.25	2.45	20	100.00	8.16
5	20.00	2.50	12.5	167.50	8.37	20.25	4.05	20	167.50	8.27
6	16.00	2.50	15.6	170.00	10.62	17.00	3.40	20	160.00	7.41
7	19.00	2.50	13.2	182.50	9.6	20.00	4.00	20	160.00	8.00
Total	94.95	15.75	(16.6)	870.00	(9.16)	96.50	19.30	20	760.00	(7.88)

Notes : (i) $D/P \text{ Ratio} = \text{DPS} \div \text{EPS}$

(ii) $P/E \text{ Ratio} = (P \div \text{EPS})$ (Number of Times)

(iii) $\overline{(\quad)}$ indicates average position

(c) Company X is following a stable dividend policy whereas company Y is following a stable dividend payment ratio. In the latter type of policy, sporadic dividend payments occur. As such, its owners are very uncertain about the returns they can expect from their investment in the firm and, therefore, generally depress the share prices. It is probably for this reason that the company X's average price per share exhibited a consistent increase as compared to company Y; such volatile pattern of earnings of both companies (during the last three years) is not withstanding. Hence, Company Y is advised to follow a stable dividend policy.

Review Questions

A. Short Questions

1. What do you understand by dividend policy of a corporate firm ?
2. Discuss the main objectives of dividend policy.
3. What are the constraints affecting dividend policy ?
4. How do the availability and cost of outside fund affect dividend policy ?
5. How would you define the following -
a) Stock dividend; b) Stock split and c) Stock reinvestment plan ?
6. Distinguish between Stock dividend and Stock split.
7. Examine the rationale of the stock split
8. Examine the affects of stock dividend and stock split.
9. Discuss the significance of stability of dividend.

B. Broad Questions

10. What are the various types of dividend policy ? Explain with examples.
11. What are the factors that affect dividend policy of a corporate firm ? Explain.
12. In what forms dividend can be paid ? Explain with examples.
13. What are the various forms of stability of dividend ? Explain with the help of graphs.

Review Problems

Problem - 1

The shareholders funds of XYZ company for the year ending March 31 are as follows :

12% Preference share capital	Tk. 1,00,000
Equity share capital	4,00,000
Share premium	40,000
Retained Earnings	3,00,000
	8,40,000

The earnings available for equity shareholders from this period's operations are 1,50,000, which have been included as part of the retained earnings.

Required :

- (a) What is the maximum dividend per share (DPS) the firm can pay ?
- (b) If the firm has Tk. 60,000 in cash, what is the largest DPS it can pay without borrowing ?
- (c) Indicate what accounts, if any, will be affected if the firm pays the dividends indicated in (b) above ?

Problem - 2

The following data relate to the Bashir Ltd. and the Shahin Ltd which belong to the same industry and sell the same product :

Bashir Ltd				
Year	EPS	DPS	Market price	
			High	Low
1	Tk. 3.20	Tk. 1.70	Tk. 50	Tk. 30
2	3.30	1.70	55	31
3	3.50	1.70	60	28
4	3.40	1.70	62	28
5	3.60	1.70	62	33

Shahin Ltd				
Year	EPS	DPS	Market price	
			High	Low
1	Tk. 1.10	Tk. 0.50	Tk. 42	Tk. 28
2	4.00	2.00	44	30
3	2.50	1.25	40	26
4	5.50	2.75	48	30
5	4.00	2.00	46	30

Comment on the differences in the dividend policies followed by the two firms and suggest who is following a better policy and why ?

Case Study

Two companies – Alpha Ltd and Beta Ltd. are in the same industry with identical earnings per share for the last five years. The Alpha Ltd. has a policy of paying 40 percent of earnings as dividends, while the Beta Ltd. pays a constant amount of dividend per share. There is disparity between the market prices of the shares of the two companies. The price of Alpha’s share is generally lower than that of Beta, even though in some years Alpha paid more dividends than Beta. The data on earnings, dividends and market price for the two companies are as follows:

Alpha Ltd.

Year	EPS Tk.	DPS Tk.	Market Price Tk.
1994	4.00	1.60	12.00
1995	1.50	0.60	8.50
1996	5.00	2.00	13.50
1997	4.00	1.60	11.50
1998	8.00	3.20	14.50

Beta Ltd.

Year	EPS Tk.	DPS Tk.	Market Price Tk.
1994	4.00	1.80	13.50
1995	1.50	1.80	12.50
1996	5.00	1.80	12.50
1997	4.00	1.80	12.50
1998	8.00	1.80	15.00

1. Calculate (a) Payout ratio, (ii) Dividend yield and (iii) Earning yield for both the companies.
2. What are the reasons for the differences in the market prices of the two companies' shares ?
3. What can be done by Alpha Limited to increase the market price of its shares ?