CHAPTER IX
CONCEPT AND THEORY OF FINANCIAL STRUCTURE

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(A) Rationale of Capital Structure Policy

At the very promotion stage of a business enterprise the two most important problems of financial management an entrepreneur has to consider are those of capitalisation and capital structure. Although the significance of an appropriate size of capital to avoid risks of undercapitalisation and overcapitalisation cannot be overemphasised, its role in the success of business may not be so crucial if the scale of operation is maintained in accordance with the sources available. On the other hand, the qualitative aspect of capital - the type of sources tapped for acquiring capital - becomes significant under all circumstances. The basic reason for the superiority of quality - capital structure - over quantity-capitalisation is that the factors that determine the latter are to some extent in the hands of management, whereas the factors which influence the former, like trade cycles, are sometimes outside the control of an individual concern.

The choice of a Balance Sheet is one of the most important policy decisions to be taken by the management of a company. A chosen balance sheet embodies in itself three structured policies of a company, i.e., (i) assets structure policy, (ii) financial structure policy, and (iii) capital structure policy. The assets structure relates to the composition mainly of fixed and current assets - the right hand side of the Balance Sheet. The financial structure is the structure of the owners' equity and the creditors' equity. It deals with the proportion
in which different sources of finance are used to finance the assets of the company. It is the structure of equity share capital, preference share capital, debentures, reserves and surplus, secured and unsecured loans and the current liabilities and provisions. It refers to the left hand side of the Balance Sheet. The capital structure is a part of the financial structure. It is a structure of owners' equity and creditors' equity excepting the current liabilities and provisions. It is a structure of the funds raised to finance all the fixed assets and the portion of current assets, which a company is supposed to keep permanently to carry on the business. It is the structure of equity share capital, preference share capital, reserves and surplus, debentures, long term and medium term loans or borrowings from banks, financial institutions etc. The capital structure policy or the long term financial policy should embrace in it all the long term and medium term funds rather than the net worth alone. The current liabilities are excluded as they are incurred to meet the short term financial requirements of the business. Such obligations mature within a short period, usually 12 months.

The long term and medium term funds in the form of equity capital, preference capital, debentures and loans are raised for improving the profitability and the investment value of the business. They do not change their form and substance frequently and are raised in order to finance the permanent assets, which are capable of paying back the investment made in them over a period.
Hence, it seems desirable to exclude current liabilities and provisions in order to have a sound and logical base for capital structure policy. The capital structure decisions are taken at the time of (a) commencement of a business, (b) the expansion and development of business, and (c) the reconstruction of financial structure. The capital structure is a complex and controversial issue. While planning for it, management must consider the cost, income, risk and control implications of different forms of capital. These four variables once again are influenced by variables like rate of growth, stability of earnings, money and capital market conditions in the industry, and firm, aspirations of shareholders and management, government policies, etc.

Capital structure requires a study of two factors: (i) Determination of the amount of capital required (ii) The make up of capitalisation, i.e., the various securities which will constitute capitalisation. The former is known as capitalisation and the latter is known as capital structure. The term 'capital structure' according to Gouthman and Dougall "may be used to cover the total combined investment of the bondholders, including any long term loans as well as total stockholders' investment including retained earnings as well as original investment." Both capitalisation and capital structure affect vitally the working of an enterprise. Insufficient capital may lead to technical failures or, at times, may compel the firm to borrow funds at a rate of interest higher than the market rate. Similarly, redundant capital
not only leads to wastage of scarce resources but also has adverse effect on the efficiency of the enterprise. Hence, the objective of an enterprise, be it small or big, should be to avoid both overcapitalisation and undercapitalisation. Capital structure also affects the efficiency of a firm. A firm could raise the needed capital either by floating shares or debentures or their combination. Of the three methods of raising capital, the last one, viz., a combination of both shares and debentures, i.e., a combination of owned capital and borrowed capital in the regular conduct of business is known as trading on equity. Trading on equity is a popular device for corporate financing.

As such, it is very difficult, in practice, to predict accurately incomes and risks and thereby to have a model of optimal capital structure. Kalawar Y.B. in his article concludes that a capital structure policy decision has a great bearing on firm's profitability and the value of shares. Hence, there should be a judicious mix of net worth and leverage to the maximum extent possible. For this, a scientific analysis and evaluation of all sources of finance is essential. The ideal financial structure is one that provides sufficient capital to provide for efficient and profitable operations, a maximum rate of return with a minimum of financial risk and a minimum of dilution of control.

* Schwartz El in his article "The theory of capital structure of the firm" states that, "In both Economics and Finance, there hardly exists the complete model of optimal capital structure of the firm".

The conventional first step in the identification of an optimum financing pattern is to abstract down financing sources to the two classes of equity and debt as there are basic dissimilarities between the two. They are subject to different tax treatment both within the company and outside it. Monetary earnings on equity are more subject to risk than returns on debt. The traditional approach to financial structure is that of a financing pattern which includes a moderate amount of debt that would generally result in a least-cost financing solution. This pattern has been attributed to a market preference for the securities of moderately leveraged firm; for, a moderate amount of debt would mean creditor claims that would not endanger safety.

An optimal capital structure involves less debt financing than the firm's or company's debt capacity. Therefore, a shareholder wealth maximising company will not maximise its borrowings. Instead, it will reach for its optimal capital structure to attain maximum value of the firm. A firm achieves its optimal capital structure, when it arrives at the best design for the left hand side of the balance sheet. From the financial point of view, the best design is one that makes the company's shareholders as well off as possible. But the hard part is of finding the best design. Trial and error is of no help. A finance manager following a trial and error strategy has no way of telling when optimum policy is reached. The efforts of trial shift in financing policy can be observed only if all other things affecting the
firm's market value could be held constant. This is impossible. There is no such thing as the model capital structure for all business or industrial units. The extent of time and attention of the financial executives and the board of directors taken by the choice of the types of securities varies from one company to another and, even within a company, very few finance managers have the opportunity of designing an absolutely new capital structure. They have mainly to be concerned with an existing capital structure. Despite the limitations, the traditional view on the subject is that optimum capital structures do exist and, when an enterprise is about to plan one for its financial arrangements, the 'optimum' dictum should better be taken into account.

A crucial question is: What proportions between debt and equity capital must be obtained and maintained over reasonably long periods? Debt is supposedly a cheaper mode of finance, because its after-tax cost is much smaller than the expected return on equity capital. A large dose of debt would, thus, have the effect of lowering the cost of capital and enhancing the value of the enterprise. At the same time, an excessive amount of debt would increase the chances of default (both of interest and principal payments) and bankruptcy. The riskiness of the enterprise would correspondingly increase. In contrast, a large proportion of equity resources would ensure safety of operations by minimising the solvency risks, but may have the effect
of raising the cost of capital and hence depressing profitability. The solution lies in a risk-return trade off, which finance managers will have to try to strike out in a bid to optimise the finance-mix of their enterprises.

The twin objectives in planning capital structures, may, thus, be stated as (i) Minimisation of solvency risks (ii) Maximisation of profitability or returns to equity holders. A risk proof borrowing is relatively much lower and the possible gains in terms of solvency are more than counter balanced by the prospect of loss of control. Thus, even from a solvency point of view, an ideal capital structure must contain some amount of debt. A method that can be employed for planning such a finance-mix may consist in estimating (i) Model Capital Structure Ratios and (ii) Model Income Turnover Ratios. It may be observed that in both the cases, the major determinant of the ideal capital structure is the industry experience embodied in model ratios.

For illustrating the above thesis, let us assume that the model capital structure ratios as maintained by firms belonging to a homogeneous risk-class are: 20% debt, 70% equity capital, and 10% retained earnings. A new enterprise proposes an investment of Rs. 8 lacs and aims at maintaining the solvency level of rival firms. It could be easily done as shown below:

\[ X + 7X \times 2X = Rs. 8 \text{ lacs}, \] where 'X' denotes retained
earnings. Hence, Rs. 5.6 lacs will be the equity capital and Rs. 1.6 lacs, debt capital.

These ratios can be used even for readjusting the existing capital structures. Assume that a firm has a total finance-mix of Rs. 10 lacs, containing 90% equity shares and 10% retained earnings and zero debt, and that expansion finance of Rs. 8 lacs is to be so managed that the total capital structure which emerges corresponds to the model ratios as above, viz., $X + 7X + 2X$. In such a case, the new capital structure must contain Rs. 1.8 lacs by way of retained earnings, Rs. 12.6 lacs by way of equity capital, and Rs. 3.6 lacs by way of debt capital. This will require additionally, in a plan for expansion, Rs. 0.8 lacs by way of retained earnings, Rs. 3.6 lacs by way of equity capital, and Rs. 3.6 lacs by way of debt capital. Quantitative readjustments may also be made without affecting the over-all size of the capital structure. A refinancing plan may be drawn for the purpose.

Employment of Model Income Turnover Ratios is a dynamic approach. The hypothesis is that perfect solvency implies the ability of the enterprise to refund all financial obligations including equity shares and retained earnings. Let us assume that the following are the model industry ratios :

Debt capital / after tax profits = 3
Equity capital / after tax profits = 17
Therefore, the new financing plan of a firm, embarking upon a new investment of Rs. 20 lacs, and expected to yield 5% per annum after tax over its life, (i.e., Rs. 1 lac) would be:

Rs. 3 lacs in the form of debt and
Rs. 17 lacs in the form of equity capital.

(B) The Theory of Optimal Debt

The management of a firm is interested in deciding the optimum debt limit for the company to see that its credit worthiness is not jeopardised by over-trading on equity; the lenders are interested in appraising the optimal debt limit of the company to see that it is not borrowing beyond its capacity.

(1) Conventional Approaches to Debt Capacity

A keen observation of the present-day business practice would suggest that businessmen and executives commonly draw their ideas of debt capacity from one or more of the several sources. Some businessmen or managements see what comparable companies are doing in this area of financial management, in terms of the common risk patterns. It is natural that the debt-equity ratio of competitors will be carefully considered and, in the absence of more objective guides, there will be a tendency to reject the extremes. This approach has an added practical appeal. Group norms are considered pivotal in the capital market's appraisal of a company's financial strength. If a company is out of line, it may be penalised
even though the deviation from the average may be perfectly appropriate for this company.

Some company managements may seek the counsel of institutional lenders. Most corporate borrowers negotiate long term debt contracts at infrequent intervals. The financial institutions are constantly involved in loan decisions and, in consequence, presumably have a great deal more experience and better judgement.

Some companies follow the practices of the past. There is a very natural tendency among entrepreneurs to respect the corporate financial traditions and this is often true of debt policy also. Some other companies refer to 'general practice' and 'common knowledge'. There is a widespread acceptance of the belief that 'an appropriate limit' to the long term borrowings of industrial companies is 30% of capitalisation. The rationale of this particular decision rule has been obscured by the passage of time, but there is no doubt that it has become a widely honoured 'rule of thumb' in the decisions of both borrowers and lenders.

It may be noted that there are serious limitations inherent in using the above conventional approaches as the only guides to appropriate debt policy. 'Lessons of experience' as a guide have two limitations. Firstly, even assuming strict comparability—which, in itself, is hard to establish—there is no proof that the company concerned has arrived at its current debt proportions in a deliberate and rational manner. In view of wide variations in debt policy within an industry group, there can
be little meaning in an industry average. But, as in most areas of business, there is a range of acceptable behaviour, and the skill of management lies in identifying the limits to which it can go advantageously without raising too many eyebrows.

Secondly, even a company's own direct experience with debt financing has its limitations as a guide to debt capacity. The evidence that a particular debt policy was not a cause of financial embarrassment in the past, might only go to show that the policy was on the right lines, but not that it was optimally beneficial. Perhaps it was a proof of a conservative approach. However, if assurance of adequate conservatism is the primary goal, the only really satisfactory policy will be a no-debt policy. In most industries, the past 20 years, say, have produced four to five periods of decline in sales and earnings. This limited recession experience of the behaviour of cash flows may be misleading since cash flows are affected by many factors and each recession, too, is the result of unique combinations of events, which may not necessarily get repeated in future. Thus, the so called test of experience cannot be taken at its face value.

"Advice of the lender" approach also has its limitations. The lender views the individual loan contract as one of the large number of investments which makes up a constantly changing portfolio. To him the nature of risk is necessarily influenced by the fact that this loan is only a fraction of the total sum invested. The
borrower, on his part, has to consider the needs which
will go unsatisfied during the period prior to the time
of actual repayment or default, when debt servicing
drains precious cash reserves. Naturally the risk to
the lender is not the same thing as risk to the borrower
and consequently the standards of one alone are not
necessarily appropriate to the other. Some will argue
that if the borrower does not accept the lender's stand­
ards, there will be no loan contract. However, there is
often room for negotiating the terms. Under some circum­
stances, there may be valid reasons for probing the upper
limits of the lender's willingness to lend.

It must be said that debt policy decision is one
which the management of a company alone must make. Interes­
ting questions crop up here. Does the management deter­
mine the attitude towards risk bearing which the share­
holders must then adopt?, or is it vice versa? Should
the management first choose the financial policies which
it prefers and then attract a like-minded shareholder
group? Should it shape the attitude and objectives of
its present shareholder group and attempt to translate
these into appropriate action?

Responsible managements would not be dealing with
the problem in terms of purely personal risk preferences.
It seems that many top executives have not given this
aspect the attention it deserves. There is a case for a
debt policy to be generated internally only. A question
arises as to why many companies, in deciding how far to
go in using 'other peoples' money, lean so heavily on 'other peoples' advice'? This is so probably because of three factors. Firstly, most managements have failed to separate subjective from objective elements. Secondly, the measurement of risk is a complex affair. Thirdly, conventional debt capacity rules are inadequate.

It is obvious that if a business doesn't have a dependable method of assessing the general magnitude of risks of a too-much debt in terms of its individual company and industry circumstances, it will either fall back on the generalised concept of risk of comparable companies or make the decision on purely subjective grounds, viz., on how the management 'feels' about debt. Thus, an internally generated debt-capacity decision is often based almost entirely on the management's general attitude towards the kind of problem without regard

(a) to how much risk will be actually involved, and (b) to what the potential rewards and penalties from risk bearing will be in the specific situation. The most obvious examples are to be found in the extremes of debt policy that follow such rules as, 'no debt under any circumstances' or 'borrow the maximum available'. There is also some truth in the generalisation that financial officers tend to be more conservative than other executives at the same level. They tend to minimise risk regardless of the potential rewards from risk bearing.
It is certainly illogical to base an internal decision regarding debt policy on the individual attitudes towards risk alone; just as it is illogical to believe that corporate debt policy can be properly formulated without taking the individual attitudes into consideration. It is in the formulation of an approach to the measurement of risk in the individual company that the hope for an independent appraisal of debt capacity lies.

Unfortunately the conventional form of expressing debt capacity rules is of little help. Debt capacity is commonly expressed in terms of the Balance Sheet relationship between long term debt and total of all long term sources as percentage of total capitalisation. The alternative form of expression is Earnings Coverage Ratio, i.e., the ratio of income available for debt servicing to total amount of annual interest plus sinking fund charges for repayment. Under this rule, no new long term debt would be contemplated unless the net income available for debt servicing is equal to or in excess of some multiple of debt servicing charges, say, 3 : 1, so that the company can survive a period of decline in sales and earnings and still have enough earnings to cover the fixed charges of debt.

As far as the capitalisation standard is concerned, it is apparent that, in order to formulate the debt policy the standard must be expressed in terms of data which can be related to the magnitude of the risk, so
that changes in the ratio can be translated into changes in the risk of cash inadequacy and vice versa. But then how many executives have really an idea as to how much risk is increased when the long term debt of their companies is increased, say, from 10% to 20% of capitalisation?

This standard does have its weaknesses. Firstly, as loans are repaid by partial annual payments, while the principal amount declines and the percentage of capitalisation ratio improves, the annual cash drain for repayment defacto remains the same, until the maturity is reached. Secondly, there may be substantial changes in the values of assets like inventory and in depreciation policies and the consequent changes in the percentage of capitalisation ratio may have no bearing on the capacity of the company to meet the fixed cash drains. Thirdly, certain off-the balance sheet factors (e.g., payments for lease agreements) have an important bearing on cash flows which this conventional ratio takes no cognizance of.

(2) The Earnings - Coverage Standard

On the surface atleast, this method affords a better prospect of measuring risk in an individual company in terms of factors which would bear directly on cash adequacy. By relating the total annual cash outflow under all long term contracts to the net earnings available for servicing the debt, it is intended to assure that earnings will be adequate to meet the charges at all times.
This approach implies that greater the prospective fluctuation in earnings, the higher is the ratio required for the larger cushion between normal earnings and debt servicing charges.

This approach also has some limitations. Firstly, the net earnings found in the income statement and derived under normal accounting procedure is not the same as net cash inflow, an assumption which is implicit in this standard. The time when it may be roughly true is the time when managements are least concerned about the hazards of debt, i.e., when sales are approximately constant from period to period. It is in times of rapid change including recession that managements are most concerned about debt burden, and then there are likely to be sharp differences between net income and net cash flow.

Secondly, the question as to what the proper ratio is between earnings and debt servicing should be, in itself, problematical. Perhaps, the best course would be to work backward from the data of past recessions which would indicate the low points of net earnings - towards a ratio between this expense and some measure of 'normal' earnings, with the intention of assuring a 1:1 relationship between net earnings and debt servicing at all times. However, for this purpose, the estimate of minimum net earnings would itself provide the measure of debt capacity and the conversion into a ratio will be redundant.
Thirdly, there are hazards in a literal translation of past history to serve as a guide for future. What, if a company has incurred losses in the past? Does this mean that it has no debt capacity? If a net loss is possible, no ratio between normal net earnings and debt servicing, however large, will assure the desired equality in future recessions.

(3) Dividend Approach

In this approach, the period of optimal debt is to be defined first. A cash flow statement is then prepared for the period. The formula used is:

\[ D_1 + AE = ADD + D_2 \]

where, \( D_1 \) = Term Loan at the beginning of the period
\( AE \) = Adjusted Retained Earnings, i.e., Earnings after making provision for equity dividend and some definite margin for working capital at some percentage on value of inventories and receivables,
\( ADD \) = Accumulated Depreciation and Development Rebate, and
\( D_2 \) = Term Loan outstanding at the end of the given period.

Here, the optimal debt for each of the years of the period under consideration, are worked out and an average limit is finally set. The formula is based on the thesis that debt should be set in the light of depreciation funds generated by the company, net of retained earnings; for, the greater the profit generating
capacity, the smaller is the debt limit and the larger the depreciation funds, the greater is the debt servicing capacity of the company.

(4) Cash-Flow Approach

Conventionally, debt capacity standards are expressed as some percentage of capitalisation or net tangible assets, or as earning coverage ratio. These standards are inadequate for some definite reasons. Firstly, changes in debt ratio as some percentage of capitalisation can not be translated into changes in risk of cash inadequacy, and vice versa. The Balance Sheet data hardly provides any direct evidence on the question of cash inadequacy and some figures picked up may prove to be highly unreliable and misleading.

Secondly, there will be a wide variation in the relation between the principal amount of the debt and the annual obligation of cash payment (interest + instalment on annual basis) because of different maturing dates of loan contracts. A loan whose repayment is scheduled over a longer period will have a smaller annual obligation for each payment. As the loans get repaid in instalments and the principal amounts will decline, the equity-debt ratio will improve, but the annual obligation for cash payment will remain the same, until the date of maturity.

Thirdly, changes in inventory valuation and depreciation policies will affect the capital structure and the
debt-equity ratio, but they will have no bearing on the capacity of the company to meet fixed obligations.

In view of the above inadequacies of the conventional methods of approaching debt capacity, a new approach, viz., the cash flow approach has been suggested by a few experts. It is their considered opinion that the debt capacity of a company needs to be examined in terms of its capacity to bear incremental fixed cash outflows for any purpose during a period of adverse conditions of business, like in a recession. This, in turn, requires an analysis of the major influences on the cash flow behaviour resulting from all transactions under the concept of a going concern. The most significant factor is sales volume. (There are other factors related, in greater or lesser degree, to sales.) In order to determine the cash flow behaviour during, say, a recession period, the latter's boundaries will have to be established. Based on past experience, the limits of the recession period boundaries as the maximum favourable and as the maximum adverse limits can be indicated.

In practice, however, it may be difficult to assess with confidence the probabilities within the range. In such cases, without going through the formal process of assigning probability values, the most probable adverse limit should be determined. The debt limit indicated in this approach will only be a guideline to management in evaluating risk, which may escalate when the debt limit is transgressed. There is no reason why the management should not incur the debt beyond the limit point, if it is willing to bear financial risk.
This approach, however crude and approximate, is superior to the conventional 'rules of thumb' governing debt policy. It is intended to be used as a general guide and not as a precision instrument. The equation that is applicable in the approach is:

\[ Y = rx + \frac{1}{n} x \]

Where, \( Y \) = net annual cash generation during the period of recession after deducting dividend on preference shares, annual capital expenses, normal rate of equity dividend and annual incremental margin of money for working capital,

\( x \) = optimal debt,

\( r \) = average rate of interest after tax, and

\( n \) = number of years in which debt is redeemed.

(5) Break-Even Approach

The optimal debt limit in this method is derived applying the following formula:

\[ ES = FC + \left\{ xI + \left( \frac{1}{n} x \frac{r}{n} 1 - T \right) \right\} x 3 \]

Where, \( ES \) = Expected 1 - VC amount of sales,

\( FC \) = Fixed Cost,

\( x \) = Optimal Debt,

\( I \) = Average Rate of Interest payable every year,

\( n \) = Number of years over which debt is repaid,

\( T \) = Tax Rate applicable, and

\( VC \) = variable cost per rupee of sales.
By way of illustration, suppose that the following data are given:

Sales Rs. 750 lacs; VC = 60 paise per rupee of sales;
PC = Rs. 200 lacs; debt repaid over 7 years; tax rate 60%; Interest rate = 6%.

The application of the formula will mean:

\[ ES = PC + \left\{ xI + \left( \frac{1}{n} x \frac{1}{T} \right) \right\} X 3 \]

\[ (750 - 450) = 200 + \left\{ 0.06 x + (0.14 x \frac{1}{0.4}) \right\} X 3 \]

\[ 300 = 200 + 0.18 x + 1.05 x \]

\[ x = 81.3 \text{ lacs} \]

\[ \text{Debt limit is Rs. 81.3 lacs.} \]

To illustrate the break-even analysis of leverage:
Suppose X Co. Ltd. has got long term capitalisation of Rs. 100 lacs consisting entirely of equity shares and wishes to raise another Rs. 50 lacs for expansion through one of the three possible financing plans: (i) All equity shares (ii) All debt, at 9% interest (iii) All preference shares with a 7% dividend. The present annual earnings before interest and taxes (EBIT) are Rs. 20 lacs. Assume that the income tax rate is 50% and that at present, 2,00,000 Equity Shares are outstanding at Rs. 50 per share.

Under the first option, 1,00,000 additional shares of Rs. 50/- each can be issued. In order to determine the EBIT break-even or indifference, EPS under the three
alternatives should be found out. If it is intended to find out the EPS under the three plans, when EBIT are Rs. 20 lacs, a break even or indifference chart can be drawn from the given data. EBIT and EPS are plotted on the horizontal axis, and on the vertical axis respectively. For each financing alternative, a straight line to reflect EPS for all possible levels of EBIT has to be drawn. To do so, EPS at some point of EBIT - in our case, Rs. 20 lacs - is taken and it is plotted for the three alternatives. Secondly, the EBIT necessary for overall fixed charges - financial costs for a particular financial plan - is found out and plotted on the horizontal axis. For equity share alternative there are no fixed costs, so the intercept on the horizontal axis is zero. For the debt alternative, EBIT must be Rs. 4.5 lacs to cover the interest charges. For the third alternative of preference shares, EBIT should be the total annual preference dividends divided by \(1-t\), where \(t\) = tax rate applicable. So EBIT of Rs. 7 lacs would be needed to cover dividend of Rs. 3.5 lacs, at the assumed 50% tax rate. Given the horizontal axis intercepts and EPS for the assumed level of EBIT, a straight line is drawn through the two set of points. The break-even chart is thus, ready. (Vide: Chart II.1)
The calculation of earnings per share under three financing patterns is presented in Table II.1

<table>
<thead>
<tr>
<th>Particulars</th>
<th>All Equity Capital Rs.</th>
<th>All Debt Rs.</th>
<th>All Preferred Stock Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT</td>
<td>20,00,000</td>
<td>20,00,000</td>
<td>20,00,000</td>
</tr>
<tr>
<td>Interest</td>
<td>-</td>
<td>4,50,000</td>
<td>-</td>
</tr>
<tr>
<td>EBT</td>
<td>20,00,000</td>
<td>15,50,000</td>
<td>20,00,000</td>
</tr>
<tr>
<td>Income Tax (at 50%)</td>
<td>10,00,000</td>
<td>7,75,000</td>
<td>10,00,000</td>
</tr>
<tr>
<td>PAT (Profit after tax)</td>
<td>10,00,000</td>
<td>7,75,000</td>
<td>10,00,000</td>
</tr>
<tr>
<td>Preference Share dividend</td>
<td>-</td>
<td>-</td>
<td>3,50,000</td>
</tr>
<tr>
<td>Earnings available to equity share holders</td>
<td>10,00,000</td>
<td>7,75,000</td>
<td>6,50,000</td>
</tr>
<tr>
<td>Number of Equity shares outstanding</td>
<td>3,00,000</td>
<td>2,00,000</td>
<td>2,00,000</td>
</tr>
<tr>
<td>EPS</td>
<td>3.33</td>
<td>3.88</td>
<td>3.25</td>
</tr>
</tbody>
</table>
The conclusion that can be drawn from the above is that EPS available to equity shareholders is higher under the debt alternative than under the preference shares alternative, despite the fact that the interest rate on debt is higher than the preference share dividend rate. The indifference point between the equity and debt methods of financing will be as follows:

\[
\frac{(\text{EBIT}^* - C_1) (1-t)}{S_1} = \frac{(\text{EBIT}^* - C_2) (1-t)}{S_2}
\]

Where, \( \text{EBIT}^* \) = the EBIT indifference point, 
\( C_1 \) and \( C_2 \) = annual interest expenses (or preference dividend) on a before-tax basis for financing methods 1 and 2, 
\( t \) = corporate tax rate, and 
\( S_1 \) and \( S_2 \) = number of equity shares outstanding after financing for methods 1 and 2.

\[
\frac{(\text{EBIT}^* - 0) (0.5)}{3,00,000} = \frac{(\text{EBIT}^* - 450,000) (0.5)}{2,00,000}
\]

\[
\text{EBIT}^* = 13,50,000
\]

Thus, the indifference point between equity and debt alternatives in EBIT is Rs. 13.5 lacs, where EPS under both the methods is the same. If EBIT is below this point, the equity stock alternative will provide higher EPS; above that point, the debt alternative will be the best. Similarly, the indifference point between the preference shares and equity shares alternative is Rs. 21 lacs in EBIT. Above it, the preference share
alternative will be favoured with respect to EPS; below it, the equity shares alternative will be the best. There is no indifference point, between the debt and preference shares alternatives. The debt alternative dominates at all levels of EBIT and by a constant amount of EPS, namely, Rs. 0.63.

(C) Factors Affecting Capital Structure Decisions

(1) Multiple Determinants

The financial structure of different firms and industries vary widely. Financial managers do consider the industry financial structure patterns in evaluating and designing a plan for a specific company with reference to the latter's financial and operating characteristics. Executives differ in their attitudes towards risk and exercise considerable discretion when adding to business risk in the form of increased borrowings. The relative weight given by the financial manager to the different criteria underlying capital structure composition will depend upon a number of factors affecting the firm and its operations. Age and development of the firm, size of the firm, corporate functions, economic and environmental factors, Government tax policy, sources of capital available to the firm, control of the company, management's and lenders' attitudes, type of business and assets needed—are some of the traditional factors. A new factor, i.e., cost of financing, is of late having a great impact on the decisions relating to capital structure.
The capital structure composition is influenced by the age and development of the firm. Newly organised firms generally are subject to more risks and uncertainties than established firms; for their markets may not be developed, their operations may be inefficient, and so on. Because of these additional risks plus a lack of reputation, the new firm will probably have difficulty in borrowing capital on favourable terms and may be forced to rely on equity financing. An established firm, on the other hand, will relatively have a greater selectivity in financial media. More mature firms often follow a policy of retiring the bulk of their senior securities to strengthen their financial position. More diversified firms may go through a number of growth cycles and, as a result, their capital structure may be modified periodically as to composition and size.

The size of the firm is bound have its impact on the composition of capital structure. Larger firms generally have greater access to capital markets than smaller firms because of their stability, strength, and reputation. Thus, they can employ more types of financing and achieve a better balance in their capital structure than smaller firms. Larger firms typically are able to utilise greater amounts of financial leverage in their capital structure, since they have more stability and sources of funds.
The adequacy of a company's capitalisation may have a critical influence on its ability to succeed. It is often as important as good management, acceptable products, etc. In some cases, the theoretical principles of an appropriate capital structure may have to be temporarily ignored to ensure a sufficient capitalisation. The scale on which the business operates or plans to operate is the initial determinant of the amount of its capitalisation. In any specific industry, there is always a minimum practicable scale of operations, and the organisers of a new firm can estimate the probable costs, the expected earnings and the amount of assets needed on the basis of comparison with going firms of similar size and character.

There is some tendency for new closely-held companies to start with a nominal capitalisation in order to minimise certain expenses and the effect of government regulations, and to plan to increase the capitalisation later, with a public offering of securities. The capitalisation or recapitalisation of a going business is likely to be less arbitrary, since there exists a record of earnings, costs and assets. The capitalisation must also impress investors as reflecting a realistic valuation of the business. If business involves much more than average risk, the rate of return might have to be increased to attract investors.

The type of economic endeavour that a firm pursues will affect both its asset composition and its capital structure. Traditionally, organisations are classified
into five different categories: industrials, trading firms, rail roads, public utilities, and financial institutions.

The firms in the industrials category tend to have heavy working capital needs which are reflected in their capital structures dominated by equity capital and surpluses. Funded debt and preference shares are used more sparingly when there is lack of fixed capital for security and the prevalence of greater competition and risk. There is very little uniformity of capital structures between sub-groups.

The trading firms usually invest larger funds in terms of working capital and their fixed investments are comparatively small.

The public utility firms have their funds mostly invested in fixed capital. Therefore, they are able to use funded debt to a greater extent in their capital structures. Preferred stock is also commonly used by them. They rely less heavily on equity stock than the other categories of firms do.

The financing of financial institutions such as banks is very specialised and complex. Although the techniques used by them vary substantially, in fact, they all employ financial leverage at a high degree.

There are economic factors that inevitably affect the capital structures of firms. Among the most important ones are present sales (i.e., revenue) levels, and future income prospects (i.e., trends and stability). Cost conditions must not be overlooked when sales projections
are being considered, since most firms share the actual (and potential) markets and are, therefore, subject to varying degree of price competition and constraints.

The asset structure and ownership make-up of a firm are factors which will also affect its capital structure. Firms which have a preponderance of fixed assets tend to use extensive amounts of long term senior financing, since both the need for this type of financing and the requisite collateral values are present therein. Similarly, firms with chiefly short-term operations rely heavily on current financing. If continued control of the firm is a consideration, other things being the same, senior securities will be used to supplement funds derived from the retention of earnings. If the equity stock of a corporation is widely distributed, then control consideration can usually be ignored in capital structure planning.

Firms faced with keen competition and uncertain profits usually rely on equity financing, while firms that have little or no competition can more safely employ debt.

Capital market conditions are another set of factors which influence firms' capital structures. If market conditions are tight, i.e., funds are costly and in short supply, the choice of a source of finance is likely to be dictated by investors and equity issues or debt issues with conversion facility may have to be offered. On the other hand, if markets are buoyant, firms may be able to
issue securities, which otherwise are marginal in investor appeal. It is very difficult for firms to plan their capital structures in the light of future capital market conditions and, therefore, some degree of flexibility has to be incorporated in the financial structure as a hedge against the possibility of having to raise finance under adverse circumstances.

Business cycle conditions may still be another consideration in a firm's financing operations. If a firm needs additional capital during a period of depressed business activity, the ideal medium would be funded debt, since the prevalent interest rates will be low and the firm will have a period of rising prices and earnings later, when it can not only pay interest on but also repay the principal amount of the debt. In a period of peak business activity, debt should be retired and capital should be raised by means of equity financing.

The government's tax policy has become a progressively more important factor in the last few decades in decisions regarding the use of debt versus equity stocks in financing. It is observed that most of the companies in India have been relying on debt capital for meeting their capital requirements.* The usual argument put forth for favouring the method of debt financing is that the interest payments are recognised as deductible expenses in computing taxable profits, whereas the

dividends on equity capital are not. The same advantage is also not available in the case of preferred stock, though it possesses some features of debt. In the case of debt capital, the tax deductibility nature of interest reduces the net cost of borrowing below the contractual interest rate. For instance, at a 52% income-tax rate, an 8% interest charge is partially offset by a tax saving of 4.16% on the capital amount involved, giving a net annual cost of borrowing of 3.84%. As against this, 8% dividend on equity or preferred stock calls for the payment of the full amount, with no partial tax offset, and the gross and the net financial costs will be identical.

Can, however, in view of this tax advantage, the capital structure of corporations consist of 100% debt? Excessive use of debt over and above a certain limit is considered undesirable in view of the greater amount of bankruptcy risk involved therein.** Also, the long run profits of the corporations are likely to be affected adversely by the preponderence of debt capital as their charges are fixed and cannot be postponed like dividends. The necessary provision for repayment of debt has to be made. Excessive use of debt is also undesirable from the cyclical point of view because of greater corporate vulnerability in depression and the rigidities induced by fixed charges.


According to Modigliani and Miller, the total value of the firm and its cost of capital are independent of its capital structure and there is no tax advantage to the corporations. But according to Soloman Ezra, "a firm can lower its cost of capital due to tax advantage on the increased leverage up to a certain level, beyond which the cost of capital rises because of the interaction of non-tax factors."

In a research study undertaken by him on the influence of corporate income tax on corporate financial policies, Miller had observed that "the increased use of debt capital by the U.S. Corporations was not due to tax advantage. The shift towards debt financing was not due to greater use of senior securities; but simply that within that capacity there has been net replacement of preferred stock with debt." So far as conditions in India were concerned, a study of four large and medium Private Sector cotton textile and basic industrial chemical units was undertaken by Satyanarayan Rao, for a period of 19 years from 1956-57 to 1974-75. One of his major conclusion was: "The capital structure of any corporation would never consist of 100% debt capital. Tax was not the lone and the major factor that influenced the level of debt capital. Other variables like interest rates on loans, equity dividend rates and the demand for capital were also responsible for the increased use of debt capital." 

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In general, in U.S.A., government regulations have favoured simplicity of capital structure and have, in effect, denied long term debt financing to banks, insurance companies, railroads and public utilities.

The sources of capital available to a firm have their own impact on the composition of its capital structure. A new business, especially if it is a small enterprise, will find it almost impossible to raise long term funds from the capital market by issuing any securities other than equity stock. An established business firm seeking to raise long term funds from the general public for the first time may be able to trade on equity by issuing preference shares and debentures, provided it has proved record of earnings, valuable assets and substantial backing that may inspire confidence among prospective investors. In any case, capital structure based only on equity and surplus offers simplicity and flexibility and does not burden the firm with fixed interest charges and a threat of default and bankruptcy in future. It needs to be noted that, in recent years, there has been a tendency for small growing companies to obtain debt financing from non-bank sources, i.e., from government specialised agencies and/or financial institutions.

In order to retain control on the company the original promoters as well as those investors who helped to supply the initial capital will generally prefer to limit the amount of voting equity stock issued and to make more use of non-voting preferred stock or debentures.
In many cases, a company has to change substantially its policy and resort to other sources entailing fixed charges. However, failure to meet fixed obligations later often becomes a quick road to loss of control, if not complete loss of the company. In this way, "numerous large companies in U.S.A. with a high proportion of their equity scattered in the hands of many small investors, have come under the control of groups with perhaps 20% or less of outstanding equity stock.* The management of a company considers simultaneously other factors like costs, anticipated incomes, and the relative advantages of various policies—policies of slower growth based on retained earnings contrasted with faster growth requiring large doses of outside capital. Getting too much additional capital from lenders or investors for the sake of increasing immediate profits could endanger interest and income of the present owners as also of the company.

The management's attitude that most directly influences the choice of financing is based on consideration (i) of control of the enterprise, and (ii) of risk. Large companies whose shares are widely owned may choose additional sales of equity shares as these will have little influence in terms of the control of the company. As management represents the stewardship of owners, it is often less willing to take the risk of fixed charges. Managers of most companies get remuneration in the form

of salaries only. Hence, they may not strive for greater profits, if the effort is to involve using the debt leverage involving large interest risk. Presumably they are governed by the feeling that the risk of leverage for them, the ones who actually decide to use debt or equity, will outweigh the potential gains from successful leverage; for, when the sales are low, there is a chance of failure and the loss of their jobs, whereas when the sales are high, it is equity holders and not they, who will receive the benefits. Again, most equity shareholders are more diversified than most managers. If the firm fails, an equity holder loses only a percentage of his net worth invested in the firm, but the manager loses hundred percent in terms of his job. However, it should be pointed out here that companies are increasingly using profit based compensation schemes to motivate management to optimise profitability. In contrast, the owners of small firms may prefer to avoid issuing equity in order to be assured of continued control. Managers of such firms are often willing to incur higher debts.

The attitudes of the lenders—banks and financial institutions—are frequently important and, sometimes, the most important determinants of financial structure. In some cases corporate managements discuss their financial structures with lenders and give much weight to their advice. But, when a management is confident of the future and seeks to use the debt leverage beyond the norms for the industry, the lenders may be unwilling to accept
the former's demands. They may insist that an excessive debt will reduce the credit-rating of securities already issued, and impose conditions and restrictions on the use of loans, debt-equity ratio to be maintained, repayment of loans, etc., which will affect the revised composition of financial structure of the company.

The assets structure and prospects of earnings too are determinants of company capital structure. The assets structure or composition of assets influences the sources of financing. Firms like public utilities, with long lived fixed assets and relatively assured demand for the products, use long term mortgage debt extensively. Firms like wholesaling and retailing, whose assets are mostly inventory, the value of which is dependent upon the continued profitability of the individual firm, rely less on long term financing and more on short term funds.

(2) Cost of Financing

The capitalisation of a new company must cover the costs of organising (i.e., promoting) a business and of obtaining capital needed to operate it. The nature and amount of such costs will vary with the size and type of business of the company. There are reasons for inquiring into the nature of cost of capital. One is that the decision-maker needs to know the marginal cost of capital if he is to make profit or wealth - maximising decisions. Another is that he can choose rationally between alternative sources of financing only if he can distinguish between the sources in terms of the relative costs of capital to be procured.
The overall cost of capital can be defined as the internal rate which will equate all future payments that will be made to all capital sources with the amount of money being currently supplied by all of these sources. It also may be defined as equal to the weighted average of the cost of capital obtained from each capital source, where weights are determined by each source's fraction of total money being currently supplied. The ideal capital structure would be one which minimises the overall cost of capital to the firm.

A lower cost of capital indirectly contributes to the earnings per share available to equityholders. A direct measure of the leverage effect may also be made by observing variations in EPS for different proportions of debt-equity. With a decline in the proportions of equity shares in the total capital structure, the present value improves, and the return available to equity holders keeps rising with an increasing proportion of debt into the capital structure.

Similarly, it is very clear that equityholders' position improves as the income levels rise. The ideal capital structure is expected to minimise the weighted average cost of capital to the firm, where the weights of different components of capital are the capital structure ratios and the individual components as follows:

\[ K(i) = \text{Debt cost} = \text{After tax interest cost}, \]
\[ K(e) = \text{Equity cost} = \text{Present return on the market value of equity shares (yield)}, \] and
K(r) = Retention costs = Difference between what the enterprise would presumably earn if funds were left with it and what the equity holders would earn, if funds were distributed to them.

Suppose K(i) = 3.5%, K(e) = 8%, K(r) = 2%, and capital structure ratios are: Debt Capital = 20%, Equity Capital = 70%, and Retained Earnings = 10%.

Then, the present cost of capital position would be as shown in Table II.2.

**Table II.2**

<table>
<thead>
<tr>
<th>Capital Structure</th>
<th>Amount</th>
<th>Relative Weight</th>
<th>Component cost</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Capital</td>
<td>20000</td>
<td>20</td>
<td>3.5</td>
<td>70</td>
</tr>
<tr>
<td>Equity Capital</td>
<td>70000</td>
<td>70</td>
<td>8.0</td>
<td>560</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>10000</td>
<td>10</td>
<td>2.0</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>13.5</td>
<td>650</td>
<td></td>
</tr>
</tbody>
</table>

Simple average cost = \( \frac{13.5}{3} = 4.5\% \), and Weighted average cost = \( \frac{650}{100} = 6.5\% \)
Now, suppose new capital expansion of Rs. 1 lac is planned to be undertaken and attention is directed to low cost finance. If the Finance Manager arrives at the decision that Rs. 60000 be raised by debt, Rs. 30000 by equity and Rs. 10000 by retentions, the cost of capital position would be as exhibited in Table II.3.

<table>
<thead>
<tr>
<th>Capital Structure</th>
<th>Amount (Rs.)</th>
<th>Relative weight</th>
<th>Component cost</th>
<th>Weighted average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Capital</td>
<td>80000</td>
<td>4</td>
<td>3.5</td>
<td>14.0</td>
</tr>
<tr>
<td>Equity Capital</td>
<td>100000</td>
<td>5</td>
<td>8.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>20000</td>
<td>1</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>13.5</td>
<td>56.0</td>
</tr>
</tbody>
</table>

\[
\text{Simple average cost} = \frac{13.5}{3} = 4.5\% \\
\text{Weighted average cost} = \frac{56.0}{10} = 5.6\%
\]

It would be seen that the return available to equityholders keeps on rising and the weighted average cost declines with an increasing proportion of debt in the capital structure.
Any theory of capital structure should be examined from the point of view of the valuation of a firm and the implications of capital structure for cost of capital and financing decision. Solomon Ezra* makes the following assumptions in this regard:

(i) There are no income taxes.

(ii) The ratio of debt to equity for a firm is changed by issuing debt to repurchase stock or issuing stock to pay off debt. In other words, a change in capital structure is effected immediately and transaction costs are supposed to be nil.

(iii) The firm has a policy of paying 100% of its earnings in the form of dividends.

(iv) The expected value of earnings for each firm is the same for all the investors in the market. Expected value of earnings for all future periods is also the same as the present operating earnings.

The required rate of return for investors in a firm, whose earnings are not expected to grow and that has a 100% dividend payout ratio is the E/p (EPS) Ratio. Given the assumptions, E/p ratio represents the market rate of discount that equates the present value of the stream of future dividends with the current market value of the share. This is not to say that it should be used

as a general rule to depict the cost of equity. It is used here only because of its simplicity for illustrating the theory of capital structure.

The final rate \( (K_0) \) is the result that can be obtained by dividing net operating earnings \( (o) \) by the market value of the firm \( (V) \)

\[
K_0 = \frac{o}{V}
\]

where, \( V = \text{value of firm's equity} + \text{value of firm's debt} \).

Here, \( K_0 \) is the over-all capitalisation rate for the firm. It also can be expressed as:

\[
K_0 = K_i \left( \frac{B}{B+S} \right) + K_e \left( \frac{S}{B+S} \right)
\]

Where, \( K_i = \text{Cost of debt}, \)
\( K_e = \text{Cost of equity}, \)
\( S = \text{Market value of equity}, \) and
\( B = \text{Market value of debt}. \)

Durand* proposed two approaches to the valuation of earnings of a company. (i) Net Income Approach and (ii) Net Operating Income Approach. These two approaches represent the extremes in valuing the firm or company with respect to the degree of leverage.

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With the net income approach, earnings available to equity holders are capitalised at a constant rate \((K_e)\). The implied overall capitalisation rate, i.e., cost of capital will be:

\[
K_o = \frac{O}{V}
\]

\[
= \frac{1000}{11500}
\]

\[
= 8.7\%
\]

Assuming that the firm increases its debt from Rs. 3000 to Rs. 6000 and uses its proceeds to repurchase equity stock and rate of interest (5%) remains unchanged, the market value of the firm and overall cost of capital will be as follows:

<table>
<thead>
<tr>
<th>Rs</th>
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<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1000</td>
</tr>
<tr>
<td>Less F</td>
</tr>
<tr>
<td>300</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>700</td>
</tr>
<tr>
<td>Ke</td>
</tr>
<tr>
<td>10%</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>7000</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>6000</td>
</tr>
<tr>
<td>V</td>
</tr>
<tr>
<td>13000</td>
</tr>
</tbody>
</table>

\[\therefore K_o = \frac{O}{V} = \frac{1000}{13000} = 7.7\%\]
According to this approach, the firm is able to increase its valuation (V) and lower its cost of capital (Ko) as it increases the leverage. As a result, the market value of equity increases.

Suppose that the firm has a debt of Rs. 3,000, and 850 equity shares, with a market price of Rs. 10/- per share. If the amount of debt is increased to Rs. 6000, and the stock of Rs. 3000 is repurchased at Rs. 10/- per share, 300 shares are repurchased. So, there will remain 550 shares outstanding. With a market value of equity of Rs. 7000, the new market price shall will be, $7000 \div 550$ equity shares = Rs. 12.73 per share.
In chart II.2, the degree of leverage (B/S) is plotted along the horizontal axis, while the percentages of Ki, Ke and Ko are put on the vertical axis. This is on the assumption that Ke remains constant as the degree of leverage increases. As the proportion of cheaper debt increases, the weighted average cost of capital Ko decreases and approaches the cost of debt (ki).

The optimal capital structure would be one at which the total value of the firm is the greatest and the cost of capital is the lowest. Using the Net Income Approach, the optimal capital structure is one farthest to the right in the graph. The significance of this approach is that a firm can lower its cost of capital continually and increase its total valuation by the use of debt funds. Again, the critical assumption is that the firm does not become increasingly more risky in the minds of investors and creditors as the degree of leverage is increased.

(2) Net Operating Income Approach

In this approach, the assumption is that the overall capitalisation rate of the firm (Ko) is constant for all degrees of leverage. Taking the earlier illustration of a firm with a debt of Rs. 3000, at 5% rate of interest, the position will be as follows:
The implied equity capitalisation rate \((Ke)\) is 
\[
\text{Earnings to shareholders} \div \text{Market Value of equity} = \frac{(Rs. 1000 - 150 \text { as interest})}{7000} = \frac{850}{7000} = 12.1\% 
\]

In this approach, the net operating income is capitalised at the overall capitalisation rate to obtain total market value of the firm. The market value of the debt is then deducted from the total market value of the firm to obtain the market value of the equity stock.

Suppose that in the above firm the debt is increased to Rs. 6000, Then,
\[
\text{Rs.}
\]
\[
C \quad 1000 \\
Ko \quad 10\% \\
V \quad 10000 \\
\text{Less B} \quad 6600 \\
S \quad 4000 
\]
The implied capitalisation rate of equity,

Where \( E \) = earnings available to share holders,

\[
Ke = \frac{E}{S} = \frac{1000 - 300}{4000} = \frac{700}{4000} = 17.5\% 
\]

(vide: Chart II.3)

The equity capitalisation rate (Ke) rises with the degree of leverage. This approach implies that the total valuation of the firm remains unaffected by its capital structure. The critical assumption is that (Ko) is constant regardless of the degree of leverage. The market capitalises the value of the firm as a whole. As a result, the break-down between debt and equity is unimportant. An increase in the use of supposedly 'cheaper' funds (debt) is offset exactly by the increase in the equity capitalisation rate (Ke). Thus, the weighted average costs of capital of (Ke) and (ki) remain constant or unchanged for all degrees of leverage. As the firm increases its degree of leverage, it becomes increasingly more risky and investors penalise the stock by raising the capitalisation rate directly in keeping with the increase in the debt equity ratio (DER). As long as (Ki) remains constant, (Ke) is a constant linear function of the DER.
According to Net Operating Income Approach, the real cost of equity and the real cost of debt are almost the same, nearly equal to \( (K_o) \). The cost of debt has two elements:

(i) The explicit cost represented by the rate of interest and

(ii) The implicit cost ('hidden' cost) which is represented by the increase in the equity capitalisation rate that accompanies an increase in proportion of debt to equity. Because the cost of capital of the firm cannot be altered through leverage, this approach implies that there is no one optimal capital structure.

All capital structures are optimal; for, the market price per share does not change with leverage. As in earlier illustration:

(i) Debt of Rs. 3000 and 850 equity shares: the market value Rs. 7000 ÷ 850 = 8.23 per share.

(ii) With additional debt of Rs. 3,000 and the firm repurchasing equity stock of Rs. 3000 at Rs. 8.23 per share, (i.e., nearly 364 shares) the market price per share after the change in the capital structure is Rs. 4000 ÷ 486 shares = Rs. 8.23. This is the same as before. Thus, the capital structure would be a matter of indifference to the investor.
Traditional Approach

The traditional approach to valuation and leverage assumes that there is an optimal capital structure and that the firm can increase its total value through the judicious use of leverage. Actually, this approach encompasses all the ground between the net income approach and the net operating income approach.

Taking the earlier illustration, Debt of Rs.3000 at 5% rate of interest and capitalisation rate on equity at say 11% (roughly midway between 10% as per net income approach and 12.1% as per net operating income approach) will mean the following:

<table>
<thead>
<tr>
<th></th>
<th>Rs.</th>
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<tbody>
<tr>
<td>O</td>
<td>1000</td>
</tr>
<tr>
<td>F</td>
<td>150</td>
</tr>
<tr>
<td>E</td>
<td>850</td>
</tr>
<tr>
<td>Ke</td>
<td>11%</td>
</tr>
<tr>
<td>S</td>
<td>7727</td>
</tr>
<tr>
<td>B</td>
<td>3000</td>
</tr>
<tr>
<td>V</td>
<td>10727</td>
</tr>
</tbody>
</table>

: Overall capitalisation rate, \( K_o = \frac{O}{V} \)

\[
= \frac{1000}{10727} = 9.3\%
\]
Suppose, the debt is increased to Rs. 6000 with a 6% rate of interest and the cost of equity is 14%, cost of capital would be as under:

**Illustration II**

<table>
<thead>
<tr>
<th></th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>1000</td>
</tr>
<tr>
<td>F</td>
<td>360</td>
</tr>
<tr>
<td>E</td>
<td>640</td>
</tr>
<tr>
<td>Ke</td>
<td>14%</td>
</tr>
<tr>
<td>S</td>
<td>4571</td>
</tr>
<tr>
<td>B</td>
<td>6000</td>
</tr>
<tr>
<td>V</td>
<td>10571</td>
</tr>
</tbody>
</table>

\[ \therefore \text{Ke} = \frac{O}{V} = \frac{1000}{10571} \]

Illustration I suggests that the firm can lower its cost of capital and increase the total value of the firm and equity share market price by leverage. With no leverage and all equity of the value of Rs. 10000, the overall capitalisation rate Ke is 10%.

(i.e., \( \text{Ke} = \frac{O}{V} = \frac{1000}{10000} \))

Although investors increase the capitalisation rate Ke as the firm becomes financially more risky with leverage, the increase in Ke does not offset entirely the benefit of using cheaper debt funds.
Consequently, the total valuation and market price per share increase and the cost of capital decreases.

The traditional approach implies that, beyond some point, Ke rises at an increasing rate with leverage. Moreover, Ki also may rise beyond some point. When debt is Rs. 6000 and proceeds of the issue are used to repurchase stock, assuming the rate of interest to be 6% p.a. and the equity capitalisation rate to be 14%, the valuation of the firm will be Rs. 10571 and the overall capitalisation rate Ko is 9.5%. This result is due to increase in Ke and also in Ki to some extent. From these two observations, one can say that the optimal capital structure in this case occurs before a debt equity ratio (DER) of $\frac{6000}{\frac{4571}{1.31}}$, or 1.31 : 1.00.

Graphically, one variation of the traditional approach can be shown (vide: Chart III. 4). Ke is assumed to rise at an increasing rate with leverage, whereas Ki is assumed to rise only after significant leverage has occurred. At first, the weighted average cost of capital declines with leverage, because the rise in Ke does not offset entirely the use of cheaper debt funds. As a result, the weighted average cost of capital Ko declines with moderate use of cheaper debt funds in the capital structure and Ko begins to rise. The rise in Ko is supported further once Ki begins to rise. The optimal structure is the point x at which Ko bottoms out in the figure.
Thus, the position implies that the cost of capital is not independent of the capital structure of the firm and there is an optimal capital structure. At that optimal capital structure, the real cost of debt, explicit as well as implicit, is the same as the marginal real cost of equity in equilibrium. For degrees of leverage before this point, the marginal real cost of debt is less than that of equity. Beyond that point the marginal real cost of debt exceeds that of equity.

There are wide variations in the traditional approach. As such, it falls between the net income approach and the net operating income approach. The variation in traditional approach implies that a company is able to lower its cost of capital sufficiently with the initial use of leverage. It suggests that there is a range of optimal capital structures in which the cost of capital is minimised and the total value of the firm is maximised. In this range, changes in leverage have a negligible effect upon the total value of the firm. Thus, the traditional position allows for the considerable variation in optimal capital structures of different firms.

(4) MM Approach

Modigliani and Miller* were the first to consider the question of valuation of a firm rigorously. According to them, the relationship between leverage and cost of...

capital can be explained by net operating income approach. They make a frontal attack on Traditional Approach Position by offering behavioural justification for having cost of capital, Ko, remaining constant throughout all degrees of leverage. Their basic assumptions are:

(i) Capital markets are perfect. Information is costless and readily available to all investors. There are no transaction costs and all securities are infinitely divisible. Investors are further assumed to be rational and to behave accordingly.

(ii) The average expected future operating earnings of a firm are represented by a subjective random sample. "Expected values of all probability distribution of expected operating earnings for all future periods are the same as present operating earnings."*

(iii) Firms can be categorised into 'equivalent return' classes. All firms within a class have the same degree of business risk.

(iv) The absence of corporate income tax is assumed. (This assumption was removed by them later.)

On the basis of the assumptions as above, MM make three basic propositions:

(a) The total market value of a firm and its cost of capital are independent of its capital structure.

The total market value of a firm is derived by.

capitalising the expected stream of operating earnings at a discount rate appropriate to its risk-class.

(b) The expected yield of a share $K_e$, is equal to the capitalisation rate of a pure equity stream plus a premium for financial risk equal to the difference between the pure equity capitalisation rate and $K_i$, times the debt-equity ratio. In other words, $K_e$ increases in a manner so as to offset exactly the use of cheaper debt funds.

(c) The cut off rate for investment purposes is completely independent of the way in which an investment is financed. This proposition along with (a) implies a complete separation of the investment and financing decisions of the firm.

M&Ms argue that the total risk for all security holders of a firm is not altered by changes in its capital structure. Therefore, the total value of the firm must remain the same regardless of the finance mix. Other things being equal, with different capital structures, two firms' total values have to be the same; otherwise arbitragers will enter and drive the value of both the firms together. The essence of their argument is that arbitragers are able to substitute personal leverage to corporate leverage.

**Criticism of MM Approach**

(1) If there is a possibility of bankruptcy, and if administrative and other costs associated with bankruptcy are significant, the levered firm may be
less attractive to investors than the unlevered one. With perfect capital markets, zero bankruptcy costs are assumed. If capital markets are less than perfect, there may be bankruptcy costs and assets may have to be liquidated at less than their economic values. In any event of bankruptcy, security holders as a whole will receive less than they would in the absence of bankruptcy costs. To the extent that a levered firm has a greater possibility of bankruptcy than an unlevered one, it would be less attractive investment, all other things remaining the same. In such a case, expected costs of bankruptcy increase and would be expected to have corresponding negative effect upon the value of the firm.

2 The perceived risks of personal leverage and corporate leverage may differ. Implied in the MM analysis is that personal and corporate leverages are perfect substitutes. However, in the case of borrowings, the individual has only limited liability. His total risk exposure will be different with personal leverage and investment in the unlevered company from that, which may occur with a straight investment in the levered firm. Further, if the investor borrows personally and pledges his shares as collateral, he is subject to possible marginal calls. Moreover, the personal leverage involves a certain amount of inconvenience to the investor, which he does not
experience with corporate leverage. For these reasons, personal leverage may not be a perfect substitute for corporate leverage in the minds of many investors.

(3) Due to capital market imperfections, the cost of borrowings (including the rate of interest) will usually be higher for the individual than for a firm. If so, the levered firm will have a somewhat greater value than the unlevered firm, for this reason alone.

(4) There are institutional reactions that may retard the arbitrage process. Many institutional investors are not allowed to engage in 'home-made' leverage. Hence, a significant number of investors cannot substitute personal for corporate leverage.

(5) Transaction costs tend to restrict the arbitrage process by setting limits.

(6) In making their stand, MM deny that a judicious amount of leverage may lower the weighted average cost of capital. According to their hypothesis, $K_0$, weighted average cost of capital line is horizontal throughout all degrees of leverage. However, it can be argued that the cost of borrowings can rise with extreme leverage beyond a certain point, when the firm can be expected to pay increasingly higher rates of interest on borrowings. Here also, MM argue that, even when $K_i$ increases, $K_e$ will increase, at a decreasing rate. This, too, does not seem to be tenable.
In the absence of corporate income taxes, the traditional position implies that the firm can lower its cost of capital through a judicious amount of leverage. MM, however, contend that the cost of capital cannot be altered with leverage, assuming perfect capital markets. In practice, however, the majority of academicians and financial managers favour the traditional approach because of imperfections in the capital markets that hamper the perfect functioning of the arbitrate process.

**Impact of Corporate Taxes**:

Payment of interest is deductible for tax purposes. Leverage lowers after-tax weighted average cost of capital found with the MM position. This effect may be illustrated (vide: Table II.4) for two firms with different capital structures where Firm A has got Rs. 10000 all in the form of equity capital and no debt, whereas Firm B has got Rs. 10000 - being Rs. 2000 in the form of equity capital and Rs. 8000 in the form of 5% debt and where the earning capacity of both is the same.
<table>
<thead>
<tr>
<th>Particulars</th>
<th>Firm A (Rs.)</th>
<th>Firm B (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) EBT</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td>(2) Taxes (at, say, 50%)</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>(3) After tax capitalisation rate</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>(4) Capitalised value of earnings</td>
<td>12500</td>
<td>12500</td>
</tr>
<tr>
<td>(5) Interest on debt</td>
<td>-</td>
<td>400</td>
</tr>
<tr>
<td>(6) (1-tax rate) X Interest</td>
<td>-</td>
<td>200</td>
</tr>
<tr>
<td>(7) Tax Savings on interest</td>
<td>-</td>
<td>200</td>
</tr>
<tr>
<td>(8) Rate of interest</td>
<td>-</td>
<td>5%</td>
</tr>
<tr>
<td>(9) Capitalised value of Tax-Savings on interest</td>
<td>- 4000</td>
<td>- 4000</td>
</tr>
<tr>
<td>(10) Total value of the firm (4 + 9)</td>
<td>12500</td>
<td>16500</td>
</tr>
</tbody>
</table>

The high total value of firm (B) is due to the deductibility of interest payments. Because of the tax benefit, the firm can increase its total value with leverage under M M position. With taxes, the value of the firm according to M M is:

\[ V = \frac{O (1-t)}{PK} + t B. \]

Where, \( t \) = Corporate tax rate applicable,
\( PK \) = After tax capitalisation rate for a Company with no debt in a given risk class,
\( O \) = Expected net operating income, and
\( B \) = Market value of debt.
As before, a 100% dividend payout ratio is assumed. The above equation suggests that the government subsidises debt capital. So that the greater the amount of debt, the greater the value of the firm and the greater the leverage, the lower the cost of capital of the firm. The cost of capital on a tax adjusted basis is expressed as:

$$K_0 = P_k \left\{ 1 - t \left( \frac{B}{B + S} \right) \right\}$$

MM in their later study, recognise that with the introduction of corporate income taxes, the cost of capital can be lowered with leverage. Hence, in order to achieve an optimal capital structure, the firm should strive for the maximum amount of leverage so that cost of capital can be continuously reduced.

However, the proponents of the traditional position would argue that the cost of capital must rise with extreme leverage owing to the increased financial risk. Consequently, the optimal capital structure is not the one that calls for maximum use of debt. Again, the MM thesis rests on the weakest ground when leverage is extreme. In defence, MM suggest that the firm should adopt a target debt ratio so as not to violate the limits imposed on leverage by creditors and that the debt funds should be refused beyond some point.

A reference may also be made, in passing, to the views of a few other scholars:

Growthmann and Dougall * have pointed out that

the similarity in financing patterns by the firms in a given industry is too prevalent to occur merely by chance.

Soloman Ezra* in the theoretical treatise, has argued that inter-industry differences are likely to be significant.

Schwartz and Aronson** investigated the effect of one factor - Viz., industry on the proportion of equity in a firm's financial structure. They tested the hypothesis that financial structures as measured by book values do not vary significantly among industries. They concluded that industries developed optimum financial structures conditioned by their inherent business risks.

Scott M.R.*** concluded in an article that various industries that are subject to various degrees of business risks had indeed developed characteristically different financial structures. If financial structures were of minimal importance in the ultimate valuation of the firm, a wide variety of equity ratios should be found within each industry. The findings indicated, instead, a definite tendency to cluster as a matter of practical business policy.

Leverage means the tendency for profit to change at a faster rate than sales. The concept of leverage is useful in several ways. Firstly, it enables one to specify the effect of a change in sales volume on earnings available to equity shareholders. Secondly, it permits the management to show the inter-relationship between the operating leverage and the financial leverage. Thirdly, the concept can be used to show the management that a decision, say, to automate and to finance new equipment with debt may result in a situation wherein, a decline of, say, 10% in sales may produce a 50% decline in earnings whereas, with another kind of leverage, it may produce only 20% decline in earnings. The alternatives stated in this manner give the decisionmaker a better idea of the possible ramifications of his actions. Fourthly, the concept is useful to investors. If firms in an industry can be classified according to their degrees of leverage, an investor who is optimistic about the prospects of the industry, will favour those firms with high leverage and vice versa.

(1) Financial Leverage and Operating Leverage

A leverage may be operating or financial in nature. Operating leverage is the tendency for profits to change at a faster rate than sales because of the fixed costs (long term assets) in the capital structure of a firm. Financial leverage is the tendency for profits to change at a faster rate than sales because of fixed cost elements
in the firm's financial structure. The greater the firm's ratio of debt to equity, the larger is the financial leverage. It arises from the use of fixed cost financing—ordinarily debt. Three ratios of financial leverage are important: (i) Debt ratio (ii) The times interest earned ratio and (iii) Debt-equity ratio.

The Debt ratio indicates the percentage contribution of creditors to the firm. It is measured by dividing total debt by total assets of the firm. It is interpreted in the same way as the debt-equity ratio. Indeed, these ratios are related. The greater the debt ratio, the greater will be the debt-equity ratio.

The times interest earned ratio consists of a firm's total income (earnings before interest and taxes) divided by the annual interest charge. It indicates the margin of safety with which interest requirements are being earned. The amount of profit before taxes as interest payments are tax-deductible expenses and have prior claim on company's earning power. If a company has fixed rental or lease obligations on buildings or equipment, the rentals or lease payments should be included with debt interest in the divisor of the ratio.

Debt-equity ratio (DER) is the most widely used measure of financial leverage, which simply stated, is the rupee amount of debt divided by the rupee amount of shareholders' equity. It is important to management, creditors and shareholders because it indicates the
firm's financial risk. As it rises, the financial risk increases. The greater the ratio, the greater the chance, if the company encounters financial difficulty, (i) that the shareholders will be wiped out and (ii) that the creditors will lose money.

A project or a company is supposed to be very highly geared, when DER is in the following ranges:

- $100:0$ (infinity), $90:10$, $80:20$, $70:30$
- or
- $10:1$, $9:1$, $4:1$, $2.33:1$.

Such a ratio is generally not favoured, except for the shipping industry.

A moderately geared company is one in which DER ranges as follows:

- $1.5 : 1$, $1:1$, $1:1.5$, $1:2.33$.

This ratio may be considered as normal. Although it is very ideal, it is adopted in only those ventures where term loans may not be forthcoming or where self-financing is possible.

A low geared company is one in which DER is in these ranges: $1:4$, $1:9$, $0:1$. Such a ratio is practicable only when the enterprise generates huge profits and self-financing is the goal.
Consequences of financial leverage

Financial leverage means that any change in the company's earning power will be reflected in proportionately greater change in return on equity. The fundamental relation is between the earning before interest and taxes and the rate of interest. Whenever EBIT exceeds the cost of borrowed capital, leverage is favourable. In such a situation, the higher the DER, the higher will be the return on equity. When EBIT is less than the cost of borrowed capital, leverage is unfavourable. In that case, the higher the DER is, the lower will be the return on equity. When EBIT is equal to the cost of borrowed capital, leverage is neutral.

Suppose there are two companies, A and B. Company A has employed Rs. 300 in the form of debentures and Rs. 200 are in the form of equity with the total resources of Rs. 500. Company B, with the same total amount of resources, has debentures worth Rs. 100 and equity of Rs. 400. The return on equity of both the companies under three different circumstances will be as exhibited in Table II.5.
<table>
<thead>
<tr>
<th>Particulars</th>
<th>Company (A)</th>
<th>Company (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rs.</td>
<td>Rs.</td>
</tr>
<tr>
<td>(i) <strong>Favourable Leverage:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Rate of interest 6% p.a.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and EBIT equal to 20% of total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>assets)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBIT</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Less Interest</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>EBT</td>
<td>82</td>
<td>94</td>
</tr>
<tr>
<td>Less Taxes (50%)</td>
<td>41</td>
<td>47</td>
</tr>
<tr>
<td>PAT</td>
<td>41</td>
<td>47</td>
</tr>
<tr>
<td>Return on Equity (%)</td>
<td>20.5%</td>
<td>11.7%</td>
</tr>
<tr>
<td>(ii) <strong>Neutral Leverage:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Rate of Interest=EBIT=6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>on total assets)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBIT</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Less Interest</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>EBT</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Less Taxes (50%)</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>PAT</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Return on equity (%)</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
(iii) Unfavourable Leverage :

(Rate of interest = 6% p.a,
and EBIT at 2% on total
assets)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Less Interest</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>EBT</td>
<td>- 8</td>
<td>4</td>
</tr>
<tr>
<td>Less Taxes (50%)</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>PAT</td>
<td>- 8</td>
<td>2</td>
</tr>
<tr>
<td>Return or equity (%)</td>
<td>- 4</td>
<td>0.5</td>
</tr>
</tbody>
</table>

One can observe from Table II.5 that, with favourable leverage, company A enjoys a far higher return on equity than company B. Although A's earning after taxes are smaller than B's, A's earnings are distributed over a much smaller equity and the percentage is higher. With neutral leverage, the percentage return on equity is the same for both A and B, despite their difference in capital structure. With unfavourable leverage, where the earning power is lower than the rate of interest, A's larger interest charges result in a greater loss before taxes and B, with moderate interest expense, manages to make a small profit on its equity. The principle, therefore, is that so long as a company can invest borrowed funds in an asset that yields a return greater than the interest rate it pays, it should borrow the money and invest it. Its absolute gain will increase as its DER goes up. A financially
leveraged firm is hurt not only by a drop in sales volume but also by a rise in interest rates.

The degree of operating leverage (DOL) can be defined as % change in sales volume. The formula is:

\[
DOL = \frac{Q (P - V)}{Q (P - V) - F} = \frac{s - vc}{s - vc - F}
\]

Where, \(Q\) = units of output, \(P\) = average sales price per unit, \(V\) = variable cost per unit, \(F\) = total fixed costs, \(S\) = Sales, and \(VC\) = Total variable costs.

Suppose \(Q = 200\) units,
\(P = \text{Rs. 10000/-}\ per\ unit,
\(VC\ per\ unit = \text{Rs. 4000/-},\ and
\(FC = \text{Rs. 400000/-}.

then, Degree of operating leverage will be as follows:

\[
DOL = \frac{200 (10000 - 4000)}{200 (10000 - 4000) - 400000} = \frac{12,00,000}{800000} = 1.5 = 150\%
\]

Operating leverage affects EBIT, financial leverage affects PAT. Financial leverage takes over, where operating leverage leaves off, further magnifying the effect on EPS at a given level of sales. Operating leverage is known as first-stage leverage, whereas financial leverage is known as the second-stage leverage.
Degree of financial leverage is defined as the percentage change in earnings available to equity shareholders that is associated with a given change in EBIT.

Degree of financial leverage  = \( \frac{\text{EBIT}^*}{\text{EBIT} - \text{I}} \)

Suppose, EBIT is Rs. 800,000 and annual interest Rs. 2,50,000, then, the degree of financial leverage will be as follows:

\[
\text{DFL} = \frac{800,000}{800,000 - 250,000} = 1.45
\]

A 100% rise in EBIT would result in 145% rise in EPS.

The formula for finding out the EPS after leverage will be:

\[
*\text{EPS} = \frac{\text{EBIT}^* (1-t)}{N}
\]

where  
*\text{EPS} = \text{New earning per share after leverage.}

*\text{EBIT} = \text{New earning before interest and taxes.}

The % increase in EPS is the change in EPS over the original EPS:

\[
*\text{EPS} = \frac{\text{EBIT} (1-t)}{N} \div \frac{(\text{EBIT}-\text{I})(1-t)}{N} = \frac{\text{EBIT}}{(\text{EBIT}-\text{I})}
\]

* The equation is derived as under

(1) \( \text{EBIT} = Q (p-v) - E \)

(2) \( \text{EPS} = \frac{(\text{EBIT}-\text{I}) (1-t)}{N} \)

Where, EPS = earning per share, P = Price per unit, Q = Number of units of sales, and V = Variable cost, and N = Number of equity shares.
Thus, the degree of financial leverage is the % change in EPS over the % change in EBIT.

\[
\text{Degree of financial leverage} = \frac{\text{EBIT}}{\text{EBIT-I}}
\]

Where EBT = Earning before tax, and
* EBT = New earning before tax.

(2) Combining Operating Leverage and Financial Leverage

The operating leverage causes a change in sales volume to have a magnified effect on EBIT, and if financial leverage is imposed on operating leverage, changes in EBIT will have a magnified effect on EPS. Therefore, if a company uses a considerable amount of both operating leverage and financial leverage, even small changes in sales will produce wide fluctuations in EPS. The new equation for the combined effect will be as follows:

(i) \[\text{EBIT} = Q(p-v)\]

(ii) The above can be rewritten as

\[
\frac{\text{EBIT}}{\text{EBIT-I}} = \frac{Q(p-v)}{Q(p-v)-F-I}
\]

Combining the two, the total leverage effect will be equal to the degree of operating leverage times the degree of financial leverage.

(iii) The combined leverage effect can be shown thus:

\[
\frac{Q(p-v)}{Q(p-v)-F-I}
\]
Continuing the earlier illustration, a 100% rise in sales (new level: 400 units) would cause EPS to rise by 218%, so the new EPS figure would be 3.18 times the original EPS.

\[
\text{Combined leverage effect} = \frac{200(10000-4000)}{200(10000-4000)-400,000-250,000} = \frac{12,00,000}{12,00,000-400,000-250,000} = \frac{12,00,000}{550,000} = 2.18
\]

\[
\therefore \text{EPS (400 units)} = \text{EPS (200 units)} + \text{EPS (200 units)} \times 2.18 = \text{EPS (200 units)} \times 3.18
\]

(3) The Theory of Debt-Equity Ratio (DER)

The DER depicts an arithmetic relationship expressed as a ratio of the long term funds obtained from sources external to the enterprise to the funds provided by the owners of the enterprise for building up the fixed assets. It is generally acknowledged as a relevant and significant element of the capital structure of an industrial concern representing the measure of balance between the two most important components of a project as distinguished from its operation.
DER is referred to as 'Gearing' in U.K., as 'Leverage' in U.S.A., and as 'Trading on Equity' in India. These expressions purport to describe the role of debt in helping to improve the earnings of equity on the implicit assumption that additional debt can be raised at a cost lower than the return on investment. Funds from long term borrowings carry a security, a mortgage or a charge on the assets of a company and, therefore, are protected. Similarly the payment of interest on debt is a contractual obligation, and interest is payable out of pre-tax profits. Thus, from the point of view of both income and capital, the creditors are well-protected. Higher financing through debt in a firm's capital structure does increase its financial risk. It is also true that, if an enterprise proves to be unsound or poorly planned, the capital invested may be lost, and both equity and long term lenders may suffer. Therefore, the DER norm is not an independent norm and should be taken into account along with the others to judge the financial soundness, viability and profitability of an enterprise. In order to understand the role of debt as well as of equity in an enterprise, these two facets of the financial structure should be compared.

The advantages of debt are many. Firstly, the greater use of debt, where the interest rate is lower than the average rate of return an investment, increases the net return to equity holders. Secondly, higher debt
does not impair the control of shareholders over the enlarged operations of the company. Thirdly, the deductibility of interest on debt before computing profits subject to tax, as against payment of dividends out of profits subject to tax, as against payment of dividends out of profit after tax, implies an effective lowering of the tax rate on a company - more or less in the proportion at which the debt is substituted for equity in the company's financing pattern.

The advantages of wider equity base also should be considered. Firstly, it increases the ability of the concern to cope up with economic change at a quickened pace. Secondly, together with the promoters' own contribution towards equity, it maintains more effectively the interest and stake of the promoter in the success of the project and ensures his involvement. Thirdly, it enhances the credit standing of the project and more effectively assures its prospects against economic reversals. Fourthly, it enables better absorption of the impact and incidence of cost overruns in a project with a delayed implementation and longer gestation. Fifthly, it improves the stability of net profit by reducing, through lower debt, the fluctuating fortunes of the enterprise. Sixthly, from a long term point of view, the special advantage of equity as against debt is that, while the latter has to be redeemed on maturity from profits, equity funds stay in the enterprise indefinitely.
Thus, the need for striking a proper mean between the two main components of capital structure emerges as an important consideration. This mean can appropriately be struck with due regard to the entire context of conditions of an individual project bearing on its nature, profitability, and risks, and their spread, over and above, the attitude, willingness and competence of managements to assume risks.

(4) DER - Experiences Abroad

In the pre-War days, a combination of historical, economic and other factors influenced the role of debt in corporate financing in western countries. A relatively high level of savings and their investment in financial assets coupled with organised capital markets facilitated the availability of larger risk capital funds to the corporate executives and tended to minimise the role of debt in the capital structures of corporations. However, in the post War years, with the augmented need for reconstruction and development of the economies and with the increase in the scale of operations of business enterprises, borrowed funds progressively acquired greater importance in the corporate financing plans in the west as well as in Japan. Although the data available are not strictly comparable as between individual countries, the increasing importance of debt capital in these countries is clearly seen. For example, DER increased from 0.75 : 1.0 in the year 1964 to 1.00 : 1.05 in 1974-75 in Canada. In Italy and Japan, the proportion of debt to total liabilities increased during 1970 - 1974.
The proportion of equity declined in Sweden, West Germany and Austria. The case of Japan deserves a special mention. It has been recognised all over the world that borrowed funds played a remarkable role in the growth of the Japanese industry. The average ratio of owned capital to total capital employed has been always low and is around 15%. Actually, in the last 20 years, the importance of owned capital to total capital employed has declined from 27% to 15%. The DER at present works out to 5.5 : 1. (It must be noted, however, that unlike in India, the concept of debt in Japan includes short term debt also).

The Japanese industry, in the absence of developed capital markets and specialised financial institutions, came to depend entirely on the banking system for both short term and long term funds, and the Japanese Banking system had no choice but to resort to a policy of 'overloading' in which credit-deposit ratio of banks always exceeds 100%. In the post War days, there was an acute shortage of risk capital in Japan and business corporations had to draw up their financial plans with a heavy reliance on borrowed funds, i.e., debt capital.

According to the available data, the DER in U.S.A. is in the range of 2:1 to 4:1, whereas DER in Europe is between less than 1:1 and 2:1. A recent study of corporate finance in Europe, published by the Institute of Bankers, England, in 1976 reveals the following:

(i) British Companies, in general, are less highly geared than those in Western Europe and Japan. This causes their cost of capital to be higher than that elsewhere because they depend more on equity than on debt. British companies are less highly geared because of the restraints by British bankers. The latter, more than other bankers, have subjective attitudes to such matters of risk and gearing and are unduly risk-adverse. Higher interest rates significantly reduce the interest cover provided by the profits of British Companies.

(ii) French and German companies are rather more highly geared than British companies. There, the equity ratio to total assets is about 30% as against 45% in Britain. The French and German companies value their assets on historical cost basis. In U.K., when assets are revalued, profits on revaluation are added to the net worth. More than 20% increase in net worth during 1971-1974 was of this type. Equity ratio is a serious weakness of German and French companies.

(iii) The data regarding interest-coverage ratio as available are presented in Table II.6

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>4.9</td>
<td>3.9</td>
<td>3.2</td>
<td>3.7</td>
<td>3.5</td>
<td>2.9</td>
</tr>
<tr>
<td>France</td>
<td>N.A.</td>
<td>2.5</td>
<td>2.6</td>
<td>2.4</td>
<td>2.6</td>
<td>N.A.</td>
</tr>
<tr>
<td>U.K.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>9.3</td>
<td>10.9</td>
<td>11.2</td>
<td>10.8</td>
</tr>
</tbody>
</table>
The table indicates that the financial risk in Germany and France in regard to corporate finance (or, lending) has grown in recent years. In U.K., companies are better off with a higher equity ratio and a higher interest coverage ratio.

(5) DER - The Indian Experience

The Government of India is mainly concerned with the regulation of the financial structures of companies in the administration of the Capital Issues (Control) Act of 1947. The main provisions of the Act and published guidelines are as follows:

(i) Issues of Securities up to Rs. 50 lacs during a period of 12 months from the beginning of a company are exempt from the control.

(ii) Issue of securities, other than debentures by certain public limited companies, are exempt from certain provisions of the Act provided, as a result of the above issue, equity capital of the company is not less than one half of the debt. 'Debt' here, includes all borrowings - debentures, loans from banks and DPG loans etc., - repayable not earlier than 5 years from the respective dates of borrowings and preference shares redeemable not later than 12 years from the date of issue. 'Equity' includes paid-up share capital, share premium, reserves, irremedable preference
shares and preference shares redeemable not earlier than 12 years from the date of issue.

(iii) As a result of the proposed issue, the total paid-up preference share capital will not be more than one third of total paid-up equity share capital.

(iv) "It is important that a company should have a proper balance between its equity and debt and should not have a capital structure geared in favour of debt. A ratio higher than 2:1 as between debt and equity is not generally favoured, i.e., a position where the debt exceeds double the equity is considered financially imprudent though for certain types of industries, a higher ratio is permitted on merits".*

(v) "To finance the capital cost of the project, the capital structure should be such that equity-debt ratio of 1:2 is considered fair and reasonable. In case of capital intensive industries a higher equity-debt ratio may be considered on merits of each case."**

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** The guidelines for issue of fresh capital issue, issued by the Office of the Controller of Issues, on 14th May, 1975.
It is well recognised by the government that a standard norm in regard to debt-equity ratio for all industrial units is neither desirable nor practicable as conditions differ from industry to industry, and from unit to unit within an industry. This realisation is reflected in the relaxation of the ratio to 3:1 in case of the fertilizer, aluminium, paper, cement (plants in the Private Sector) industries. The shipping industry, in particular, has been acknowledged as a further special case with a ratio of 6:1, and even higher.

The range of flexibility in the application of DER came to be widened as the all India term lending financial institutions progressively expanded their-lending operations. In 1948, when IFCI was set up, the DER of 1:1 was adopted. The two main bases for the adoption of such a conservative norm were (i) that financial institutions were authorised to grant long term loans on the security of fixed assets and (ii) that, in the initial stages of industrialisation, financial institutions desired to have an adequate margin of safety. Even project appraisal techniques were hardly developed and viability of projects was mainly assessed on the basis of domestic demand for their products, having regard also to import substitution possibilities. Gradually, financial institutions themselves started underwriting capital. Enterprises went in for diversification and the debt-equity norm was relaxed.
At the second stage, sophisticated methods for project evaluation like cash flow and project projections were developed. If the profit earning capacity of a project was adequate (a) to service loan capital by way of regular payment of interest and repayment of principal amount, and (b) to pay a reasonable dividend on equity capital, financial institutions found a case for relaxing the debt-equity norm, and a norm up to 1.5:1 came to be accepted.

In January 1961, IFCI was asked by the Government to try to ensure that the debt of an applicant company did not exceed twice its equity.

In 1970, IDBI issued this directive to IFCI: "In sanctioning financial assistance, the corporation should give greater attention to the proper assessment of the earning capacity of the concerns and to an appropriate debt-equity ratio, normally not higher than 2:1, which may be relaxed, if necessary, at the discretion of the board of the corporation in the case of projects requiring special consideration, including those in less developed areas in the country."

At present, keeping in view the current market conditions and other economic factors, the debt-equity norm in the case of medium and medium-large projects is kept up to 2:1, whereas in the case of large capital intensive projects like fertilisers, petro-chemicals, cement plants, the DER is permitted up to 3:1.

* Review of directives issued by IDBI to IFCI in the letter dated 29th December, 1976.
Thus, the over-all objective is to ensure that there is a proper balance between a concern's owned and borrowed funds and that there is no eroding impact on its profitability by a disproportionate burden of the long term debt; the concern should have the capacity to service both equity and loan capital.

The basic government-cum-financial institution's approach to DER in the capital structure of concerns is well reflected in the section on 'Over-all capital structure of a company' included in the 'Detailed guidelines for the financial institutions and Commercial banks' issued on the recommendation of the Industrial Licensing Inquiry Committee, which states:

"All the financial institutions concerned will exercise their judgement in consultation with the IDBI to see that the ratio between debt and equity of the assisted concern is reasonably maintained at all times in the interests of the shareholders and the financial institutions which may already hold or come to hold investments in such concerns. The financial institutions should work out the projected profit potential of the assisted concern in detail and ensure that the share capital base of the assisted concern is neither so narrow and concentrated as to give the shareholder a disproportionately higher return on the investment vis-a-vis the interest which the assisted concern pays on its long term debts nor so excessively diluted in relation to the aforesaid debts as to become unattractive as a risk investment". It adds: To have an adequate DER,
it is needed that the entrepreneurs mobilise their own resources and invest in projects by way of promoters' contribution as stipulated by financial institutions so as to reduce the pressure on institutions' resources. The expedient of loan convertible into equity also alleviates, to some extent, at least potentially the weak equity base of some of the assisted concerns.

More recently, in general, while appraising for assistance, the financial institutions have followed a pragmatic and flexible approach in regard to DER. The ratio is fixed on case to case basis taking into account all relevant factors such as debt servicing capacity of the project, risk attendant on the project and state of capital market. For project proposals with a project cost exceeding Rs. 20 lacs, and for projects sponsored by large industrial houses within the purview of Monopolies and Restrictive Trade Practices Act of 1969, one more ratio, i.e., net block to debt-being 1 : 0.5, has been devised. This implies a DER of 1 : 1 as, in most cases, net block is equal to equity + debt broadly.

**DER and the experience of All-India and State Financial Institutions**: The following information and data have been worked out from the Annual Reports of IDBI for the four years - 1972-73 to 1975-76:

(i) 89% of cases assisted in 1972-73, 56% of cases assisted in 1973-74 and 78% of cases assisted in 1974-75 and 1975-76 had a DER of 2:1 or less than 2:1.
During the four year period, 44% of the cases on an average had DER between 1.25 : 1 and 1.75 : 1.

The projects with a higher ratio than 2 : 1 (i.e., 22% of cases assisted over the four year period) must have represented a very much higher proportion of the total value of investment in projects assisted by IDBI.

The modal value of DER increased from 1.50 : 1 to 1.75 : 1 during 1975-76. This indicates the relaxations made by IDBI, especially for very large projects and projects in backward areas.

DER of more than 2 : 1 was permitted for highly capital intensive projects like fertilisers, cement, basic metals, etc.

53 assisted projects were having total costs exceeding Rs. 10 crores each, of which 55% had a ratio above 2 : 1, and 23% had a ratio above 3 : 1. This brings out the correlation of higher DER with the size of the project.

29 projects of above Rs. 10 crores each had a ratio above 2 : 1, and 30 medium projects with a cost of less than Rs. 10 crores each had a ratio above 2 : 1.

For less capital intensive units, the ratio of 1.75 : 1 was stipulated so as to provide an adequate cushion in case of overruns.

Projects with long gestation periods had a ratio between 2.1 : 1 and 2.5 : 1.
27% of projects in backward areas had a DER of 2:1, whereas 18% had a ratio of over 2:1. The modal range was between 1.75:1 and 2:1 as compared to 1.5:1 and 1.75:1 in the case of projects in other areas.

**Report on the study of DER norms**

A study of DER norms was undertaken by Dr. B. K. Madan, Chairman, Management Development Institute, at the request of The Government of India in the year 1976 and was submitted in February, 1977. It has made far-reaching recommendations, some of which are recapitulated herein below:

(i) The general debt-equity norm of 2:1 should be retained for the sake of good order in and for facilitation of decisionmaking, even if the norm is treated as a point of departure either way. It is not necessary to apply it rigidly.

(ii) There is hardly any case for upward shift of the norm.

(iii) More attention to various inhibiting factors over and above the norm is desirable to allow larger debt to eligible units and projects.

(iv) Industrywise or multiple norms are neither practicable nor desirable.

(v) On the whole, it seems that, in the matter of definition of debt and its classification for the
purpose of inclusion in DER, the definition generally followed by financial institutions is more in conformity with banking and commercial practices and will be suitable. Its coverage of long term borrowings included in debt is also more comprehensive.

(vi) There seems no logical reason why Preference Shares, once classified as equity, should be reclassified as debt by financial institutions, once their outstanding period to redemption becomes less than 12 years or even later. Legally and in accounting sense, preference share capital is capital and should be so treated rather than as debt at any stage.

(vii) Similarly, convertible debentures as an element of capital structure offer several attractive features and possibilities which need to be carefully explored.

(6) DER and Indian Industries

In the above sections, an attempt has been made to describe (i) some of the important approaches to the determination of debt capacity, and (ii) the main theories of capital structure. The Madan study of DER is of primary importance in connection with the study of the pattern of financing adopted in cotton textile mills of Ahmedabad. The study has endorsed the viewpoint that the DER norm of 2 : 1 has to be treated as a broad indicator
(or, general guideline) rather than as a fixed or rigid basis for increase of capital or for financial assistance. As stated earlier, relaxations were made by financial institutions in the case of (i) capital intensive projects, (ii) very high-cost projects in the priority sector, (iii) projects in backward areas, and (iv) projects sponsored by technical entrepreneurs.

Before dealing with the actual position regarding DER and the use of proprietorship funds and non-proprietorship funds in the textile mills of Ahmedabad, it may be of interest to know (a) the trends of financing as well as the trend of DER in the cotton textile industry in India, as a whole and (b) these trends in relation to those in all the industries in India and elsewhere, to the extent possible.

(a) Studies in regard to DER

Some data are available from the studies undertaken by the Reserve Bank of India for selected companies in the years from 1960-61 to 1974-75. A study of 1333 public limited companies belonging to different industries revealed that in 1960-61 to 1965-66, DER showed a steady trend in the range of 0.19 : 1.00 and 0.20 : 1.00. The ratio was the highest for shipping industry, being in the range of 0.81 : 1.00 and 0.92 : 1.00. Electricity Supply Industry came next with a ratio ranging between 0.52 : 1.00 and 0.56 : 1.00. Then was listed the Iron and Steel Industry, with a DER
between 0.52 : 1.00 and 0.56 : 1.00. This leads one to believe that, in general, industries relied heavily on owned funds and must be ploughing back huge profits. A study of 1501 public limited companies during 1965-66 to 1970-71 showed a mild rising trend in DER. The All-India-All-Industries average figure of DER was 0.35 : 1.00 in 1967-68 and was 0.32 : 1.00 in 1970-71, as against 0.20 : 1.00 in 1964-65. During this period, DER for shipping, paper and aluminium industries continued to be higher than the over-all ratio for all the industries.

In respect of 1650 companies studied during 1970-71 to 1974-75, the DER for Indian industries, in general, stood at 0.38 : 1.00 both in 1972-73 and 1974-75. With respect to the entire textile industry, the RBI study shows DER increasing from 0.13 : 1.00 in 1960-61 to 0.51 : 1.00 during 1974-75. This indicates a fourfold increase in the ratio against a two fold increase in the ratio for all the industries, that increased from 0.19 : 1.00 to 0.38 : 1, during the same period.

In a study of corporate debt policy by Rao* all large and medium non-financial companies having paid-up capital exceeding Rs. 5 lacs (based on data provided by RBI Bulletin from 1956-57 to 1974-75) have been covered.

The object of the study was to find out how far the debt finances in public companies were influenced by taxation and other factors. Its main findings were:

(i) The DER for these companies was on an average, 61 : 100, during 1966 to 1970, and had increased to 64 : 100, during 1971 to 1975.

(ii) The tax provision to PBT was 48% during 1966-1970 and had declined to 47% during 1971-75.

He concluded that, while it was traditionally believed that higher corporate taxes lead to greater preference for debt capital because of deductibility of interest as a business expenditure, the data analysed did not conform the hypothesis.

Mote and Bijapurkar in their study on 'Profitability, cost structure and finances of cotton textile industry,' found the position regarding DER as exhibited in Table II.7.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>65-66 to 70-71</th>
<th>70-71</th>
<th>71-72</th>
<th>72-73</th>
<th>73-74</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(261 Co.)</td>
<td>(272 Co.)</td>
<td>(272 Co.)</td>
<td>(272 Co.)</td>
<td>(272 Co.)</td>
</tr>
<tr>
<td>DER(%)</td>
<td>113.60</td>
<td>158.70</td>
<td>153.20</td>
<td>175.05</td>
<td>149.86</td>
</tr>
</tbody>
</table>

They concluded that: Borrowings in relation to equity in the cotton textiles industry were rising rapidly, though the DER therein was certainly less than the generally accepted DER norm of 2 : 1. A high DER, by itself,
should not be the cause of concern. Low returns, over a long period of time, of about 6.7% on total investments coupled with rising debts were a pointer to the fact that the industry would find it increasingly difficult to meet its cash obligations in future.

They also studied the sources of finance of the cotton textile companies and classified them into (i) long term sources, and (ii) short term sources. Their major conclusion was that the relevance of external long term funds had sharply increased from 56% in 1960-61 to 79% of total funds in 1971-72.

Ratios indicating the relative importance of debt and equity in the financial pattern of corporate sector in selected countries have been worked out by Dr. Madan,* according to the concept as evolved in these countries. These were: In Canada, the DER was 0.87 : 1.00 during 1966-70, and went up to 1.05 : 1.00 during 1971-75. In the case of Japan, the ratio of external capital (short term as well as long term credit) to owned capital had given an average figure of 0.86 : 1.00 for 1971-75. In Italy, debt to total liabilities had remained low at a figure of 0.53 : 1.00. In Germany, Capital and Reserves which as a percentage of total liabilities had averaged 0.33 : 1.00 during 1966-70, had declined to 0.28 : 1.00 during 1971-75. In Sweden too, equity as a percentage of total

liabilities had declined from 0.38 : 1.00 during 1965-69 and to 0.30 : 1.00 during 1970-74. In Austria, the shareholders' equity to total liabilities had declined from 0.45 : 1.00 during 1965-1970 to about 0.33 : 1.00 during 1971-72. The figures do show a definite trend: in some countries like Austria, Sweden and Germany, the role of equity or owned funds had declined and the contribution of debt was gradually increasing; in countries like Canada, Japan and Italy, the contribution of external sources was on an increase.

(b) Studies in regard to the use of proprietorship funds and non-proprietorship funds:

The RBI studies* of 1501 Companies for the period from 1966-67 to 1970 (i.e., Period A) and of 1650 Companies for the period from 1971 to 1975 (i.e., Period B) disclosed the following details:

(i) Internal sources (defined as Paid-up Capital + Reserve and Surplus + Provisions) had contributed (a) Rs. 266.5 crores, on an average, and 46.80% of total funds during period A. These had increased to Rs. 566.2 crores, on an average, and 56.66% of total funds, during period B.

(ii) External sources (defined as new capital issues + Borrowings and Trade dues) had contributed to the

extent of 53.20% of total funds during period A, but their importance had declined to 43.34% of total funds during period B.

As regards the formation of fixed assets, inventory and their financing, the studies indicated as under:

(i) During period A, the average increase in the gross fixed assets was financed to the extent of Rs. 378.80 crores, of which internal sources had contributed Rs. 293.80 crores, and the external sources (i.e., increase in paid up capital + long term and short-term borrowings) had contributed Rs. 85.00 crores. During period B, on an average, internal sources had contributed Rs. 632.00 crores and external sources, only Rs. 78.00 crores. Again, the role of external sources during the period B, had diminished in terms of both the absolute amount and its contribution to total investment in fixed assets. As such, its contribution had declined from 23% in period A, to 11% during period B.

(ii) The contribution of capitalised reserves to total resources had declined from 15.7% in 1966-67 to 4.3% in 1974-75, mainly on account of the curbs on bonus issues imposed by the Government of India.

(iii) Reserves and Surplus had increased from 0.09% in 1966-67 to 15.8% of total funds in 1974-75.
(iv) Provision for depreciation, taxation and others had increased threefold, but their share had remained constant at 26% of total funds.

(v) The contribution of long term borrowings had declined from 24.2% in 1966-67 to 10.9% in 1974-75.

(vi) The average capital issues had declined from Rs. 74.2 crores during 1966-70 to Rs. 70.6 crores during 1971-75.

The study undertaken by Shriniwasan* to analyse the patterns of financing in Indian industries, with reference to 750 non-financial companies during 1951 to 1955 and 1001 non-financial companies during 1956 to 1966 disclosed the following:

(i) Internal resources (defined as paid-up capital + reserves & surplus, and provisions) had accounted for 59% of total funds during 1951 to 1955, but had declined to 45% of total funds during 1956 to 1966. Their contribution was the lowest at 28.4% in the year 1952.

(ii) External resources (defined as new capital issues + long term and short term borrowings) had accounted for 41% of total funds during 1951 to 1955, and had increased to 55% of total funds during 1956 to 1966.

He had concluded:

(a) that the increasing monetary control on external sources tended to increase the size and the degree of dependence on retained earnings, and that if such controls were exclusively on bank borrowings, there would be a tendency towards a shift in borrowings from the other-than-banks sector, i.e., financial institutions; and

(b) that in general, the higher the demand for total funds in a company, the greater will have to be the allotment to Reserves.

A study of sources of funds of 261 selected cotton textile mill companies in India was made by Kothare and Menon* for a period of ten years from 1965-66 to 1974-75. The paid-up capital of these companies was equal to 78% of paid-up capital of all non-government public limited companies of cotton textile industry. Its main findings were:

(i) The reliance on external sources had increased from 56% of total funds during 1960-61 to 1965-66 and to 57.9% of total funds during 1965-66 to 1970-71. During 1971-72, it had gone up to 76.3% of total. However, next year, it had declined to an all time low of 12.6% only, mainly due to spurt in profits. It had increased once.

again to 62% of total funds in 1974-75, because of (a) a rise in current liabilities and provisions, and (b) a sharp rise in bank borrowings.

(ii) The reliance on internal resources was reduced to 38% of total funds in 1974-75 primarily because of relaxation in the restrictions on payment of dividend, which resulted in a depletion of Reserves.

(iii) As compared to other industries, the cotton textile industry had relied to a greater extent on borrowings from banks and other financial institutions. The average share of borrowings in total funds was 20% in case of the cotton textile industry as compared to the average figure of 9.9% for all other industries during the period of the study.

(iv) The amount of internal funds used for assets formation was very meagre in the case of cotton textile industry.

The pattern of financing of large industrial projects in the private corporate sector in 1974 was studied by 'The Economic Times' Research Bureau.* Table II.3 (a) presents the planwise data regarding the sources of funds based on this as well as the RBI studies.

Table II.8 (a)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>First Plan</th>
<th>Second Plan</th>
<th>Third Plan</th>
<th>Annual Plan</th>
<th>Fourth Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Resources (%)</td>
<td>58.00</td>
<td>44.70</td>
<td>49.10</td>
<td>43.70</td>
<td>55.20</td>
</tr>
<tr>
<td>External Resources (%)</td>
<td>42.00</td>
<td>55.30</td>
<td>50.90</td>
<td>56.30</td>
<td>44.80</td>
</tr>
</tbody>
</table>

Table II.8 (b) exhibits the sources of funds for all industries vis-à-vis the cotton textile industry as per the E T study.

Table II.8 (b)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Sources of funds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Industries</td>
</tr>
<tr>
<td>Internal Resources (%)</td>
<td>53.30</td>
</tr>
<tr>
<td>External Resources (%)</td>
<td>46.70</td>
</tr>
</tbody>
</table>

The main findings of the study were:

(i) Internal sources accounted for a relatively large share in the financing of assets. They dominated particularly in the case of cotton textiles industry.

(ii) The declining trend in retained profits in the total funds during the Second and the Third plans was reversed in the Fourth plan.
During the First plan period, internal funds had played a prominent role in financing industrial expansion. As a result of the establishment of large scale financial institutions during the Second and the Third plan period, it was possible for industries to avail of long term loans; consequently, external funds played an increasingly important role by constituting 55.3% in the Second plan and 50.9% in the Third plan, of the finances needed for industrial expansion.

The study undertaken by Sastry and Krishnamurthy* covered a period of ten years from 1966 to 1975 and was based on the data of Balance Sheets and Profit and Loss Accounts of selected public limited companies, including 165 companies belonging to cotton textile industry. The main findings were:

(i) External finance in the total flow of funds was important in most of the industries; it ranged from 50% to 67%. In a majority of the industries, the proportion of external funds in the total flow of funds had increased in the latter years.

(ii) The single largest item of external finance was that of borrowings, which constituted about 55% to 70% for all industries. The proportion of borrowings in external finance in the case of all the cotton textile mills had declined, on an average, during.

In his study of Methods of Financing, G. D. Mishra* had covered 13 different industries for a period of 23 years from 1950-51 to 1973-74 on the basis of data supplied by RBI. The findings of the study are summarised below:

(i) On account of taxation on corporate income, internal funds had declined, particularly, in the case of Tobacco and Cotton Textile Industries. The retained earnings had been 50% and 83% (approx.) of total profits in their respective cases and their effective tax rates, too, were fairly high.

(ii) Shipping and Cement industries had enjoyed the fruits of tax incentives better.

(iii) For all the industries under study, the improvement in debt capital ratio as a result of tax policy was explained by the supporting data. (The effective average tax rate was 46%)

(iv) The corporate sector as a whole had depended considerably on external funds in financing its investment needs, both in fixed capital and inventories.

(v) Financial policies of companies were guided by the tax policy of the government.

However, according to the study made by Raos** of the Indian Manufacturing Sector (1951 to 1975), the

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observed shift in the capital-mix of Indian companies did not appear to be of the tax-induced type only. The advantage from debt was much more than simply the tax advantage. The effect of other variables had turned out to be more critical than the corporate tax rate itself.

In another study made by D.P. Pandey* three types of industries were covered: (a) Fast moving – Engineering and Chemicals/Medium – Sugar and Cotton Textiles, and (c) Slow moving – Tobacco and Vegetable Oils. The main conclusions were:

(i) The external source of financing was the dominating factor for the positive growth of firms.

(ii) Retained earnings were generally found to be insignificant. The firms required more of capital beyond their internal capacity to save for the process of growth.

(iii) While the methods of financing varied slightly, reliance on long term borrowings was generally found.

(c) DER and cotton textile mills of Ahmedabad

The DER of the 50 cotton textile mills of Ahmedabad has been studied by me for two periods viz., 1966-70 and 1971-75. The main findings narrated herein below are based on the generally accepted norm of DER, as suggested by the Study Group on DER headed by B.K. Madan, viz., 2 : 1 (which I have accepted as the standard and will be referred to as 'the norm' for debt capacity.)

(i) The number of cotton textile mills having a DER below the norm, was reduced from 42 during 1966-70 to 40 during 1971-75. It can be said, in general, that these textile mills had not reached their debt capacity throughout the period of the ten years of study, though a few units had tried to move up during the latter period.

(ii) Some cotton mills seemed to have exceeded their debt capacity during 1971 to 1975. During 1966 to 1970 not a single textile unit was having an exceptionally high DER, i.e., 4.0 : 1.0 or 4.5 : 1.00 and above. During the latter period, there were two units which had excessive DER of 4.0 : 1.00, and one with a DER of 4.5 : 1.0.

(iii) The number of textile units conforming to the norm had remained unchanged at 5 in both the periods.

(iv) Some cotton textile mills had exceptionally low DER, i.e., even less than 1 : 1. The number of such units had increased from 20 in the former period to 26 in the latter. Some of them had actually repaid a major part of their long term borrowings and had ploughed back portions of their profits.

(v) As is clear from the Main Table No. XVIII (vide: Appendix AA), the average DER for all the fifty cotton textile mills together had remained unchanged at 98 : 100 during both the periods.
Even this ratio was fairly low as compared to the norm. In other words, the cotton textile industry of Ahmedabad, as a whole, can certainly make more use of debt, particularly, institutional borrowings to enjoy the fruits of trading on equity.

In practice, the share of bank and institutional borrowings in the total sources of these mills had declined from 33.22% during 1966-70 to 30% during 1971-75. The financial institutions working in Gujarat State can certainly play a more meaningful role in the financing of the finance-hungry cotton textile mills of Ahmedabad.

The average figure of DER of 98 : 100 also indicated that the mills had used net worth and debt as sources of finance almost in an equal manner. They seemed to have relied on internal resources first and then, whenever necessary, on external sources. They had not used the principle of trading on equity to their benefits.

(vi) In a more detailed analysis of this Table, it appears that the cotton textile unit Nos. 4, 11, 12, 13, 37, 41 and 47 in the list, had used, very sparingly, debt as a source of finance during 1966 to 1970. The units which had used debt very sparingly during 1971-75 were Nos. 2, 12, 13, 30, and 38. Thus, unit Nos. 12 and 13 had used debt very
sparingly during both the periods. These are the units which had a fairly satisfactory record of profitability. Their average rates of return on equity were 19.29% and 12.67% respectively. Thus, even after paying an average equity share dividend of 16%, both had been able to plough back a part of their profits.

(vii) The cotton textile unit Nos. 19 and 33 had exceeded their debt capacity during 1966 to 1970, whereas during 1971 to 1975, unit Nos. 3, 8, 24 and 33 had exceeded it. The latter four are all sick units now being managed by NTC, Gujarat. One of the important causes of their sickness could be identified in the excessive use of debt as a source of finance coupled with poor profitability record and non payment of equity dividend for a long period of time. Such units with very poor ploughing back capacity had no other alternative but to use debt for financing their activities and even this source could not be profitably used.

The position of DER of cotton textile units of Ahmedabad as compared with that of the Indian textile industry and of all industries in India is presented in Table II.9.
Table II.9

<table>
<thead>
<tr>
<th>Particulars</th>
<th>DER 1965-70</th>
<th>DER 1971-75</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All industries in India*</td>
<td>35.00:100.00</td>
<td>38.00:100.00</td>
</tr>
<tr>
<td>2. Indian cotton textile industry**</td>
<td>113.60:100.00</td>
<td>159.20:100.00</td>
</tr>
<tr>
<td>3. Cotton textile mills of Ahmedabad</td>
<td>98.00:100.00</td>
<td>98.00:100.00</td>
</tr>
</tbody>
</table>

The figures indicate two things:

(i) The cotton mills of Ahmedabad had been having an average DER which was fairly less than that for the Indian cotton textile industry as a whole. However, the former were still highly geared when compared to all the industries in India, as a whole.

(ii) Whereas the DER of all industries in India, as well as, that of the Indian cotton textile industry, as a whole, had increased during the latter years, that for the cotton textile mills of Ahmedabad had remained unchanged.

(d) Employment of proprietorship funds and non-proprietorship funds in the cotton textile mills of Ahmedabad.

As defined earlier, proprietorship funds refer to funds created in the form of paid-up equity share capital.

* RBI study of 1333 public limited companies.
** RBI study of 1650 public limited companies.

paid-up preference share capital and reserves and surplus, whereas non-proprietorship funds refer to funds borrowed from non-proprietors. They include debt plus short term loans, current liabilities and provisions. Table No. XVII shows the mean values of these two types of funds used and during 1966 to 1970/during 1971 to 1975. It reveals the following:

(i) Their average percentage of proprietorship funds had declined from 20.60 to 29.80 during the latter period, i.e., by 2.60% only, without any significant change in variability or dispersion.

(ii) The average share of non-proprietorship funds in the total funds had also increased in the same fashion, but in the reverse direction. It had increased from 69.40% to 70.20%, i.e., by 1.13% only. This had occurred without any notable change in the variation.

It may safely be concluded that the non-proprietorship funds had played a marginally higher role as compared to the proprietorship funds during the latter period, without any significant change in the variability factor.

(iii) The proportion between proprietorship funds and non-proprietorship funds on an average for all the fifty mills had remained almost constant during both the periods. It was 31:69 in the former period and was 30:70 in the latter.
(iv) DER taken together with the use of proprietorship and non-proprietorship funds indicate that the use of debt as against equity was almost constant (98:100) during both the periods. Sources like short term loans, current liabilities and provisions must have played a significant role in financing cotton textile units of Ahmedabad during both the periods.

(v) The study of Table I relating to funds available and sources indicates certain extremes. In case of the cotton textile unit Nos. 3, 8, 9, 18, 19, 25, 29, 33 and 40, the share of proprietorship funds in the total funds had been fairly below the average during both the periods. At the extreme was unit No. 25, which had collected only 10.59% of total funds out of proprietorship sources, during 1966 to 1970, whereas unit No. 33 had collected only 10.04% of total funds from proprietorship sources during the latter period of study. For the same phenomenon, two different probabilities exist. In case of the unit No. 25, a definite policy of reliance on borrowings seemed to have been followed, because it had a fair record of profitability of an average of 15% profits on net worth during both the periods under study. However, in the case of unit No. 33, now being managed by NTC, Gujarat, the absence of a fair record of profitability seemed to have been the possible cause for the phenomenon.
(vi) In the case of unit Nos. 3, 8, 18, 27 and 33, not only was the share of proprietorship funds far below the average for all the mills under study during both the periods, but also had their share declined during the latter period of study. In particular, the unit No. 8 had collected only 13.58% of total funds during 1966 to 1970. Even this share had declined to 9.44% during 1971-1975. The share of proprietorship funds in total funds in this case was reduced by about one-third during the latter period. This again was due to low profitability and absence of ploughing back of profit.

(vii) In the case of unit Nos. 9, 19, 25 and 40, although the share of proprietorship funds in total funds was below the overall average during both the periods, it had increased marginally during the latter period.

(viii) In the case of unit Nos. 13, 41 and 43, the share of non-proprietorship funds was below the overall average during both the periods, but had increased in the latter period. In case of the unit No. 41, the share of non-proprietorship funds in total funds had increased from 46.52% in the former period to 60.28% during the latter, i.e., by about 29%. In the case of unit No. 43, this share had increased from 49.78% during the former period to 62.19% during the latter, i.e., by about 25%.
Here also, two different factors seemed to have been responsible for the same phenomenon. In the case of unit No. 43, the average net profits earned to net worth had been around 20.37% during the period of this study and therefore, it seemed that the management of the unit, as a policy, had used borrowings as the chief source for development and expansion of its activities. However, in the case of unit No. 41, the average net profits to net worth had been around 4.72% only and, in the absence of a proper capacity to plough back profits, it must have resorted to borrowings wherever and whenever possible.

(ix) In the case of unit No. 38, the share of non-proprietary funds was below the overall average during both the periods, and it had decreased relatively in the latter. This unit had, on an average, earned a net profit of about 16.74% on net worth during the latter period and seemed to have followed a policy of relying more on ploughing back of profits than on borrowings. It may be noted that the decline in this share was only marginal, because it had adopted a policy of distributing a dividend of Rs. 18 per equity share of Rs. 100/-, on an average, during the former period. In the latter, it had distributed Rs. 18.40 per share, on an average, by way of equity dividend, with an enlarged equity-base.
The distribution of dividend to this extent seemed to be a factor which might not have allowed the unit to plough back larger profits.

A comparison of Ahmedabad cotton textile units with the entire cotton textile industry and with all the industries in India may be made in regard to use of proprietorship sources and non-proprietorship sources. The study of 1650 public limited companies made by RBI shows that, during 1966 to 1970, internal sources had contributed to the extent of 46.80% of total funds and this share had increased to 56.66% during 1971 to 1975. The share of non-proprietorship funds had declined from 53.20% in the former period to 43.34% during the latter. The study made by Shrinivasan also reveals that the internal sources of non-financial companies had contributed to the extent of 45% of total funds during 1966 to 1970. The study made by Sastry and Krishnamurthy points out the fact that, in the case of a majority of industries, the share of internal funds had increased from 50% during 1966 to 1970 to about 67% during 1971 to 1975. The study of 261 cotton textile public limited companies in India, in terms of trends of finances, published in RBI Bulletin, January, 1977, suggests that during 1966 to 1970, the cotton textile industry, on an average had used internal sources to the extent of 42.10% of total sources, and this share had declined to about 38% of total during 1971 to 1975.
In the case of cotton textile mills of Ahmedabad under study, the share of proprietorship funds to total funds was about 30.60% during 1966 to 1970, and it had declined to 29.80% during 1971 to 1975. A reduction in the use of internal funds during the latter period in the case of these mills conforms to the pattern of financing as adopted by all the cotton textile mills working in the country. It may be pointed out, however, that the share of proprietorship funds in total funds as used by cotton textile mills of Ahmedabad of about 30%, was below the all-India cotton textile industry average of 38% to 40%. This also means that the former had relied on borrowings, particularly short term loans, more than the latter.

Table II.10 compares the result of my study with those of the study made by the E T Research Bureau, for the period 1971-75.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>All-India</th>
<th>Cotton Textile Mills of Ahmedabad</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All-Industries</td>
<td></td>
</tr>
<tr>
<td>Internal sources %</td>
<td>53.30</td>
<td>29.80</td>
</tr>
<tr>
<td>External sources %</td>
<td>46.70</td>
<td>70.20</td>
</tr>
</tbody>
</table>

The figures indicate that, as compared to All-India All-Industries average, the share of internal funds of Ahmedabad cotton textile mills was very low. It had relied on debt and short term borrowings to a very large
extent and had not been able to plough back as much profits as had been done by all the industries in general working in the country.

(e) Factors responsible for the larger use of non-proprietorship funds in the cotton textile mills of Ahmedabad

The decline in the share of proprietorship funds, a marginal increase in the role of non-proprietorship funds and, in general, a larger use of non-proprietorship funds of about 70% of total funds during both the periods, can be traced back to the following factors:

(i) The record of profitability shows that 22 out of 50 cotton textile units of Ahmedabad had earned profits before tax to the extent of less than 10% of net worth employed in them. As many as 10 units had shown losses on an average during 1966 to 1970, of which 5 units had continued to show losses even during 1971 to 1975. This had contributed greatly to the decline in their capacity to plough back profits for expansion.

It may also be noted that the entire Indian cotton textile industry had not fared well in terms of profitability, when compared with that of All-India All-Industries put together*. During 1966-70, the ratio of gross profit to net sales was 5.74% in the case of the textile industry as a whole.

as compared with that of 9.68% for all industries put together. Even during 1971-75, the rate of gross profit on net sales (7.36%) was fairly lower for the cotton textile industry than that (10.10%) for all industries put together.

(ii) The taxes on corporate income were a factor responsible for lowering the capacity of ploughing back of these units. During 1966-70, the amount of provision for tax was more than half of PBT in the case of 9 units whereas, in the case of 12 units, it was more than half of PBT during 1971-75. 12 Units during 1966-70 and 16 units during 1971-75 had provided for tax for an amount exceeding 30% of PBT.

The taxation of corporate profits had reduced the internal funds for tobacco, and cotton textiles and engineering industries. The effective tax rate was fairly high (46%) for the cotton textiles industry.* It explains the improvement in debt capital as a result of tax policy. The corporate sector as a whole had depended considerably on external funds in financing its investment needs both in fixed capital and inventories.

The accounting practice allows the interest charge on debt capital as a business expenditure in computing the taxable profits, but not the

dividends paid on equity and preference shares.
In view of this advantage, companies tend to change their financial policies whenever there are changes in corporate income tax rules. As corporate tax rates increase, companies too increase their DER because of the increased advantages.

India is one of the few countries in the world, which is having high corporate tax rates and personal income tax rates. But, in the recent past, the Government has changed their fiscal policy towards companies in view of urgency to develop industries. In view of the incentives like development relate, tax holiday etc., the average effective tax rate had come down to 46% from the statutory rate of 55% & 5% surcharge on the tax in the year 1973-74. Whenever there have been fresh demands for finance, the first preference had generally been for debt which might also be the result of the desire of the corporate leaders not to lose control over their business*.

(iii) After corporate taxes had taken away their share from PBT, dividend appropriations from PAT were responsible for not allowing the managements to plough back substantially. Eight units during 1966-70, and six units during 1971-75 had distributed, by way of dividend, more than 100% of the PAT and had drawn the required balance from past

reserves. In all, as many as 31 out of 50 units had distributed more than half of their PAT by way of dividend. During 1971-75, 24 units had distributed more than half of PAT by way of dividend. This means that the textile units under study had been following a liberal policy of distribution of dividends. It may also be noted that, because of lower profits or losses, twelve units did not pay any dividend during both the periods of this study.

A detailed study of the dividends declared revealed that, out of 50 equity share issues as many as 32 were having a face value of Rs. 100/- per share - or even less. And 18 units out of 50 during 1966-70 and 23 units out of 50 during 1971-75 had declared a dividend of Rs. 10/- and above per equity share.

(iv) The conditions prevailing in the capital market did not favour larger equity or preference share issues. The total capital issues had declined from Rs. 74.2 crores during 1966-70 to Rs. 70.6 crores during 1971-75*. The RBI study of sources and uses of funds of 1501 public limited companies during 1966-70 and of 1650 companies during 1971-75** revealed that new capital issues had declined greatly from 4.58% of total funds of these companies during 1966-70 to about 0.22% of their total funds during 1971-75.

According to the RBI Report, * during 1966-70, the equity share prices for the entire cotton textiles industry and those for cotton textiles of Ahmedabad had averaged Rs. 113.10 and Rs. 102.02 respectively. The preference share prices quoted for the entire textile industry and for Ahmedabad mills had averaged Rs. 96.76 and Rs. 82.26 respectively. This means that the prices of shares of Ahmedabad cotton textile units were fairly lower than those for the entire industry.

The annual average of the amount of capital raised by public limited companies, both by prospectus and rights issues, had declined from Rs. 84 crores during 1961-65 to Rs. 74 crores during 1966-70. The proportion of equity issues had declined from 72% of total during 1961-65 to 51% during 1966-70, whereas debenture issues had increased from 20% during 1961-65 to 34% during 1966-70.

The proportion of the amount underwritten to the total amount offered to public had increased marginally from 89% during 1961-65 to 91% during 1966-70. During the period, out of 187 equity issues involving Rs. 128 crores through prospectus,

11 issues for Rs. 95 crores had involved participation by promoters and underwriters. During 1971-75, generally there was a downward trend in equity share prices, the Index having been 99 in May, 1971 and 95.6 in June, 1972. In November, 1973, the Index had upswinged to 129.90 but had again downswinged to 115.30 in November, 1974. The tight money conditions created by the credit policy of RBI was the major factor that had ebbed it to the low of 90.40 in June, 1975.

(v) The cotton textile mills of Ahmedabad had collected large sums of money through short term unsecured loans and trade credit & provisions. A study of Table V indicates that the average share of secured loans in total funds of the 50 mills had declined from 32.90% during 1966-70 to 31.01% during 1971-75. Similarly, their share in non-proprietorship funds had declined from 49.65% to 45.38% during the same period. As against this, the share of unsecured loans and trade credit & provisions had increased (a) from 33.76% of total funds during 1966-70 to 37.33% of total funds during 1971-75 and (b) from 50.35% of non-proprietorship funds during 1966-70 to 54.62% of non-proprietorship funds during 1971-75. The absence of any requirement of mortgage charge on assets and the ease of using these sources of finance were probably the main factors responsible for this trend.