

## **UNIT 7 CAPITAL STRUCTURE**

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## Structure

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## 7.0 INTRODUCTION

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In the previous unit, you have already learned that the funds required by a business enterprise can be raised either through the ownership securities, i.e., equity shares and preference shares or the creditorship securities, i.e., debentures and/or bonds. A business enterprise has to maintain a proper mix of both these types of securities in a manner that both the cost and the risk are minimum. The mix of different securities is portrayed by the firm's capital structure.

This unit deals with the meaning of capital structure, patterns of capital structure, capital structure theorems etc.

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## 7.1 UNIT OBJECTIVES

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After going through this unit, you will be able:

- The meaning of capital structure
- Differentiating capital structure from financial structure
- The different patterns of capital structure
- Identifying optimum capital structure
- The factors determining capital structure

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## 7.2 MEANING OF CAPITAL STRUCTURE

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According to Gerstenberg, capital structure refers to 'the make up of a firm's capitalization'. In other words, it represents the mix of different sources of long-term funds (such as equity shares, preference shares, long-term loans, retained earnings, etc.) in the total capitalization of the company. For example, a company has equity shares of Rs 1,00,000, debentures Rs 1,00,000, preference shares of Rs 1,00,000 and retained earnings of Rs 50,000. The term capitalization is used for total long-term funds. In this case it is of Rs 3,50,000. The term capital structure is

used for the mix of capitalization. In this case it will be said that the capital structure of the company consists of Rs 1,00,000 in equity shares, Rs 1,00,000 in preference shares, Rs 1,00,000 in debentures and Rs 50,000 in retained earnings.

## NOTES

### 7.3 CAPITAL STRUCTURE AND FINANCIAL STRUCTURE

The term capital structure differs from financial structure. Financial structure refers to the way the firm's assets are financed. In other words, it includes both long-term as well as short-term sources of funds. Capital structure is the permanent financing of the company represented primarily by long-term debt and shareholders' funds but excluding all short-term credit. Thus, a company's capital structure is only a part of its financial structure.

### 7.4 PATTERNS OF CAPITAL STRUCTURE

In case of a new company the capital structure may be of any of the following four patterns:

- (i) Capital structure with equity shares only
- (ii) Capital structure with both equity and preference shares
- (iii) Capital structure with equity shares and debentures
- (iv) Capital structure with equity shares, preference shares and debentures

The choice of an appropriate capital structure depends on a number of factors, such as the nature of the company's business, regularity of earnings, conditions of the money market, attitude of the investor, etc. All these factors have been discussed later in the chapter. However, we will like to emphasize only one point here. It is regarding the basic difference between debt and equity. Debt is a liability on which interest has to be paid irrespective of the company's profits. While equity consists of shareholders, or owners, funds on which payment of dividend depends upon the company's profits. A high proportion of the debt content in the capital structure increases the risk and may lead to financial insolvency of the company in adverse times. However, raising funds through debt is cheaper as compared to raising funds through shares. This is because interest on debt is allowed as an expense for tax purposes. Dividend is considered to be an appropriation of profits hence payment of dividend does not result in any tax benefit to the company. This means if a company, which is in the 50 per cent tax bracket, pays interest at 12 per cent on its debentures, the effective cost to it comes only to 6 per cent. While if the amount is raised by issue of 12 per cent preference shares, the cost of raising the amount would be 12 per cent. Thus, raising of funds by borrowing is cheaper resulting in higher availability of profits for shareholders. This increases the earnings per equity share of the company which is the basic objective of a financial manager.

The effect of the change in debt-equity mix on EPS of the company can be understood with the help of the following illustration:

**Illustration 7.1:** A Ltd has a share capital of Rs. 1,00,000 divided into shares of Rs 10 each. It has a major expansion programme requiring an investment of

another Rs 50,000. The management is considering the following alternatives for raising this amount:

- (i) Issue of 5,000 equity shares of Rs 10 each.
- (ii) Issue of 5,000, 12% preference shares of Rs 10 each.
- (iii) Issue of 10% debentures of Rs 50,000.

The company's present earnings before interest and tax (EBIT) are Rs 40,000 p.a. You are required to calculate the effect of each of the above modes on financing of the earnings per share (EPS) presuming:

- (a) EBIT continues to be the same even after expansion.
- (b) EBIT increases by Rs 10,000.

**Solution:**

- (a) When EBIT is Rs 40,000 p.a.

PRESENT AND PROJECTED EARNING PER SHARE				
Particulars	Present Capital Structure All Equity	Proposed Capital Structure		
		(i) (All Eqty.)	(ii) (Eqty.+ Pref.)	(iii) (Eqty.+ Debt)
EBIT	Rs 40,000	40,000	40,000	40,000
Less: Interest	—	—	—	5,000
PBT	Rs 40,000	40,000	40,000	35,000
Less: Tax	Rs 20,000	20,000	20,000	17,500
PAT	Rs 20,000	20,000	20,000	17,500
Less: Pref. Dividend	Rs —	—	6,000	—
Profit for Equity Shareholders	Rs 20,000	20,000	14,000	17,500
No. of Equity Shares	10,000	15,000	10,000	10,000
EPS	Rs 2	1.33	1.40	1.75
Dilution against initial EPS of Rs 2	—	0.67	0.60	0.25

The above table shows that dilution of earning per share has been the least when funds have been raised by issue of debentures.

- (b) When EBIT is Rs 50,000 p.a.

PRESENT AND PROJECTED EARNING PER SHARE				
Particulars	Present Capital Structure (All Eqty.)	Proposed Capital Structure		
		(i) (All Eqty.)	(ii) (Eqty.+ Pref.)	(iii) (Eqty.+ Debt)
EBIT	Rs 40,000	50,000	50,000	50,000
Less: Interest	—	—	—	5,000
PBT	40,000	50,000	50,000	45,000
Less: Tax	20,000	25,000	25,000	22,500
PAT	20,000	25,000	25,000	22,500
Less: Pref. Dividend	—	—	6,000	—
Profit for Equity Shareholders	20,000	25,000	19,000	22,500
No. of Equity Shares	10,000	15,000	10,000	10,000
EPS	2	1.67	1.90	2.25
Changes in EPS as against initial of Rs 2	—	-0.33	-0.10	+0.25

The above table indicates that EPS has gone up by Re 0.25 per share as against the present EPS when the funds are raised by issue of debentures.

**NOTES**

## 7.5 POINT OF INDIFFERENCE

### NOTES

It refers to that EBIT level at which EPS remains the same irrespective of the debt-equity mix. In other words, at this point, rate of return on capital employed is equal to the rate of interest on debt. This is also known as break-even of EBIT for alternative financial plans.

The point of indifference can be calculated with the help of the following formula:

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

where,

$X$  = Point of Indifference or Break-even EBIT Level

$I_1$  = Interest under alternative 1

$I_2$  = Interest under alternative 2

$T$  = Tax Rate

$PD$  = Preference Dividend

$S_1$  = Number of Equity Shares (or amount of equity share capital)  
under alternative 1

$S_2$  = Number of Equity Shares (or amount of equity share capital)  
under alternative 2

**Illustration 7.2:** A new project under consideration by your company requires a capital investment of Rs 150 lakh. Interest on term loan is 12 per cent and tax rate is 50 per cent. If the debt-equity ratio insisted by the financing agencies is 2:1, calculate the point of indifference for the project.

#### Solution:

In case of the project under consideration, the debt-equity ratio insisted by the financing agencies is 2:1.

There are two alternatives available :

(i) Raising the entire amount by issue of equity shares.

(ii) Raising Rs 100 lakh by way of debt and Rs 50 lakh by way of issue of shares. Thus, maintaining a debt-equity ratio of 2:1.

In the first case the interest amount will be zero, while in the second case it will be Rs 12 lakh.

Point of indifference.

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

$$\text{Or } \frac{(X - 0)(1 - 0.5) - 0}{15} = \frac{(X - 12)(1 - 0.5) - 0}{5}$$

$$\text{Or } \frac{0.5X}{15} = \frac{0.5X - 6}{5}$$

$$\text{Or } 2.5X = 7.5X - 90$$

$$\text{Or } -5X = -90 \text{ lakh}$$

$$\text{Or } X = 18 \text{ lakh}$$

EBIT at point of indifference is, therefore, Rs 18 lakh.

If EBIT is Rs 18 lakh, the earning on equity after tax will be 6 per cent per annum notwithstanding whether the capital investment is financed fully by equity or any other mix of equity and debt provided the rate of interest on debt is 12 per cent.

## 7.6 OPTIMUM CAPITAL STRUCTURE

A firm should try to maintain an optimum capital structure with a view to maintain financial stability. The optimum capital structure is obtained when the market value per equity share is the maximum. It may, therefore, be defined as that relationship of debt and equity securities which maximizes the value of a company's share in the stock exchange. In case a company borrows and this borrowing helps in increasing the value of the company's shares in the stock exchange, it can be said that the borrowing has helped the company in moving towards its optimum capital structure. In case the borrowing results in fall in the market value of the company's equity shares, it can be said that the borrowing has moved the company away from its optimum capital structure.

The objective of the firm should therefore be to select a financing or debt-equity mix which will lead to maximum value of the firm. The Optimum Capital Structure and its implications have been expressed by Ezra Soloman in the following words:

‘Optimum leverage can be defined as that mix of debt and equity which will maximize the market value of a company, i.e., the aggregate value of the claims and ownership interests represented on the credit side of the balance sheet. Further, the advantages of having an optimum financial structure, if such an optimum does exist, is twofold; it minimizes the company's cost of capital which in turn increases its ability to find new wealth-creating investment opportunities. Also, by increasing the firm's opportunity to engage in future wealth-creating investment, it increases the economy's rate of investment and growth.’<sup>1</sup>

## 7.7 CAPITAL STRUCTURE THEORIES

In order to achieve the goal of identifying an optimum debt-equity mix, it is necessary for the finance manager to be conversant with the basic theories underlying the capital structure of corporate enterprises. In the following pages we are reviewing these major theories and trying to develop a unified theory of capital structure. However, it will be seen that the existence of optimum capital structure is not accepted by all. There exist extreme views. There is a viewpoint that strongly supports the argument that the financing or debt-equity mix has a major impact on the shareholders' wealth. While according to others, the decision about the financial structure is irrelevant as regards maximization of shareholders' wealth.

There are four major theories/approaches explaining the relationship among capital structure, cost of capital and value of the firm:

1. Net Income (NI) Approach
2. Net Operating Income (NOI) Approach
3. Modigliani-Miller (MM) Approach
4. Traditional Approach

<sup>1</sup> Solomon E., *Theory of Financial Management* (New York), Columbia University Press, 1969, p. 42.

## NOTES

### Check Your Progress

1. What are the factors which determine the choice of an appropriate capital structure?
2. What might lead to financial insolvency of the company?
3. Why should a firm maintain an optimum capital structure?

## NOTES

**1. Net Income (NI) Approach**

This approach has been suggested by Durand.<sup>2</sup> According to this approach, capital structure decision is relevant to the valuation of the firm. In other words, a change in the capital structure causes a corresponding change in the overall cost of capital as well as the total value of the firm.

According to this approach, a higher debt content in the capital structure (i.e., high financial leverage) will result in decline in the overall or weighted average cost of the capital. This will cause increase in the value of the firm and consequently increase in the value of equity shares of the company. The opposite will happen if the situation is reversed.

Net Income approach is based on the following three assumptions:

- (i) There are no corporate taxes.
- (ii) The cost of debt is less than cost of equity or equity capitalization rate.
- (iii) The debt content does not change the risk perception of the investors.

The value of the firm on the basis of NI Approach can be ascertained as follows:

$$V = S + B$$

where,

$V$  = Value of Firm

$S$  = Market Value of Equity

$B$  = Market Value of Debt

Market value of Equity can be ascertained as follows:

$$S = NI/ke$$

where,

$S$  = Market value of equity

$NI$  = Earnings available for equity shareholders

$ke$  = Equity Capitalization Rate

In order to examine effect of change in debt-equity mix in the capital structure of the firm, let us consider the following illustration.

**Illustration 7.3:** X Ltd is expecting an annual EBIT of Rs 1 lakh. The company has Rs 4.00 lakh in 10 per cent debentures. The cost of equity capital or capitalization rate is 12.5 per cent. You are required to calculate the total value of the firm. Also state the overall cost of capital.

**Solution:**

## STATEMENT SHOWING VALUE OF THE FIRM

	Rs
Earnings before Interest and Tax (EBIT)	1,00,000
<i>Less:</i> Interest at 10 per cent on Rs 4.00 lakh	40,000
Earnings available for equity shareholders ( $NI$ )	60,000
Equity Capitalization Rate ( $Ke$ )	12.5 per cent

<sup>2</sup> Durand David, 'Costs of Debt & Equity Funds for Business', reprinted in *The Management of Corporate Capital*: Ezra Solomon (Ed.) New York, The Free Press, 1959, pp. 91–116.

Market Value of Equity ( $S$ ):

$$\frac{NI}{Ke} \frac{60,000}{12.5} 100 = 4,80,000$$

Market value of Debt ( $B$ )

$$4,00,000$$

Total value of the firm ( $S + B$ )

$$\underline{8,80,000}$$

Overall cost of capital:

$$k = \frac{EBIT}{V} \frac{1,00,000}{8,80,000} 100 = 11.36 \text{ per cent}$$

*Increase in value.* The value of the firm according to the NI Approach will get increased in case the amount of equity is decreased by issue of debentures, bonds, etc., to equity shareholders.

## 2. Net Operating Income (NOI) Approach

This approach has also been suggested by Durand.<sup>3</sup> This is the opposite of Net Income approach. According to this approach, the market value of the firm is not at all affected by the capital structure changes. The market value of the firm is ascertained by capitalizing the net operating income at the overall cost of capital ( $k$ ), which is considered to be constant. The market value of equity is ascertained by deducting the market value of the debt from the market value of the firm.

*Value of the Firm.* According to the NOI Approach, the value of a firm can be determined by the following equation:

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

where,

$V$  = Value of firm

$k$  = Overall cost of capital

$EBIT$  = Earnings before interest and tax

*Value of Equity.* The value of equity ( $S$ ) is a residual value, which is determined by deducting the total value of debt ( $B$ ) from the total value of the firm ( $V$ ). Thus, the value of equity ( $S$ ) can be determined by the following equation:

$$S = V - B$$

where,

$S$  = Value of equity

$V$  = Value of firm

$B$  = Value of debt

### Optimum Capital Structure

According to Net Operating Income (NOI) Approach, the total value of the firm remains constant irrespective of the debt-equity mix or the degree of leverage. The market price of equity shares will, therefore, also not change on account of change in debt-equity mix. Hence, there is nothing like optimum capital structure. Any capital structure will be optimum according to this approach.

In those cases where corporate taxes are presumed, theoretically there will be optimum capital structure when there is 100 per cent debt content. This is because

<sup>3</sup> Durand, D., *op. cit.*

## NOTES



with every increase in debt content 'k' declines and the value of the firm goes up. However, due to legal and other provisions, there has to be a minimum equity. This means that optimum capital structure will be at a level where there can be maximum possible debt content in the capital structure.

## NOTES

**Illustration 7.4:** XY Ltd, has an EBIT of Rs 1 lakh. The cost of debt is 10 per cent and the outstanding debt amounts to Rs 4.00 lakh. Presuming the overall capitalization rate as 12.5 per cent, calculate the total value of the firm and the equity capitalization rate.

**Solution:**

## STATEMENT SHOWING THE VALUE OF THE FIRM

Earning before Interest and Tax (EBIT)	Rs 1,00,000
Overall Capitalization Rate ( $k$ )	12.5 per cent
Market Value of the Firm ( $V$ ):	
$\frac{1,00,000}{12.5} \times 100$	8,00,000
Total Value of Debt ( $B$ )	4,00,000
Market Value of Equity ( $S$ )	<u>4,00,000</u>
$(S = V - B)$	
Equity Capitalization Rate ( $ke$ ):	
$ke = \frac{\text{EBIT} - I}{V - B} \times 100 = \frac{1,00,000 - 40,000}{8,00,000 - 4,00,000} \times 100 = \frac{60,000}{4,00,000} \times 100 = 15 \text{ per cent}$	

The validity of the NOI approach can be verified by calculating the overall cost of capital:

$$k = kd \left( \frac{B}{V} \right) + ke \left( \frac{S}{V} \right)$$

where,

- $k$  = Overall cost of capital
- $kd$  = Cost of debt
- $B$  = Total debt
- $V$  = Total value of the firm
- $ke$  = Cost of equity capital
- $S$  = Market value of equity

$$\begin{aligned} k &= 10\% \left( \frac{4,00,000}{8,00,000} \right) + 15\% \left( \frac{4,00,000}{8,00,000} \right) \\ &= 10\% (1/2) + 15\% (1/2) \\ &= 5\% + 7.5\% \\ &= 12.5 \text{ per cent} \end{aligned}$$

**Increase in Debt.** In case the firm raises the debt content for reducing its equity content, the total value of the firm would remain unchanged. However the equity capitalization rate would go up.

**Market Price of Shares.** According to the NOI approach, the market price per share remains unaffected on account of change in the debt-equity mix. For instance, if in the illustration 7.4, the total number of equity shares are 4,000, the market price

of an equity share would be Rs 100 (i.e., 4,00,000/4,000). In case of illustration 7.5, the company would be in a position to redeem shares of Rs 1 lakh, and therefore, the total number of outstanding shares would amount to 3,000. The market value of a share would continue to be Rs 100 (i.e., 3,00,000/3,000).

### 3. Modigliani-Miller Approach

The Modigliani-Miller (MM) approach is similar to the Net Operating Income (NOI) approach. In other words, according to this approach, the value of a firm is independent of its capital structure. However, there is a basic difference between the two. The NOI approach is purely definitional or conceptual. It does not provide operational justification for irrelevance of the capital structure in the valuation of the firm. While the MM approach supports the NOI approach providing behavioural justification for the independence of the total valuation and the cost of capital of the firm from its capital structure. In other words, the MM approach maintains that the average cost of capital does not change with change in the debt weighed equity mix or capital structure of the firm. It also gives operational justification for this and not merely states a proposition.

*Basic Propositions.* The following are the three basic propositions of the MM approach:

1. The overall cost of capital ( $k$ ) and the value of the firm ( $V$ ) are independent of the capital structure. In other words  $k$  and  $V$  are constant for all levels of the debt-equity mix. The total market value of the firm is given by capitalizing the expected net operating income (NOI) by the rate appropriate for that risk class.
2. The cost of equity ( $k_e$ ) is equal to the capitalization rate of a pure equity stream plus a premium for the financial risk. The financial risk increases with more debt content in the capital structure. As a result,  $k_e$  increases in a manner to offset exactly the use of a less expensive source of funds represented by debt.
3. The cut-off rate for investment purposes is completely independent of the way in which an investment is financed.

### Limitations of MM Hypothesis

The arbitrage process is the behavioural foundation for the MM hypothesis. However, the arbitrage process fails to bring the desired equilibrium in the capital markets on account of the following reasons:

1. *Rates of Interest Are Not the Same for the Individuals and the Firms.* The assumption made under the MM hypothesis is that the firms and individuals can borrow and lend at the same rate of interest does not hold good in actual practice. This is because firms have the higher credit standing as compared to the individuals on account of the firm's holding substantial fixed assets.

2. *Home-made Leverage is Not the Perfect Substitute for Corporate Leverage.* The risk to which an investor is exposed is not identical when the investor himself borrows proportionate to his share in the firm's debt and when the firm itself borrows. As a matter of fact, the risk exposure to the investor is greater in the former case as compared to the latter. When the firm borrows, the liability of the investor is limited only to the extent of his proportionate shareholding, in case the company is forced to go for its liquidation. However, when an individual borrows, he has an unlimited liability and even his personal property can be used for payment to his creditors.

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3. *Transaction Costs Involved.* Buying and selling of securities involves transaction costs. It would therefore become necessary for an investor to invest a larger amount in the shares of the unlevered/levered firms than his present investment to earn the same return.

## NOTES

4. *Institutional Restrictions.* The switching option from unlevered to levered firm and vice-versa is not available to all investors, particularly institutional investors, viz., Life Insurance Corporation of India, Unit Trust of India, Commercial Banks, etc. Thus, the institutional restrictions stand in the way of smooth operation of the arbitrage process.

5. *Corporate Taxes Frustrate MM Hypothesis.* On account of corporate taxes, it is a known fact that the cost of borrowing funds to the firm is less than the contractual rate of interest. As a result total return to the shareholders of an unlevered firm is always less than that of the levered firm. Thus, the total market value of a levered firm tends to exceed that of the unlevered firm on account of this very reason.

### 4. Traditional Approach

In the preceding pages, we have explained that the Net Income (NI) Approach and Net Operating Income (NOI) Approach represent two extremes. According to the NI approach, the debt content in the capital structure affects both the overall cost capital and total valuation of the firm, while the NOI approach suggests that capital structure is totally irrelevant so far as total valuation of the firm is concerned. The MM approach supports the NOI approach. However, the limitations of the MM approach as discussed in the previous pages show that this approach with its assumptions is of doubtful validity. The traditional approach or the intermediate approach is a mid-way between the two approaches. It partly contains features of both the approaches as given here:

1. The traditional approach is similar to the NI Approach to the extent that it accepts that structure or leverage affects the cost of capital and its valuation. However, it does not subscribe to the NI approach that the value of the firm will necessarily increase with all degree of leverages.

2. It subscribes to the NOI approach that beyond a certain degree of leverage, the overall cost of capital increases resulting in decrease in the total value of the firm. However, it differs from the NOI approach in the sense that the overall cost of capital will not remain constant for all degree of leverages. The essence of the Traditional Approach lies in the fact that a firm through judicious use of debt-equity mix can increase its total value and thereby reduce its overall cost of capital. This is because debt is relatively a cheaper source of funds as compared to raising money through shares because of tax advantage. However, beyond a point raising of funds through debt may become a financial risk and would result in a higher equity capitalization rate. Thus, up to a point, the content of debt in the capital structure will favourably affect the value of a firm. However, beyond that point, the use of debt will adversely affect the value of the firm. At this level of the debt-equity mix, the capital structure will be optimum. At this level, the average or the composite cost of capital will be the least. In other words, here the marginal real cost of equity will be equal to the marginal real cost (both implicit and explicit) of debt.<sup>4</sup>

<sup>4</sup> For more details please refer to the unit 5 'Cost of Capital' given in this book.

**Illustration 7.5:** In considering the most desirable capital structure for a company, the following estimates of the cost of debt and equity capital (after tax) have been made at various levels of debt-equity mix:

<i>Debt as Percentage of Total Capital Employed</i>	<i>Cost of Debt (per cent)</i>	<i>Cost of Equity (per cent)</i>
0	5.0	12.0
10	5.0	12.0
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 company by calculating composite cost of capital.

**Solution:**

STATEMENT SHOWING THE COMPANY'S COMPOSITE  
COST OF CAPITAL (AFTER TAX)

<i>Debt as Percentage of Total Capital Employed</i>	<i>Cost of Debt (per cent)</i>	<i>Cost of Equity (per cent)</i>	<i>Composite Cost of Capital (per cent)</i>
0	5.0	12.05	$\times 0 + 12 \times 1.00 = 12.00$
10	5.0	12.05	$\times .10 + 12 \times .90 = 11.30$
20	5.0	12.55	$\times .20 + 12.5 \times .80 = 11.00$
30	5.5	13.05	$.5 \times .30 + 13 \times .70 = 10.75$
40	6.0	14.06	$\times .40 + 14 \times .60 = 10.80$
50	6.5	16.06	$.5 \times .50 + 16 \times .50 = 11.25$
60	7.0	20.07	$\times .60 + 20 \times .40 = 12.20$

Optimal debt-equity mix is 30 per cent debt and 70 per cent equity, where the composite cost of capital is the least.

**Determination of Optimum Capital Structure — A Difficult Task**

It has already been stated that at optimum capital structure, the value of an equity share is the maximum while the average cost of capital is the minimum. The value of an equity share mainly depends on earning per share. So long as the 'Return on Investment' (ROI) is more than cost of borrowings, each rupee of extra borrowing pushes up the earning per equity share which in turn pushes up the market value of the share. It means the company can borrow till the interest rate on borrowings is equal to or does not exceed the return from the project. However, each extra rupee of borrowings increases the risk and therefore, in spite of increase in the earning per equity share, the market value of the equity share may fall because of investors taking it as a more risky company. Of course, in some cases, in spite of increase in risk, the value of a company's equity shares may increase because of investors' speculation on future profits.

It is almost impossible to precisely measure the fall in the market value of an equity share on account of increase in risk due to high debt content. Market factors are highly psychological, complex and do not always follow the accepted theoretical principles since capital markets are never perfect.

**NOTES**

## NOTES

Thus, it is not possible to find out the exact debt-equity mix where the capital structure would be optimum. Of course, a range can be determined on the basis of empirical study within which if the company maintains its debt-equity mix, the investors will not discount its shares. For example, a company belongs to an industry where the average debt-equity ratio is of 1:1. Empirical studies disclosed that the investors do not discount the value of the company's shares so long as the debt-equity ratio remains within 40 per cent of the industry's average, i.e., between, 0.6:1 and 1.4:1.

This means that if the company maintains capital structure within this range, the value of the equity share will not decline due to more risk perceived by the investors. In order to have the maximum tax advantage on the interest payable, the company may maintain debt-equity ratio near the top of the range keeping in view other factors, such as profitability, solvency, flexibility and control.

The capital structure so arrived at may not be optimum but would be the most reasonable under the circumstances. Some people, therefore, prefer to use the term 'appropriate or sound capital structure' in place of the term 'optimum capital structure', the former being a more realistic term than the latter.

### Features of an Appropriate Capital Structure

A capital structure will be considered to be appropriate if it possesses the following features:

1. *Profitability.* The capital structure of the company should be most profitable. The most profitable capital structure is one that tends to minimize the cost of financing and maximize the earning per equity share.

2. *Solvency.* The pattern of capital structure should be so devised as to ensure that the firm does not run the risk of becoming insolvent. Excess use of debt threatens the solvency of the company. The debt content should not, therefore, be such that it increases risk beyond manageable limits.

3. *Flexibility.* The capital structure should be such that it can be easily manoeuvred to meet the requirements of changing conditions. Moreover, it should also be possible for the company to provide funds whenever needed to finance its profitable activities.

4. *Conservatism.* The capital structure should be conservative in the sense that the debt content in the total capital structure does not exceed the limit which the company can bear. In other words, it should be such as is commensurate with the company's ability to generate future cash flows.

5. *Control.* The capital structure should be so devised that it involves minimum risk of loss of control of the company.

The above principles regarding an appropriate capital structure are as a matter of fact relative to each other. For example, raising of funds through debt is cheaper and, is therefore, in accordance with the principle of profitability, but it is risky and, therefore, goes against the principle of solvency and conservatism. The prudent financial manager should try to have the best out of the circumstances within which the company is operating. The relative importance of each of the above features will also vary from company to company. For example, one company may give more importance to flexibility as compared to conservatism while the other may consider solvency to be more important than profitability. However, the fact remains that each finance manager has to make a satisfactory compromise between the management's desire for funds and the trends in the supply of funds.

#### Check Your Progress

4. What are the four major theories explaining the relationship among capital structure, cost of capital and value of the firm?
5. Who has suggested the 'Net-Income (NI) approach'?
6. Discuss the feature of profitability of an appropriate capital structure in brief.

## 7.8 CAPITAL STRUCTURE FINANCING POLICY

The capital structure of a company is to be determined initially at the time the company is floated. Great caution is required at this stage, since the initial capital structure will have long-term implications. Of course, it is not possible to have an ideal capital structure but the management should set a target capital structure and the initial capital structure should be framed and subsequent changes in the capital structure should be made keeping in view the target capital structure. Thus, the capital structure decision is a continuous one and has to be taken whenever a firm needs additional finances.

The following are the factors which should be kept in view while determining the capital structure of a company:

### (1) *Trading on Equity*

A company may raise funds either by issue of shares or by debentures. Debentures carry a fixed rate of interest and this interest has to be paid irrespective of profits. Of course, preference shares are also entitled to a fixed rate of dividend but payment of dividend depends upon the profitability of the company. In case the rate of return on the total capital employed (shareholders' funds plus long-term borrowed funds) is more than the rate of interest on debentures or rate of dividend on preference shares, it is said that the company is trading on equity. For example, the total capital employed in a company is a sum of Rs 2 lakh. The capital employed consists of equity shares of Rs 10 each. The company makes a profit of Rs 30,000 every year. In such a case the company cannot pay a dividend of more than 15 per cent on the equity share capital. However, if the funds are raised in the following manner, and other things remain the same, the company may be in a position to pay a higher rate of return on equity shareholders' funds:

(a) Rs 1 lakh is raised by issue of debentures, carrying interest at 10 per cent per annum.

(b) Rs 50,000 is raised by issue of preference shares, carrying dividend at 12 per cent;

(c) Rs 50,000 is raised by issue of equity shares.

In the above case, out of the total profit of Rs 30,000, Rs 10,000 will be used for paying interest while Rs 6,000 will be used for paying preference dividends. A sum of Rs 14,000 will be left for paying dividends to the equity shareholders. Since the amount of equity capital is Rs 50,000, the company can give a dividend of 28 per cent. Thus, the company can pay a higher rate of dividend than the general rate of earning on the total capital employed.<sup>5</sup> This is the benefit of trading on equity.

### *Limitations*

The trading on equity is subject to the following limitations:

- (i) A company can have trading on equity only when the rate of return on total capital employed is more than the rate of interest/dividend on debentures/preference shares.
- (ii) Trading on equity is beneficial only for companies which have stability in their earnings. This is because both interest and preference dividend impose

<sup>5</sup> Tax factor has been ignored.

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a recurring burden on the company. In the absence of stability in profits the company will run into serious financial difficulties in periods of trade depression.

- (iii) Every rupee of extra borrowings increases the risk and hence the rate of interest expected by the subsequent lenders goes on increasing. Thus, borrowings become costlier, which ultimately result in reducing the amount of profits available for equity shareholders.

**(2) Retaining Control**

The capital structure of a company is also affected by the extent to which the promoter/ existing management of the company desire to maintain control over the affairs of the company. The preference shareholders and debentureholders have not much say in the management of the company. It is the equity shareholders who select the team of managerial personnel. It is necessary, therefore, for the promoters to own the majority of the equity share capital in order to exercise effective control over the affairs of the company. The promoters or the existing management are not interested in losing their grip over the affairs of the company and at the same time, they need extra funds. They will, therefore, prefer preference shares or debentures over equity shares so long as they help them in retaining control over the company.

**(3) Nature of Enterprise**

The nature of enterprise also to a great extent affects the capital structure of the company. Business enterprises which have stability in their earnings or which enjoy monopoly regarding their products may go for debentures or preference shares since they will have adequate profits to meet the recurring cost of interest/ fixed dividend. This is true in case of public utility concerns. On the other hand, companies which do not have this advantage should rely on equity share capital to a greater extent for raising their funds. This is, particularly, true in case of manufacturing enterprises.

**(4) Legal Requirements**

The promoters of the company have also to keep in view the legal requirements while deciding about the capital structure of the company. This is particularly true in case of banking companies which are not allowed to issue any other type of security for raising funds except equity share capital on account of the Banking Regulation Act.

**(5) Purpose of Financing**

The purpose of financing also to some extent affects the capital structure of the company. In case funds are required for some directly productive purposes, for example, purchase of new machinery, the company can afford to raise the funds by issue of debentures. This is because the company will have the capacity to pay interest on debentures out of the profits so earned. On the other hand, if the funds are required for non-productive purposes, providing more welfare facilities to the employees, such as construction of school or hospital building for company's employees, the company should raise the funds by issue of equity shares.

**(6) Period of Finance**

The period for which finance is required also affects the determination of capital structure of companies. In case funds are required, say for three to ten years, it will be appropriate to raise them by issue of debentures rather than by issue of shares. This is because in case the funds are raised by issue of shares, their repayment after

eight to ten years (when they are not required) will be subject to legal complications. Even if such funds are raised by issue of redeemable preference shares, their redemption is also subject to certain legal restrictions. However, if the funds are required more or less permanently, it will be appropriate to raise them by issue of equity shares.

### **(7) Market Sentiments**

The market sentiments also decide the capital structure of the company. There are periods when people want to have absolute safety. In such cases, it will be appropriate to raise funds by issue of debentures. At other periods, people may be interested in earning high speculative incomes; at such times, it will be appropriate to raise funds by issue of equity shares. Thus, if a company wants to raise sufficient funds, it must take into account market sentiments, otherwise its issue may not be successful.

### **(8) Requirement of Investors**

Different types of securities are to be issued for different classes of investors. Equity shares are best suited for bold or venturesome investors. Debentures are suited for investors who are very cautious while preference shares are suitable for investors who are not very cautious. In order to collect funds from different categories of investors, it will be appropriate for the companies to issue different categories of securities. This is particularly true when a company needs heavy funds.

### **(9) Size of the Company**

Companies which are of small size have to rely considerably upon the owners' funds for financing. Such companies find it difficult to obtain long-term debt. Large companies are generally considered to be less risky by the investors and, therefore, they can issue different types of securities and collect their funds from different sources. They are in a better bargaining position and can get funds from the sources of their choice.

### **(10) Government Policy**

It is also an important factor in planning the company's capital structure. For example, a change in the lending policy of financial institutions may mean a complete change in the financial pattern. Similarly, by virtue of the Securities & Exchange Board of India Act, 1992, and the rules made thereunder, the Securities & Exchange Board of India can also considerably affect the capital issue policies of various companies. Besides this, the monetary and fiscal policies of the government also affect the capital structure decision.

### **(11) Provision for the Future**

While planning capital structure the provision for the future should also be kept in view. It will always be safe to keep the best security to be issued in the last instead of issuing all types of securities in one instalment. In the words of Gerestenberg, 'Manager of corporate financing operations must always think of rainy days or the emergencies. The general rule is to keep your best security or some of your best securities till the last.'<sup>6</sup>

Thus, there are many factors which are to be considered while designing an appropriate capital structure of a company. As a matter of fact, some of them are conflicting in nature. The relative weightage assigned to each of these factors will vary widely from company to company depending upon the characteristics of the

<sup>6</sup> *Financial Organization and Management of Business*, p. 201.

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### **Check Your Progress**

7. How does a company raise funds?
8. Who selects the team of managerial personnel?



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company, the general economic conditions and the circumstances under which the company is operating. Companies issue debentures and preference shares to enlarge the earnings on equity shares, while equity share are issued to serve as a cushion to absorb the shocks of business cycles and to afford flexibility. Of course, greater the operating risk, the less debt the firm can use. Hence in spite of the fact that the debt is cheaper the company should use it with caution. Moreover, it should be remembered that 'Financial theory has not developed to the  $p$  where data related to these considerations are fed at one end of a computer and an ideal financial structure pops out of the other. Consequently, human judgment must be used to resolve the many conflicting forces in laying plans for the types of funds to be sought.'<sup>7</sup>

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## 7.9 SUMMARY

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- Capital structure refers to 'the make-up of a firm's capitalization'.
- It differs from financial structure. Capital structure is permanently financing of company's assets through long-term funds excluding short-term credits. While a financial structure refers to the way the firm's assets are financed. It includes both long-term as well as short-term credits.
- Capital structure of a company may comprise of equity shares, preference shares, debentures, long-term loans, etc.
- The Point of Indifference is that level where EPS remains the same irrespective of the debt-equity mix. The concept is important while making a choice among alternative financial plans.
- A firm should try to maintain optimum capital structure with a view to maintain financial stability.
- Optimum capital structure is obtained when market value per share is the maximum.
- The various approaches to capital structure are: Net Income Approach, Net Operating Income Approach, Modigliani-Miller (MM) Approach and Traditional Approach.
- The factors determining the capital structure are trading on equity desired to retain control, nature of the enterprise, legal requirements, purpose of financing, the period of finance, market sentiments, requirements, size of the company, government policy, etc.

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## 7.10 KEY TERMS

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- **Arbitrage Process:** It is an act of buying an asset or security in one market at a lower price and selling it in another market at a higher price.
- **Capital Structure:** It refers to the mix of different sources of long-term funds, i.e., debt and equity.
- **Financial Structure:** It refers to the way in which the firm's assets are financed. It includes long-term as well as short-term sources of funds.
- **Optimum Capital Structure:** It refers to that relationship of debt and equity securities which maximizes the value of a company's shares on the stock exchange. At optimum capital structure, the composite cost of capital is the least.

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<sup>7</sup> Johnson R.W., *Financial Management* (1977), p. 234.

- **Trading on Equity:** In general, it refers to a situation in which a company earns a higher rate of return on the total capital employed in the business as compared to the cost it has to pay on funds carrying a fixed interest or dividend.

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**7.11 ANSWERS TO ‘CHECK YOUR PROGRESS’**


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1. The choice of an appropriate capital structure depends on a number of factors, such as the nature of the company’s business, regularity of earnings, conditions of the money market, attitude of the investor, etc.
2. A high proportion of the debt content in the capital structure increases the risk and may lead to financial insolvency of the company in adverse times.
3. A firm should try to maintain an optimum capital structure with a view to maintaining financial stability.
4. There are four major theories/approaches explaining the relationship among capital structure, cost of capital and value of the firm:
  - (i) Net Income (NI) Approach
  - (ii) Net Operating Income (NOI) Approach
  - (iii) Modigliani-Miller (MM) Approach
  - (iv) Traditional Approach
5. The ‘Net Income (NI)’ approach has been suggested by Durand.
6. The capital structure of the company should be most profitable. The most profitable capital structure is one that tends to minimize the cost of financing and maximize the earning per equity share.
7. A company may raise funds either by issue of shares or by debentures.
8. It is the equity shareholders who select the team of managerial personnel.

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**7.12 QUESTIONS AND EXERCISES**


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**Short-Answer Questions**

1. Explain the term ‘Point of Indifference’.
2. Differentiate between ‘Capitalization’ and ‘Capital Structure’.
3. What is ‘Optimum Capital Structure’?

**Long-Answer Questions**

1. What do you understand by ‘capital structure of a corporation’? Discuss the qualities which a sound capital structure should possess.
2. Critically examine the Net Income and Net Operating Income approaches to capital structure. What is the traditional view on this question?
3. There is nothing like an optimal capital structure for a firm. Critically evaluate this statement.
4. What do you mean by an appropriate capital structure? What should generally be the features of an appropriate capital structure?
5. What do you mean by optimum capital structure? Make a list of factors determining optimum capital structure.

## 7.13 PRACTICAL PROBLEMS

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1. Fitwell Company is now capitalized with Rs 50,00,000, consisting of 10,000 ordinary shares of Rs 500 each. Additional finance of Rs 50,00,000 is required for a major expansion programme launched by the company. Four possible financing plans are under consideration. These are:

- (i) Entirely through additional share capital, issuing 10,000 ordinary shares of Rs 500 each.
- (ii) Rs 25 lakh through ordinary share capital and Rs 25 lakh through borrowings from term-lending institutions at 12 per cent interest.
- (iii) Entirely through borrowings from the term-lending institutions at 13 per cent interest.
- (iv) Rs 25 lakh through ordinary share capital and Rs 25 lakh through 10 per cent preference shares, by issuing 5,000 preference shares of Rs 500 each.

The company's existing earnings before interest and tax (EBIT) amounted to Rs 6 lakh. By virtue of the increase in capitalization, the earnings before interest and tax are expected to double the present level.

Examine the impact of financial leverage of these four plans and calculate the earnings per share (EPS) for the shareholders, in each case. Assume 50 per cent tax rate.

2. A Ltd is capitalized with Rs 10 lakhs divided into 10,000 shares of Rs 100 each. The management desires to raise another Rs 10 lakh to finance a major expansion programme. There are four possible financing plans: (i) all equity shares, (ii) Rs 5 lakh in equity shares and Rs 5 lakh in debentures carrying 5 per cent interest, (iii) all debentures carrying 6 per cent interest shares, and (iv) Rs 5 lakh in equity shares and Rs 5 lakh in preference carrying 5 per cent dividend. The existing earnings before interest and tax amounted to Rs 1,20,000 per annum.

- (a) You are required to calculate earnings per equity share under each of the above four financial plans.
- (b) Also calculate the earning per equity share if on account of expansion the level of EBIT is doubled.

3. Glorious Ltd has a total capitalization of Rs 10 lakh consisting entirely of equity shares of Rs 50 each. It wishes to raise another Rs 5 lakh for expansion through one of its two possible financial plans:

- (i) All equity shares of Rs 50 each
- (ii) All debentures carrying 9 per cent interest

The present level of EBIT is Rs 1,40,000 and Income Tax Rate is 50 per cent.

You are required to calculate EBIT level at which earning per share would remain the same irrespective of raising of funds through equity shares or debentures.

[Ans. EBIT = Rs 1,35,000, EPS at point of indifference Rs 4.50]

4. A company needs Rs 12,00,000 for the installation of a new factory which would yield an annual EBIT of Rs 200,000. The company has the objective of maximizing the earnings per share. It is considering the possibility of issuing equity shares plus raising a debt of Rs 2,00,000, Rs 6,00,000 or Rs 10,00,000. The current market price per share is Rs 40 which is expected to drop to Rs 25 per share if the market borrowings were to exceed Rs 7,50,000. Cost of borrowings are indicated as under:

Up to Rs 2,50,000	10 per cent per annum
Between Rs 2,50,001 and Rs 6,25,000	14 per cent per annum
Between Rs 6,25,001 and Rs 10,00,000	16 per cent per annum

Assuming the tax rate to be 50 per cent, work the EPS and the scheme which would meet the objective of the management.

[Ans. EPS under Schemes: I Rs 3.60, II Rs 4.20 III Rs 3.91, Scheme II is the best since EPS is the highest.]

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## 7.14 FURTHER READING

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Maheshwari, S.N. *Financial Management: Principles & Practice*. New Delhi: Sultan Chand & Sons, 2007.

Maheshwari, Dr. S.N, Dr. Suneel K. Maheshwari, Mr. Sharad K, *A Textbook of Accounting for Management*. New Delhi: Vikas Publication House Pvt. Ltd.

## NOTES

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