2. REVIEW OF LITERATURE

Capital Structure is concerned with the decision about the financing pattern of a project. Generally, the decision takes care of the financing, throughout the life of the project. Thus, it is a long-term financing exercise.

Capital Structure decides the appropriate mix of the sources of finance i.e., debt, equity and internal resources. In addition, for normal operation, a firm uses short term capital e.g. trade credits, unpaid expenses, loans & deposits. Short term capital normally does not form part of the capital structuring decision for it keeps changing from time to time depending upon the operations of a firm. Prudent financial practices emphasise balancing of the short term capital with short term requirements and long-term capital with long-term requirements. The long term capital are of two types viz. networth and borrowing. Various combinations are available between these two. Networth composes of the equity capital and internal resources. Since internal resources, for any given project, are decided by the operations of a firm, it leads to a choice between the equity and debt capital.

Equity consists of owners' contribution to the firm by way of either equity shareholding or preference shareholding. Shareholders are entitled to the profits of the firm after setting off all the charges. Profit to the shareholders, normally takes the form of dividend, bonus shares, and the like. A firm is not obliged to pay dividend unless it makes profit nor is it obliged to repay the principal. Equity is the permanent capital invested in the firm and the return on equity is solely dependent on the profit generated by the firm. Therefore, there is no risk attached to it regarding either fixed rate of return or principal repayment.

Debt consists of either debentures, bonds and the like issued by the firm, as well as term loans which are obtained from banks and financial
institutions. Debt capital carries an obligation to repay the principal and the interest at fixed periodic intervals. It is insensitive to and unconnected with the internal cash flow of the firm. Thus, there is an element of risk with the use of debt capital. Due to any reason, if the firm is unable to pay either interest or the principal amount, it would attract heavy financial penalties coupled with the loss of goodwill. It may even have to face the risk of bankruptcy. Hence, debt is characterised as the risk capital.

One of the major attractions of the use of debt in capital structure is tax deductibility of interest. The interest charges are deducted as expenses for tax purposes resulting in the increase in the earnings of the shareholders.

The use of the fixed-charge capital such as debt in the capital structure, is described as financial leverage. This leverage, employed by a firm is intended to increase the shareholders' earnings. The role of financial leverage in increasing the shareholders' return is based on the assumption that the fixed-charge capital can be obtained at a cost lower than the firm's rate of return on total assets. In case of higher cost, the converse would be true. In other words, depending on the operating cash flows, the rate of return on owners'equity would be levered above or below the rate of return on total assets. Thus, financial leverage provides the potential of increasing the shareholders' earnings along with higher risk to the firm.

The risk of the use of financial leverage stems from the variability caused by it in the earnings per share (EPS) of the firm. For a given degree of variability in the operating cash flows, the variability of EPS increases faster with financial leverage. This variability of EPS caused by the use of financial leverage is known as financial risk. A totally equity financed firm
will have no financial risk. Financial risk is thus, an avoidable risk if the firm decides not to use any debt capital in the firm. Capital structuring is therefore, a risk return trade off exercise. Introduction of debt in capital structure increases risk to the firm but simultaneously decreases its cost of capital. With the decrease in the cost of capital, the value of firm increases. Basic assumption being that the cost of debt, is lower than the return generated by the firm on its assets. Extending this logic further, indicates that a firm should have 100 percent debt in its capital structure from the point of view of maximizing shareholder’s wealth. However, existence of bankruptcy cost would prevent a firm from doing so. Apart from the bankruptcy costs, other tax shields such as investment tax credits, depreciation and so on are also available which makes excessive debt expensive. According to DeAngelo and Masulis (1980) the firm strives to approach the point where the expected value of an additional unit of debt is balanced by the expected incremental cost of having to waste a unit of unused tax shield. Myers (1977) argue that the real costs of taking on debt in the capital structure is that the levered firm will make suboptimal investment decisions in future because of the debt burden it has to carry. Therefore the optimal capital structure does not occur at 100 percent debt and firm will have to arrive at its optima after considering various factors like cost, control, etc. Extensive work has been done in this area in the past which is briefly covered in the next section.

References


Traditional Capital Structure Theories

Traditionally the capital structure debate concentrated on whether to capitalise Net Income or Net Operating Income Approach to determine the value of firm. From the literature it appears that there is a unanimity over the capitalisation rate which is governed by the risk attached to the nature of firm's business. In other words, the degree of variability of either Net Income or Net Operating Income determines the risk which can be measured simply through standard deviation. However, the difference between capitalizing the Net Income or Net Operating Income leads to the conclusion whether financing decision is relevant in deciding the value of a firm or not. The Net Income approach propagates that this decision is relevant and in fact advocates that there does exist an optimal capital structure which maximises the value of the firm. While the Net Operating income approach makes financing decision irrelevant.

Net Income Approach assumes that:

[1] The use of debt does not change the risk perception of investors and as a result, the equity capitalization rate, Ke, and debt capitalization rate, Kd, remains constant with changes in leverage.

[2] The debt capitalization rate, Kd, is less than equity capitalization rate (i.e Kd < Ke)

Hence, if Ke and Kd are constant, with increased use of leverage, by magnifying the shareholders earnings, the market value of the equity of the firm will rise resulting in a higher value of the firm. Consequently the overall, or the weighted average cost of capital, K0, will decrease. The overall cost of capital is measured as follows:

\[ K_0 = \frac{NOI}{V} \]
The effect of leverage on the cost of capital under NI Approach is shown in the graph given below. The degree of financial leverage is plotted along the horizontal axis and the cost of capital figures on the vertical axis in graph - 1.0.

It can be noticed from the figure above, that under the NI approach, $K_o$ and $K_d$ are assumed not to change with leverage. As the proportion of debt is increased in the Capital Structure being less costly, it causes weighted average cost of capital to decrease and approach the cost of debt. Hence, the optimum Capital Structure would occur at the point where the value of the firm is maximum and the weighted average cost of capital is minimum. This brings to conclusion that under the NI approach, the firm will have the maximum value and the lowest cost of capital when it is all debt-financed or has as much debt as possible.

According to the Net Operating Income (NOI) approach, as put forward by David Durand (1959) the market value of the firm is not affected by the
capital structure changes. The market value of the firm is found out by capitalising the net operating income at the overall, or the weighted average, cost of capital $K_0$, which is constant. The market value of the firm is determined as follows:

$$V = (D + S) = \frac{\text{NOI}}{K_0}$$

Where:
- $V$ = Total market value of the firm
- $D$ = Market value of the debt capital
- $S$ = Market value of the equity of the firm
- NOI = Net Operating Income
- $K_0$ = Weighted average cost of capital or the overall capitalization rate.

$K_0$ is the overall capitalisation rate and depends on the business risk of the firm. If the business risk is assumed to remain constant / unchanged, $K_0$ is also a constant. It is independent of financing mix. If NOI and $K_0$ are independent of financing mix, then the value of the firm will also be a constant and independent of capital structure changes.

The critical premise of this approach is that the market capitalises the firm as a whole at a discount rate, which is independent of the firm's degree of leverage. As a consequence, the division between debt and equity is irrelevant. An increase in the use of debt funds which are apparently cheaper is offset by an increase in the equity capitalization rate. This happens because equity investors seek higher compensation as they are exposed to greater risk arising from increase in the degree of leverage. They raise the capitalization rate $K_0$ as the degree of leverage increases.

The **Net Operating Income** Approach has been advocated eloquently by David Durand (1959). He argued that the market value of a firm depends on its net operating income and business risk. The change in the degree of
leverage employed by a firm depends on its net income and risk between debt and equity holders without affecting the total income and risk which influence the market value of the firm. In other words, as explained by Brigham & Johnson (1976), this approach implies that there is no unique optimal capital structure, as the cost of capital is same at all capital structures.

The NOI is further illustrated graphically as shown below:

![Graph - 2.0](image_url)

It shows that $K_0$ and $K_d$ are constant and $K_e$ increases with leverage continuously. As the weighted average cost of capital is constant, this approach implies that there is no unique optimum capital structure.

Another important theory is known as the **Traditional View** or the **Traditional Capital Structure Theory** as popularized by Ezra Soloman (1963). It is an intermediate approach and is a compromise between the Net Income approach and the Net Operating Income approach. According to this view, the value of the firm can be increased or the cost of capital can be reduced by a judicious mix of debt and equity capital. This approach very clearly implies that the cost of capital decreases within the reasonable limit of debt and then increases with leverage. Thus, an optimum capital structure exists and occurs when the cost of capital is minimum or the
value of the firm is maximum. The cost of capital declines with leverage because debt capital is cheaper than equity capital within reasonable, or acceptable, limit of debt. The statement that debt funds are cheaper than equity funds carries the clear implication that the cost of debt, plus the increased cost of equity, together on a weighted average basis, will be less than the cost of equity which existed on equity before debt - financing. In other words, the weighted average cost of capital decreases with the use of debt.

According to the traditional position, as explained by Pandey, Seventh Edition (1995), the manner in which the overall cost of capital reacts to changes in capital structure can be divided into three stages.

**First stage:**
In the first stage, the rate at which the shareholders capitalise their net income, i.e. cost of equity, \( K_e \), remains constant or rises slightly with the debt. However, when it increases, it does not increase fast enough to offset the advantage of low cost debt. During this stage, the cost of debt, \( K_d \), remains constant or rises negligibly since the market views use of debt as a reasonable policy. As a result, the value of the firm, \( V \), increases or the overall cost of capital, \( K_0 \), falls with increasing leverage. This implies that, with \( K_e > K_d \), the average cost of capital will decline with leverage.

**Second stage:**
Once the firm has reached a certain degree of leverage, increases in leverage have a negligible effect on the value, or the cost of capital of the firm. This is so because the increase in the cost of equity due to added financial risk offsets the advantage of low cost debt. Within that range, the value of the firm will be maximum or the cost of capital will be minimum.
**Third Stage :**

Beyond the acceptable limit of leverage, the value of the firm decreases with leverage or the cost of capital increases with leverage. This happens because investors perceive a higher degree of financial risk and increases equity - capitalization rate by more than to offset the advantage of low-cost debt.

The overall effect of these three stages is to suggest that the cost of capital is a function of leverage. With leverage, it declines and after reaching a point, it stabilizes and thereafter it starts rising. The relation between costs of capital and leverage has been depicted graphically as below:

![Graph - 3.0](image)

As can be seen from the figure above the weighted average cost of capital, $K_o$ is saucer shaped with a horizontal range. This implies that there is a range of capital structures in which the cost of capital is minimised. Cost of equity is assumed to increase slightly in the beginning and then, at a faster rate.

The validity of the traditional position has been questioned on the ground that the market value of the firm depends upon its net operating income and risk attached to it. The form of financing can neither change the net operating income nor the risk attached to it. It can simply change the way in which net operating income and the risk attached to it are distributed.
between equity and debt holders. Therefore, firms with identical net operating income and risk, but differing in their modes of financing should have same total value.

The traditional view is criticized because it implies that totality of risk incurred by all security holders of a firm can be altered by changing the way in which the total risk is distributed among the various classes of securities. However the argument of the traditional theorists that an optimum capital structure exists can be supported on two counts: the tax deductibility of interest charges and market imperfections.

Modigliani & Miller (1958) also do not agree with the traditional view. They criticize the assumption, that the cost of equity remains unaffected by leverage upto some reasonable limit. They assert that sufficient justification does not exist for such an assumption. They do not accept the contention that moderate amounts of debt in sound firms do not really add much to the riskiness of the shares.

The debate on the Capital structure decision got momentum after celebrated paper of M&M (June, 1958) which drastically changed the way of looking at this decision. They came out with the conclusion that in a perfect market situation, the value of the firm does not change with the change in the capital structure mix. The basic argument is that the firm's value is dependent upon the cash flow it generates from its operations and the riskiness of these cash streams. Hence, merely changing the way of financing will not increase the company's cash flow stream, or its value without affecting its riskiness. They explained their position with the help of three propositions. The first proposition assumes interalia that the personal borrowings and the corporate borrowing are perfect substitute of each other i.e. the individuals can borrow at the same terms and conditions as a
company can borrow. Even though the company has inherent advantage of limited liability while the individual have unlimited liability, if there are large number of companies available in the given risk class the premium available for limited liabilities would cease to exist.

Given these basic assumptions, M - M argue that for firms in the same risk class, the total market value is independent of the debt equity mix and is given by capitalising the expected net operating income by the rate appropriate to that risk class. This can be expressed as follows:

\[ V = \frac{\text{NOI}}{K_o} \text{ or } K_o = \frac{\text{NOI}}{V} \]

\[ V = \text{Total Market value of firm} \]
\[ D = \text{Market value of debt} \]
\[ \text{NOI} = \text{Net operating income} \]

Since, the weighted average cost of capital is defined as the expected net operating income divided by the total market value of the firm, and since M - M conclude that the total market value of the firm is unaffected by financing mix, it follows that the weighted average cost of capital is independent of the capital structure and is equal to the capitalization rate of a pure equity stream of its class.

The simple principle of Proposition I is that the two firms identical in all respects except for their capital structures, cannot command different market values or have different cost of capital. M & M do not accept the NI approach as valid. Their opinion is that if two identical firms, except for the degree of leverage, have different market values, arbitrage (or switching) will take place to enable investors to engage in personal or home-made leverage as against the corporate leverage to restore equilibrium in the market.

This arbitrage process can be explained as follows:
Suppose two firms: U - unlevered and L - levered have same expected net operating income X. The borrowing and lending rate is \( K_d \) and the value of L firm is greater than U firm : \( VL > VU \). Assume that an investor holds \( \alpha \) fraction of firm L's shares. His investment and return will be as follows:

<table>
<thead>
<tr>
<th>Investment</th>
<th>Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment in L's shares</td>
<td>( \alpha (VL - DL) )</td>
</tr>
</tbody>
</table>

The investor can earn the same return at less investment through an alternate investment strategy. This he can do by selling his investment in firm L's share and by borrowing on his personal account an amount equal to his share of firm L's corporate borrowing. His investment and return now will be as follows:

1. Buy fraction (\( \alpha \)) of U's shares | \( \alpha (VU) \) | \( \alpha (X) \)
2. Borrow equal to fraction of L's debt | \( \alpha (DL) \) | \( \alpha (K_d DL) \)

Total | \( \alpha (VU - DL) \) | \( \alpha (X - K_d DL) \)

where,
- \( VL \) : Total Market value of Levered firm
- \( DL \) : Debt in Levered firm
- \( K_d DL \) : Cost of debt in Levered firm
- \( VU \) : Total market value of unlevered firm.

The investor obtains the same return, \( (X - K_d DL) \) in both the cases, but his first investment strategy costs more since market value of the levered firm is assumed to be greater than the market value of the unlevered firm. The rational investors at the margin would prefer switching from levered to unlevered firm. The increasing demand for the unlevered firm's shares will decrease the market price of the levered firm. Ultimately the market values of both the firms will reach equilibrium, and henceforth, arbitrage will not be beneficial. The inverse is also true where \( VU > VL \). The arbitrage
process explained above will ensure that one can earn the same return with less investments. Therefore, investors will sell shares of firm U and buy shares of firm L. This process will cause price of firm U’s shares to decline and that of firm L’s shares to increase. It will continue until the price of the unlevered firm’s shares equals that of the levered firm. Thus, in equilibrium, \( V_U = V_L \).

On the basis of the arbitrage process, as discussed above, it can be concluded that there cannot be any difference in the market value of firm because of the financial leverage. They went on to conclude that this value remains constant which is primarily a function of operating cash flow the firm generates and the risk class it belongs. Assuming the rational behaviour on part of the investors, uniform risk class will have a constant discounting factor for the purpose of valuation of the shares of that firm and therefore, the value of the firm can be obtained directly by discounting the cash flow with this expected rate. This is the first major conclusion that M & M arrived.

Their Second Proposition was that the expected yield of a share is equal to appropriate capitalization rate (weighted cost of capital) for a pure equity stream in the class plus a premium rate for a financial risk equivalent to the debt equity rate the time spread between weighted cost of capital rate and interest rate of debt. Through this proposition, M & M have defined weighted cost of capital and more specifically, the cost of equity.

M - M's Proposition II, which defines the cost of equity follows from their Proposition I. The cost of equity formula can be derived from M-M's definition of the weighted average cost of capital. The expected yield on equity or the cost of equity is defined as follows:

\[
K_e = K_o + (K_o - K_d) \frac{D}{S}
\]

Where : \( K_e = \text{Cost equity capital} \)
\[ K_\circ = \text{Weighted average cost of capital} \]
\[ K_d = \text{Cost of debt capital} \]
\[ D = \text{Market value of debt} \]
\[ S = \text{Market value of equity} \]

This states that for any firm in a given risk class, the cost of equity, \( K_e \), is equal to the constant weighted average cost of capital, \( K_\circ \), plus a premium for the financial risk, which is equal to debt-equity ratio times the spread between the constant weighted average cost of capital and the cost of debt, \((K_\circ - K_d)\) \(D/S\). The cost of equity, \( K_e \), is a linear function of leverage, measured by \( D/S \). Thus, the leverage though, will result in more earnings per share, it also increases the discounting rate for determining the market value for shares in the same proportion. Therefore, the benefit of leverage is exactly taken off by the increased cost of equity, and consequently, the firm’s market value remains unaffected. In other words, they emphasize that leverage increases financial risk of a firm and to the extent, this risk is exactly equal to the degree of leverage. As investors have same opportunity for borrowing, their perception of this risk is exactly equal to firm’s perception, which is their basic assumption. It therefore raises their expected rate of return directly in proportion of the reduction in the weighted average cost.

This is also illustrated graphically as shown below:

![Graph - 4.0](Graph-4.0)
From the figure, it shows that as the arbitrage process works, $K_d$ increases with debt and $K_e$ will become less sensitive to further borrowings. The reason being, the debt-holders in the extreme cases, own the firm's assets and bear some of the firm's business risk. Since the risk of shareholders is transferred to debt-holders, $K_e$ declines.

The Third Proposition of M & M relates more to the capital budgeting than the capital structure decision. It shows that if a firm in a particular case agrees in acting for the basic interest of the shareholders at the time of discounting, it will exploit the investment opportunity further and invest in which the rate of return on the investment is larger than their fixed cost of capital appropriate to that class. In our example it seems, that for evaluating any business proposition, the firm will have to use $K_0$ as discounting factor for the future cash flow stream and if the value is positive the project should be undertaken.

The soundness of M & M concept can be judged from the fact that most of the criticism of the theory were aimed at the assumptions made behind this theory. The rationale behind the theory remains unchallenged and in fact, M&M theory has become the base for further theoretical research in capital structure area. However, M&M assumptions were severely criticised and therefore, we must first look at the assumptions that M & M made behind the theory.

These assumptions, as described below, particularly relate to the behaviour of investors and capital market, the actions of the firm and the tax environment:

1. Securities (Shares and debt instruments) are traded in the perfect capital market situation. This specifically means that information is freely available and securities are infinitely divisible.
Investors are free to buy or sell securities. They can borrow without restriction at the same terms as the firm can borrow. They behave rationally and are also assumed to be well informed and choose a combination of risk and return that is most advantageous to them. It is also implied that the transaction costs i.e. the costs of buying and selling securities, do not exist.

They have homogenous expectations and hold identical subjective probability distribution about future operating earnings.

2. Firms can be grouped into homogeneous risk classes. Firms would be considered to belong to a homogeneous risk class if their expected earnings have identical risk characteristics.

3. The expected NOI is a random variable, with a constant mean probability distribution and a finite variance. Thus, the risk to investors depends on both the random fluctuations of the expected NOI and the possibility that the actual value of the variable may turn out to be different than their best estimate.

4. Firms distribute all net earnings to the shareholders.

5. No corporate income taxes exist.

Most of the shortcomings of the M-M thesis lies in the assumptions of perfect capital market in which arbitrage is expected to work. In reality, the markets are far from being perfect. Due to the existence of various imperfections in the market arbitrage will fail to work and will give rise to discrepancy between the market values of levered and unlevered firms.

The assumption regarding the rational investor having the same subjective probability distribution is also not correct. In reality every individual has its perception of risk and behaves in a totally different manner than others in the given circumstances. Thus market imperfection gives rise to different
views of equity as perceived by investor. Investor not only varies in terms of quantum of information. It also behaves differently for the same information. Therefore it is also major factor that brings in imperfection in market.

The existence of limited liability of firms in contrast with unlimited liability of individuals clearly places individuals and firms on a different footing in the capital markets. If a levered firm goes bankrupt, all investors stand to lose to the extent of the amount of the purchase price of their shares. But if an investor creates personal leverage, than in the event of the firm's insolvency, he would not only lose his principal investment in the shares of the unlevered company, but will also be liable to return the amount of his personal loan. Thus, it is risky to create personal leverage and invest in the unleveled firm than investing directly in the levered firm.

The assumption that firms and individuals can borrow and lend at the same rate of interest does not hold good in practice because of the substantial holding of fixed assets, firms have a higher credit standing. As a result, they are able to borrow at lower rate of interest than individuals. If the cost of borrowings to an investor is more than the firms borrowing rate, than the equalization process will fall short of completion. It is also incorrect to assume that the 'personal (home-made) leverage' is a perfect substitute for 'corporate leverage'.

The existence of transaction costs also interfere with the working of arbitrage. Because of the costs involved in buying and selling securities, it would become necessary to invest a greater amount in order to earn the same return. As a result, the levered firm will have a higher market value. Institutional restrictions also impede the working of arbitrage. Durand (1959), points out that 'home-made' leverage is not practically feasible as a
number of institutional investors would not be able to substitute, personal
leverage for corporate leverage, simply because they are not allowed to
engage in the 'home-made' leverage. One of the biggest shortcomings of
M&M theory, as critics point out, is the assumption regarding non-existence
of taxes.
In fact, there is a series of debate in the literature regarding the impact of
taxes on the capital structure choice which is presented in the following
chapter.

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The presence of corporate taxes is a present day reality in business world. This brings into a major "imperfection" in the market which is assumed to be "perfect" by M & M (1958). The presence of corporate taxes brings in the debt bias in capital structuring as interest payment is treated as expense for working out the tax liability, while dividends are not. Dividends are considered as appropriation of profits and not a valid charge against income of the company. This reduces the net cost of debt to the companies by equivalent of the savings in the tax liability.

This means that while the bond holder pays tax only on the income received by him by way of interest, a shareholder pays tax twice, once at corporate level and other on his income as dividends. In fact M & M themselves came out with a correct version of their original paper in 1963 incorporating the impact of tax in their earlier model.

M-M's first proposition (1958) said that as long as the operating income remained constant, the value of the firm did not depend upon the distribution of such income amongst the various claimholders. But, because of the introduction of taxation in M-M's corrected version (1963), apart from the equity holders and the debt holders, a third party has been introduced as a potential claimholder, the government. The pre-tax asset value still does not change as a result of distribution to the various claimholders, but the post tax cash flows to the equity holders and the debtholders depends upon how much is claimed by the third party, the government. Any reduction in such a share, increases the total share available to the equityholders and debtholders put together. Because of the tax deductibility of interest expense, the after-tax value of the firm goes up by the present value of the tax-shields, which accrues as a result of
increased borrowing. Hence, the value of a levered firm becomes greater than the value of an all-equity financed firm, the difference being the present value of the tax shield accruing from the tax-deductibility of the interest expense.

To illustrate, two firms are considered which have an expected net operating income of $X$ and which are similar in all respects, except in the degree of leverage employed by them. Firm A employs no debt capital whereas Firm B has $D$ in debt capital on which it pays interest @ $K_d$. The corporate tax rate applicable to both the firms is $T_c$. The income to stockholders and debtholders of these two firms is shown below.

Corporate Taxes and Income of Debtholders and stockholders:

<table>
<thead>
<tr>
<th></th>
<th>Firm A</th>
<th>Firm B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Operating Income</td>
<td>$X$</td>
<td>$X$</td>
</tr>
<tr>
<td>Interest on Debt @ $K_d$</td>
<td>-</td>
<td>$K_dD$</td>
</tr>
<tr>
<td>Profit before Tax</td>
<td>$X$</td>
<td>$X - K_dD$</td>
</tr>
<tr>
<td>Taxes @ $T_c$</td>
<td>$X.T_c$</td>
<td>$T_c(X - K_dD)$</td>
</tr>
<tr>
<td>Profit after tax</td>
<td>$X(1 - T_c)$</td>
<td>$X - K_dD (1 - T_c)$</td>
</tr>
</tbody>
</table>

**Combined income of Debtholders and Stockholders**

$X(1 - T_c)$  $X(1 - T_c) + K_dDT_c$

The combined income of the debtholders and stockholders of levered firm B is higher by the tax shield - $K_dD.T_c$ earned by this firm. If the debt employed by the levered firm is perpetual in nature, the present value of tax shield associated with interest payment may be obtained as follows:

Present Value of Tax Shield = $\frac{T_c.K_dD}{K_d} = T_c.D$

In general, the value of the levered firm as arrived by M-M in his 'corrected version' has been represented as:

$VL = X \frac{(1 - T_c)}{K} + \frac{T_c.K_dD}{K_d} = VU + T_c.D$
where, $VL$ = Value of the levered firm

$VU$ = Value of the unlevered firm

$T_c$ = Corporate tax rate

$X$ = Net Operating Income

$K$ = Pure-equity capitalisation rate

$D$ = Market value of debt

$K_d$ = Cost on debt

The first term in the above equation, $X(1 - T_c) / K$ represents the value of unlevered firm and the second term, $T_c D$ represents the tax shield arising out of financial leverage.

This expression makes value of a firm a function of leverage and tax rate. Hence M & M point out that the tax advantage of debt was due not only to the fact that deductibility of interest payment implied a higher level of after tax income for any given level of before tax earnings but also because the tax shield ($T_c K_d D$) represent a sure income and therefore capitalised at more favourable rate ($K_d$) in contrast to the uncertain stream $X(1 - T_c)$ which is capitalised at higher rate ($K$).

Therefore, they conclude that greater the leverage, greater is the value of the firm, other things being equal. Hence, this theory implies that the optimal strategy of a firm should be to maximise the degree of leverage in its capital structure. It suggests that, because of the tax-deductibility of interest charges, a firm can increase its value or lower its cost of capital continuously with leverage. Thus the optimum capital structure is reached when the firm employs 100 percent debt.

However, M-M says that the existence of a tax advantage for debt-financing does not necessarily mean that corporations would at all times seek to use the maximise possible amount of debt in their capital structure. Even the
data on observed experience do not indicate that there had been in fact a substantial increase in the use of debt by the corporate sector. The reason being the other forms of financing, notably retained earnings, may in some circumstances be cheaper still when the tax status of investors under the personal income tax is taken into account. Further, there may be limitations imposed by lenders as well as many other dimensions (and kinds of costs) in real-world problems of financial strategy which are not fully comprehended in static equilibrium models. These can be grouped and called as "the need for preserving flexibility" in the form of maintenance of a substantial reserve of untapped borrowing power. Further, M-M says that the tax advantage of debt may tend to lower the optimal size of that reserve but cannot account for their complete elimination. Hence, though theoretically, optimal capital structure is reached when the firm employs 100 percent debt, in practice firms are not found to employ such large amounts of debt, nor are lenders ready to lend beyond certain limits. M-M suggests that firms would adopt a target debt ratio so as not to violate the limits of the debt level imposed by lenders.

The main assumptions underlying the 'corrected version' are as follows: First, it must be the case that firms can always obtain the tax benefit of their interest deductions either by offsetting them directly against other taxable income in the year incurred; or, in the case no such income is available in any given year, by carrying them backward or forward against past or future taxable earnings. Second, the tax rate is assumed to remain the same.

In both the papers M & M have made an assumption of homogenous investor class as far as their personal tax liabilities are concerned. Farrar and Selwyn (1967), brought out an important dimension into the capital
structure analysis by revoking the assumption of homogenous investor class as regards with the impact of taxation and by introducing the concept of personal taxes into the analysis simultaneously with the corporate taxes. They have developed a model which confirms that in the absence of taxes M & M conclusions are valid. They show that only under the corporate tax environment, M & M's revised proposition is valid. The authors have gone further in their analysis and have introduced differential personal tax liabilities, in one with respect to the dividends and other on the capital gains. In the author's opinion the deductible expenditure should be incurred by the taxable entity (Person or Corporation) whose marginal tax liability is the highest and that the returns on investments to be disbursed to the extent possible (in the form of dividend or capital gains) subject to the smallest tax liability. With the introduction of personal taxes and that too, into two different forms (i.e. taxes on dividends and capital gains), the authors have divided investors into differential tax brackets and form the value conclusions concerning the types of investors for whom personal vs. corporate debt may appear desirable. The lower income investors would appear to prefer corporate leverage while the higher income investors would appear to prefer private leverage. Depending upon investors class a break even marginal tax bracket will occur at which corporate and private debt are interchangeable. This has been illustrated graphically below:

Let us assume a structure of rates: \( T_c = .5; \ T_g = .25; \ T_p \leq .5 \)

The implicit after-tax cost of personal debt may be seen from the figure below to be simple, linearly declining function of an investor's marginal tax rate.
Until capital gains tax hit their 25 percent ceiling (at a 50 percent marginal income tax bracket), the cost of corporate debt also may be seen to decline, at half the rate for personal debt. At this point, a discontinuity occurs; for as capital gains tax rates ‘top-out’, the true after-tax cost of deductible corporate expenditure ‘bottoms-out’. The cross-over point at which corporate and personal debt become equally costly occurs under such a schedule at marginal personal tax rates of 62.5 percent. However, if the realization of capital gains be postponed, of course, the relative advantage of corporate over personal debt is reduced. Moving from \( \tau = 0 \) at one extreme (where all gains are realized and taxed immediately) to \( \tau = \infty \) at the other (where the payment of capital gains taxes is forgiven entirely, presumably by the taxpayer’s death), the effective minimum interest cost on corporate debt increases from \( .375r \) to \( .5r \); and the marginal tax rate at which corporate and private debt become freely interchangeable drops from 62.5 percent to 50 percent.

Stiglitz (1973) made a comprehensive study of the effect of taxes, on capital structuring. His study was based on the then prevailing U.S. tax code where dividends were taxed at the rate of ordinary income. Capital gains at half the rate (only on realization) and interest receipts on ordinary
income rate. Apart from the above, he identified a number of other features of the tax code as relevant variables but excluded from analysis, which are treatment of loss, progressivity on tax structure, depreciation allowances, accelerated depreciation, investment credits, recapitalization of firms and taxes on accumulated earnings etc. He developed a model which shows that, for most tax brackets, the policy pursued by most firms of financing most of their new investments by retained earnings, raising any additional capital required by issuing bonds is in fact optimal. The intuitive interpretation of this result, which basically refutes the M & M revised proposition of debt financing being more attractive, is as follows:

(a) A larger debt means less returns if the returns to capital can be taken in the form of capital gains, which are taxed at lower rates than interest income.

(b) Capital gains are taxed only upon realization rather than upon accrual; even if capital gains and ordinary income were taxed at the same rate there would be an advantage to the use of equity.

(c) Personal borrowing is a substitute for corporate borrowing, and interest payments on personal account are also tax deductible. Thus the return to a firm borrowing - as opposed to an individual borrowing on his own account - is not the savings in the corporate profits tax, but only the difference between this and the savings which would have accrued to the individual if he had borrowed.

In general he comments that why firms do not pursue an all debt or all equity policy lies in a basic asymmetry (which arises even in our idealized tax structure) between payments to shareholders and receipts from them. Payments to shareholders are taxed, so reductions in dividends or in shares purchased back from shareholders reduce the taxes paid, but
receipts from shareholders are not taxed. Accordingly, if the firm is not paying out any dividends, using all its retained earnings for investment, and financing the excess of investment over retained earnings by debt, an attempt to increase the equity by reducing the new debt issue and increasing the new equity issue will have disadvantageous tax effects; there will be no reduction in taxation on 'equity account' this period but an increase in corporate profits taxes paid in future periods because of the reduction in interest payments.

Stiglitz has adopted the utility maximization model to explain this theory. He assumes that the investor is rational with a single objective in mind to maximize his life time utility. He has developed a model for investors life time consumption function which ultimately is equal to the post tax dividend plus net borrowings. In his model while explaining the distribution of profit of shareholders, he has introduced various forms in which payment of dividend can be substituted as a capital gain in the hands of shareholders and thus taxed at a lower rate. The most obvious one is, of course, buying back of shares. Buying back of shares is generally restricted by law but there are other methods to convert dividend into capital gains in the hands of shareholders e.g. the firm can grow or acquire other firms; the individual can then sell off the incremental value in the 'shares' of his firm. The net effect of all these regulations is that the average rate of tax is between the capital gains rate and the ordinary income rate.

Stiglitz also developed the model for investment decisions where he says that the right measure of return is, that it should be above the before tax rate of interest. In other words, the optimal investment requires that the cost of capital is just the before tax rate of interest for all types of firms.
Another model which attempts to explain the impact of taxation on capital structures of firms when investors are exposed to varying tax structures, was put forward by Merton Miller (1977). The model assumed the following: (1) all investors are taxed at the same rate; (2) the objective of the firm is to maximize its value; (3) no capital gains tax exists; (4) no bankruptcy risk exists; and (5) the firm pays all of its earnings in dividends.

As regards personal tax rate, $T_p$, the model assumed that there were various classes of investors falling in the continuum between tax-exempt institutions and high net-worth individuals. Beginning with a firm which is entirely equity-financed, there is a strong incentive for corporate borrowing, since personal tax rate on equity, $T_{pe}$, is assumed to be zero and so there is a tax saving which results with the introduction of leverage in the capital structure. In the beginning, convincing some equity holders to hold debt in the organization is a simple task, because of the clientele tax-exempt institutions who are indifferent to such a switch. However, once this set of investors are exhausted, any further debt would be able to draw investors only if higher interest rates are offered which would compensate them for the resulting tax loss suffered on personal account. This would occur when $T_p$ equals $T_c$. Thus, the Miller model arrives at the conclusion that there is no optimal debt-equity ratio for any single firm, but there is an economy-wide optimal capital structure.

The Miller model which implies that it is advantageous to companies to issue more debt so long as the corporate tax shield is greater than the personal tax cost (difference between $T_p$ and $T_{pe}$) to the marginal lender has been exhibited below. When the personal income tax is taken into account along with the corporation income tax rate, the gain from leverage,
Gl, for the stockholders in a firm has been shown by the following expression:

\[ Gl = \left[ \frac{1 - (1 - T_c)(1 - T_{pe})}{1 - T_{pd}} \right] D_l \]

where, 

- \( T_c \) = corporate tax rate
- \( T_{pe} \) = personal income tax rate applicable to income from common stock
- \( T_{pd} \) = personal income tax rate applicable to income from bonds
- \( D_l \) = market value of the levered firm's debt.

It may be noted in the above equation, that when all tax rates are set equal to zero, it reduces to the standard M & M no-tax result of \( Gl = 0 \). Hence, when the personal income tax rate on income from bonds is the same as that on income from shares - a special case of which, of course, is when there is assumed to be no personal income tax at all - then the gain from leverage would be \( T_c D_l \). But on the other hand, when the tax rate on income from shares is less than the tax on income from bonds, then the gain from leverage will be less than \( T_c D_l \). According to the author, for a wide range of values for \( T_c, T_{pe} \) and \( T_{pd} \), the gain from leverage vanishes entirely or even turns negative. It turns into a loss because investors hold securities for the 'consumption possibilities' they generate and hence will evaluate them in terms of their yields net of all tax drains. If, therefore, the personal tax on income from common stocks is less than that on income from bonds, then the before-tax return on taxable bonds has to be high enough, other things being equal, to offset this tax handicap. Otherwise, no taxable investor would want to hold bonds. Hence, to entice these taxable investors into the market for corporate bonds, the rate of interest on such bonds has to be high enough to compensate for the higher tax on interest income. More precisely, for an individual whose marginal rate of personal income tax on interest income is \( T_{pd}^* \), the 'demand rate of interest' (\( rd \)) on
taxable corporate bonds would be the rate on tax exempt bond (rs) grossed up by the marginal tax rate, i.e., ro.\{1 / (1-T_p\_d^*)\}, where ro measures the equilibrium rate of interest on fully tax-exempt bonds (such as those of state and local governments). Since the personal income tax is progressive, the demand interest rate has to keep rising to pull in investors in higher and higher tax brackets, thus giving the continuous, upward sloping curve as pictured below:

![Graph - 6.0](image-url)

The intersection of this demand curve with the horizontal straight line through the point ro / 1-T_c, i.e., the tax-exempt rate grossed up by the corporate tax rate, determines the market equilibrium. If corporations were to offer a quantity of bonds greater than D^*, interest rates would be driven above ro / 1-T_c and some levered firms would find leverage to be a losing proposition. If the volume were below D^*, interest rates would be lower than ro / 1-T_c and some unlevered firms would find it advantageous to resort to borrowing. The market equilibrium defined by the intersection of the two curves will have the following property. There will be an equilibrium level of aggregate corporate debt D^*, and hence an equilibrium debt - equity ratio for the corporate sector as a whole. But there would be no optimum debt ratio for any individual firm. Companies following a no-
leverage strategy would find market among investors in the high tax brackets; those opting for a high leverage strategy (like the electric utilities) would find the natural clientele for their securities at the other end of the scale. But one clientele is as good as the other. And in this important sense it would still be true that the value of any firm, in equilibrium, would be independent of its capital structure, despite the deductibility of interest payments in computing corporate income taxes. Miller also disagrees with the theories that balances the tax advantage of debt with the bankruptcy cost to arrive at the optimal capital structure. Quoting the Warner study on the cost of bankruptcy he comments that "the supposed trade off between the tax gains and bankruptcy cost looks suspiciously like the recipe for the fabled horse-and-rabbit stew--- one horse and one rabbit". However this aspect is dealt with in more detail in the next chapter.

Hence, the plausibility of the Miller model depends on the effective tax rate on equity being substantially lower than that on interest income. The model has been subjected to several criticisms which are as follows:

**Firstly,** the value of the corporate tax shield cannot be considered as a simple discounted value of the future stream of tax savings. With increased borrowing, there has to be enough operating income under varying economic circumstances, so that such a tax shield actually results. It is true that as per the provisions of the Income-Tax regulations, such tax shields can be availed of in different years, but that would affect the time-value of the tax shield. In case of perpetual loss-making, these tax shields may be lost forever.

**Secondly,** according to De-Angelo and Masulis (1980), borrowing is not the only manner in which income can be shielded from tax incidence. Depreciation, investment allowance are other avenues by which tax shields
are generated and so to such extent, such avenues are available to the particular firm, its dependence on debt to generate tax shields may be expected to reduce. Thus if companies are not quite confident of being able to avail of the benefit of tax shields resulting from increased corporate borrowing, the total amount of debt may be lower than as predicted by the model. Hence, the passing on of the corporate tax shield in the form of increased interest rates to convert equity holders into becoming debtholders would also therefore be affected as a result of this uncertainty.

Lastly, firms with a greater degree of non-interest tax shields would be less willing to pass on the tax-shield accruing from interest expenses as increased interest rates on marginal borrowings and this would also reduce total borrowings.

As mentioned earlier, De-Angelo and Masulis (1980), critically examines Miller irrelevance argument under corporate taxes by introducing new variable called non-debt tax shield which frustrates the Miller conclusion about the irrelevance of debt-equity choice. This model predicts that firms will select level of debt which is negatively related to the level of available tax shield substitutes for debt such as depreciation deductions or investment tax credits. Thus if companies are not quite confident of being able to avail of the benefit of tax shields resulting from increased corporate borrowing, the total amount of debt may be lower than as predicted by the model.

The authors have developed the model based on aggregate demand for debt and equity in the market under various conditions like differential personal taxation, bankruptcy cost, agency and other leverage-related costs. It is assumed that investors are differentially taxed so that at least
one investor is in each of the following mutually exclusive and exhaustive personal tax brackets: 

\[(1-t_{pd}) > (1-t_{pe}) (1-t_c)\]  
\[(1-t_{pd}) = (1-t_{pe}) (1-t_c)\]  
\[(1-t_{pd}) < (1-t_{pe}) (1-t_c)\]

Similarly, the authors have examined firm valuation under differential personal taxation by characterising the effects of leverage on before-personal tax cash flows to debt and equity. The state-contingent before personal tax, but after corporate tax cash flows to debt and equity are given by:

<table>
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<th>State outcome</th>
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<td>[D(s)]</td>
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\[X(s) = \text{earnings before interest and taxes},\]
\[D = \text{face value of debt which is assumed fully deductible in calculating the corporate tax bill},\]
\[\Delta = \text{corporate tax deductions resulting from non-cash charges such as accounting depreciation},\]
\[\Gamma = \text{value of tax credits},\]
\[T_c = \text{statutory marginal corporate tax rate}\]
\[\theta = \text{statutory maximum fraction of gross tax liability which can be shielded by tax credits}.\]

Here, \(s_1\) denotes the state in which earnings just cover debt charges. For earnings realizations in the state interval \(s \in [0, s_1]\), the firm is in default, and hence all of the firm's earnings are paid to debtholders: the corporate tax bill is zero, and all corporate tax deductions in excess of earnings are unutilized as are all tax credits. On the other hand, for \(s \in [s_1, \bar{s}]\), no
default occurs, and as such the residual component of the firm's earnings are paid to equity holders and the corporate tax bill can be zero or positive. According, $s_2$ denotes the state in which the corporate tax bill is just driven to zero. It follows that, for $s \in \{s_1, s_2\}$, the corporate tax bill is zero because corporate tax deductions exceed earnings with a consequent loss of excess deductions and all tax credits. Similarly, for $s \in \{s_2, s_3\}$, the corporate tax bill is positive and all deductions and credits are fully utilized but credits are only partially utilized due to the statutory ceiling limiting usable credits to a fraction, $\theta$, of the gross tax liability $t_c[\Delta - \Delta - D]$. As for $s \in \{s_3, s_4\}$, the corporate tax bill is positive and all deductions and credits are fully utilized. However, most important for the model is $s \in \{s_1, s_3\}$, where corporate tax shields are lost to the firm even though no default occurs. The current market value of the firm is given by $V = D + E$ where $D$ and $E$ are the current market valuations at prices $P_d(s)$ and $P_e(s)$ and the before-personal tax cash flows to debt and to equity under the state-contingent are as given below:

$$D = \int_{s_0}^{s} D(s) \cdot P_d(s) \cdot ds = \int_{s_0}^{s_1} B \cdot P_d(s) \cdot ds + \int_{s_1}^{s_2} X(s) \cdot P_d(s) \cdot ds,$$

$$E = \int_{s_0}^{s} E(s) \cdot P_e(s) \cdot ds = \int_{s_0}^{s_1} [X(s) - B - T_c[X(s) - \Delta - B] + \Gamma] P_e(s) \cdot ds,$$

$$+ \int_{s_1}^{s_2} \{X(s) - B + (1 - \theta)T_c[X(s) - \Delta - B]\} P_e(s) \cdot ds,$$

$$+ \int_{s_2}^{s_4} \} X(s) - B \} P_e(s) \cdot ds.$$

The above equation shows that the presence of corporate tax shield substitutes for debt ($\Delta, \Gamma > 0$) implies that the leverage decision is necessarily relevant to the firm. The leverage decision is irrelevant if and only if marginal value of debt financing, $\langle \mathcal{V} / \mathcal{A} \rangle = 0$ for all feasible
decisions $D$. But with $\Delta > 0$ and $I$ or $\Gamma > 0$, it is impossible for $\mathcal{N} / \mathcal{B}$ to vanish identically for all $D$.

However, to highlight the difference between Miller's model and De-Angelo & Masulis model, the authors have first characterize market equilibrium for a world analytically similar to Miller's and have derived his leverage irrelevancy result. Given no corporate tax shield substitutes for debt, partial or total loss of the marginal corporate tax shield benefits of debt never occur. Hence, with technically, $\Delta = I = 0$, $s1 = s2 = s3$. Hence, if relative prices satisfy $\bar{P}_D < \bar{P}_E (1-T_c)$, then $\mathcal{N} / \mathcal{B} < 0$, for all feasible leverage decisions and the firm selects an all equity capital structure. On the other hand, if $\bar{P}_D > \bar{P}_E (1-T_c)$, then $\mathcal{N} / \mathcal{B} > 0$ for all $D$ and an all debt capital is uniquely optimal. Similarly, if $\bar{P}_D = \bar{P}_E (1-T_c)$, the firm would be indifferent among all feasible debt-equity packages of earnings (i.e.; riskless and risky debt) so that the supply curve is perfectly elastic over the entire feasible leverage range. Since the above analysis applies to all firms, the aggregate debt supply curve would be perfectly elastic at relative prices as shown in the figure below:

\[ \bar{P}_D \]
\[ \bar{P}_E (1-T_c) \]

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**Graph -7.0 : Market equilibrium in a “debt and taxes” world**

$D^{\text{debt}} =$ aggregate demand curve, $S^{\text{debt}} =$ aggregate supply curve, $Q =$ equilibrium aggregate quantity of debt, $\bar{P}_D = \bar{P}_E (1-T_c) =$ equilibrium debt price.
However, with positive corporate tax shield substitutes for debt ($A, I' > 0$), Miller’s firm level leverage conclusion no longer holds. Instead, relative market prices will adjust until in market equilibrium, each firm has a unique interior optimum leverage decision. This unique interior optimum exists because there is a constant expected marginal personal tax disadvantage to debt while positive tax shield substitutes imply that the expected marginal corporate tax benefit declines as leverage is added to the capital structure. At the unique optimum, the expected marginal corporate tax benefit just equals the expected marginal personal tax disadvantage of debt. With corporate tax shield substitutes for debt, each firm’s debt supply curve will have a brief perfectly elastic section and then be smoothly upward sloping as shown in the figure:

![Graph](image)

They show that with any of these leverage-costs present, each firm will have a unique optimum capital structure regardless of whether non-debt shields are available. Moreover, market prices will capitalize personal and corporate taxes in such a way as to make bankruptcy costs a significant consideration in a tax benefit - leverage cost tradeoff. This is of critical interest because it mitigates Miller’s ‘horse and rabbit stew’ criticism of tax benefit - leverage cost models of optimal capital structure.
The authors had formed five hypotheses, which are given as under. They had tried to prove these hypotheses' empirical evidences but there was no supporting statistical proof of these hypotheses.

1. The leverage decision is relevant to the individual firm in the sense that a pure change in debt (holding investment constant) will have a valuation impact.

2. In equilibrium, relative market prices will imply a net (corporate and personal) tax advantage to corporate debt financing.

3. Firms with lower investment related tax shields (holding before-tax earnings constant) will employ greater debt in their capital structures.

4. Firms subject to greater marginal bankruptcy costs will employ less debt.

5. Firms subject to lower corporate tax rates will employ less debt in their capital structures (holding earnings constant).

Meir I. Schneller (1980) introduced a new concept of liquidity into the debate on Miller (1977) conclusions and arrived at contradictory results. So far in the capital structure debate, firms were always assumed to be liquid. Therefore they could assume that paying dividend and or retaining profits are prefect substitutes of each other. But with the existence of bankruptcy probabilities and the probability of firms becoming illiquid, these two terms will assume totally different significance. Schneller model analyses the capital structure theory into different states, one in which a firm is liquid and the other in which a firm is illiquid. Schneller conclusion is that when the dividend-paying firm is always liquid, the solution to the capital structure problem coincides with that of Miller’s (1977). For the earning-retaining firm without bankruptcy, the optimal capital structure is always a corner solution. When bond default is allowed, an interior solution is
possible. He therefore basically concludes that there is an optimal solution and that the debt should be used as long as present value of liability to the shareholder is lower than the proceeds received when the bonds are issued.

Another model put forward by Auerbach & King (1983), shows that in a world in which investors face different tax rates, no equilibrium exists unless constraints are imposed. They have explored the portfolio behaviour of households and financial behaviour of firms in a general equilibrium model with taxes and uncertainty. Given certain conditions on the securities available in the market, investors would be unanimous in supporting value maximisation and firms would be indifferent as to their choice of debt-equity ratio. When this is the case, the equilibrium would be segmented, and the aggregate debt-equity ratio will equal the ratio of the wealth of those who, for tax reasons, prefer debt to the wealth of those who prefer equity. But when the conditions do not hold, value maximisation would no longer be the unambiguous objective of the firm, and investors in general would hold both debt and equity. Authors have developed a model for optimal portfolio behaviour on part of investors in the absence of taxes. Here, the firm is unable to affect the implicit prices of contingent liabilities faced by its investors by altering its debt-equity ratio. Hence, in the absence of taxes, the Modigliani-Miller theorem will hold good. As regards the optimal portfolio, authors argue that investors those who have tax preference for equity would wish to hold as much equity as possible for tax purposes. To do so, without incurring excessive risk, they will tend to hold more of their portfolio in low risk stocks. The opposite is true of individuals for whom debt is superior for tax reasons. These investors would want to hold as little equity as possible to obtain the desired degree of risk, and
would do so by holding small amounts in risky firms. Therefore, it is difficult to reconcile value maximisation with the existence of portfolios that contain both debt and equity. They further suggested that for the M & M theorem to be held in a world without taxes, short sales of debt and equity must be allowed in order that investors be able to engage in home-made leverage. In contrast, once the taxes are allowed for, some constraints are essential for an equilibrium to exist, for these constraints enable an equilibrium to be reached, in which firms are indifferent as to their choice of debt-equity ratio.

A review of recent contributions to the literature on the impact of taxes on corporate financial behaviour has been provided by Haugen and Senbet (1986). However, they have focused only on the tax dimension of corporate finance and have purposely ignored other dimensions, such as agency cost and other considerations. They start with significant modifications in the Miller (1977) equilibrium model to account for redundant tax shelters or marginal personal tax rates that increase with income level. They in turn, result in significant changes in the character of the equilibrium. These changes include the possibility of optimal leverage ratios and implicit tax rates in corporate debt returns that are well below the corporate tax rate. Recent evidence also seemed to support a positive tax effect of leverage, and this was consistent with earlier evidence of Modigliani and Miller (1966). On the other hand, they found that the evidence was not supportive of a negative cross-sectional relationship between leverage and the relative use of non-debt tax shields. This empirical puzzle was potentially explained by ongoing research that endogenizes the firm's investment decisions along with its capital structure decisions. Moreover, if personal income from equity is taxed, Miller would predict an implicit tax rate in debt
returns that is above the corporate rate. Studies concentrating on short-term debt issues have found evidence that implicit rate is as high as the statutory corporate tax rate at the federal level, otherwise, the evidence supports a substantially lower implicit tax rate. Hence, the authors suggest a positive tax effect of debt financing and an important role for taxes in the actual management of capital structure.

References


Costs related to Bankruptcy and Financial Distress

One of the characteristics of debt is that the interest payable on it is a fixed liability of the firm. Irrespective of the fact that the firm has made profit or loss, it has to honour its interest liability. Bankruptcy arises when a firm is not able to meet its fixed obligations. The magnitude of these fixed obligations has direct relationship with the probability of bankruptcy of the firm. Higher are these obligations, higher is the probability of bankruptcy. In the event of bankruptcy, the firm's ownership is transferred from equity holders to the debt-holders. In more serious cases, debt holders can be asked to voluntarily forgo a portion of their claims so as to keep the firm's reputation with its lenders and often necessitating representation of debtor in the management. All these results into certain costs, known as bankruptcy costs. The costs are of two kinds, direct and indirect. Direct costs include lawyers' and accountants' fees, other professional fees, and the value of the managerial time spent in administering the bankruptcy. Indirect costs include lost sales, lost profits, and possibly the inability of the firm to obtain credit and unwillingness of customers and suppliers to do business with the firm except under less favourable terms. Bankruptcy costs have assumed significance in the literature of capital structure because it is supposed to balance the benefits of debt financing arising out of the tax implications. Kraus and Litzenberger (1973), formally introduces the tax advantage of debt and bankruptcy penalties and shows that the firm's financing mix determines the states in which the firm will earn its debt obligation and receive the tax savings attributable to debt financing. The firm's financing mix also determines the states in which the firm is insolvent and incurs bankruptcy penalties. The problem of optimal capital structure is, therefore, formulated as the determination of that level of debt
such that the resulting mixture yields the maximum market value of the firm. Hence, contrary to the additional net income approach to valuation, if the firm's debt obligation exceeds its earnings in some states, the firm's market value may not be necessarily an increasing function of its debt obligation.

Modigliani and Miller (1963) have not recognised the bankruptcy costs in their famous "revised proposition" wherein they concluded that the use of borrowed funds reduces the cost of capital of a levered firm when the account is taken of the deductibility of interest payments from corporate-tax liabilities. According to Baxter (1967), such a conclusion, however, does not hold good because of the risks normally associated with servicing and refinancing outstanding debt. It becomes difficult to obtain debt financing unless creditors believe that there is a sufficient equity cushion. Once the 'acceptable' amount of leverage has been passed, the rate of interest on debt will begin to rise and may cause the cost of capital for the overlevered firm to increase. If debt rises significantly relative to firm assets, various additional costs are incurred by the firm. These costs are manifested in the unwillingness of customers and suppliers to do the business with the firm except under less favourable terms or the debt holders may be asked to voluntarily forgo a portion of their claims so as to keep the firm's reputation with its lenders. Often representation of debt-holders in the management becomes a necessity. As leverage rises further, the firm can experience technical default or, in the extreme, economic insolvency.

Baxter agrees with the basic M & M's arbitrage mechanism and says that it is perfectly possible to make an expected profit by selling the pure equity firm and buying a mixture of debt and equity in the levered firm, but, there is also substantial risk involved. This risk results from the fact that the
unlevered firm can experience changes in earnings, but a succession of bad years may lead a levered firm into liquidation. The reason being that a levered firm may not be able to borrow further to meet its interest obligations because of its bankrupt state. Bankruptcy involves substantial administrative expenses and other costs, which causes further decline in the sales and earnings of the levered firm in liquidation. Hence, the total value of the levered firm can be expected to be less than that of the all-equity company. As mentioned above, bankruptcy is a more likely event in the case of a levered firm, and the associated costs can lead to a higher probability of income variations in the levered firm. This in turn would increase the variance of the 'expected earnings' for the levered firm and reduce the overall market value of that firm. Arbitrage operations which are necessary to bring the cost of capital of levered and unlevered firms into line need not occur because equity in unlevered firm may well be more desirable than a combination of debt and equity in levered firm. Excessive leverage can thus, lead to an increased overall cost of capital.

Further, Baxter refers to the direct costs involved in bankruptcy proceedings and reorganisation. According to him, financially-embarrassed firms usually have substantial difficulty in obtaining new capital. The process of reorganisation involves the raising of new capital from currently-interested parties (equity and debt holders) or from the public in the form of trustee certificates. These certificates are senior to outstanding debt; therefore their issue can be extremely risky and costly to existing security holders. The author is of the view that in case of industrial companies, the court would authorize the issue of such certificates only where it believes that such new capital would eventually increase the returns of the company's old creditors and owners, but in the case of utilities and
railroads where the public interest requires the continuance of operations by the bankrupt company, such securities would be authorised even at the expense of the old security holders. This is a real cost of reorganisation (and hence, bankruptcy).

There are also other direct costs of bankruptcy proceedings, recognised in the form of trustee's fees, legal fees, referee's fees etc., and in the time lost by executives in litigation. However, the most important cost of bankruptcy proceedings is the negative effect that financial embarrassment may have on the stream of net operating earnings of the firm. For example, the firm may find it difficult to obtain trade credit, and customers may question its reliability and permanence as a source of supply or may choose to deal elsewhere. Further, questionable financial condition may be equivalent to negative publicity about the integrity of the firm. This would be true to a lesser extent for industrial companies, but would certainly be the case for banks and other financial institutions.

Baxter has also indentified the indirect bankruptcy costs arising from the bankruptcy process which bears direct relevance. The bankruptcy trustee, as an agent of the court, has the authority to operate the firm. Unlike management, the trustee is responsible to the court and not directly to the firm's claim-holders. Hence, he might not necessarily act in the claim-holder's interests. To the extent that a trustee makes sub-optimal decisions which would not have been made in his absence, the firm incurs an opportunity cost which can be regarded as a cost of bankruptcy.

The figure below summarizes the above argument. Returns to the equity-holders are measured on the vertical axis and returns to bondholders on the horizontal axis. OF' represents the fixed debt service incurred by the corporation each year.
When net operating earnings are OE, or any amount in excess of OF, OF is paid to the bondholders and the remainder (F'E') is available to the stockholders. If earnings happen to fall to OF, the bond interest is paid in full and the returns to the equity owners are zero for that time period. If earnings fall below OF to OG, the stockholders sustain a loss F'G'. Such a situation cannot be sustained indefinitely, however if the earnings remain at OG, eventually the firm will have to default on its debt obligation and the bondholders will force bankruptcy.

Therefore, the author concludes that when the restrictive assumptions of Modigliani and Miller are relaxed in accordance with the existing firms in real life, the result is the traditional cost of capital curve, declining at low amounts of debt but rising where leverage becomes substantial.

On the other hand, evidence on the direct costs of corporate bankruptcy was provided by Warner (1977). However, he concluded that the direct bankruptcy costs are insignificant. Warner's study involved 11 railroad firms which were in bankruptcy proceedings between 1933 and 1955. These process-related costs were documented by the railroad's regulatory agency (ICC) and were compared to the firm's total market value (debt and equity) for seven years prior to the bankruptcy petition date. He finds that
the direct costs of bankruptcy averaged about 1 percent of market value for seven years prior to bankruptcy, but rose to 5.3 percent of market value just prior to the petition date. Warner infers that these percentages are relatively small and that the expected direct bankruptcy cost argument is not very helpful in assessing optimum capital structure decisions. However, he cautions that the costs are not small enough to be completely neglected in the discussions on capital structure policy. He summarizes that it would seem reasonable to conclude that for large-size firms, the expected direct costs of bankruptcy are definitely lower than the tax savings on debt. However, on the other hand he admits, that his results are based on a narrowly defined bankruptcy cost definition and his small sample of railroad bankrupt firms are not necessarily indicative of the population of all firms. Even according to Altman (1984), there were numerous problems with Warner's analysis and these were important given the degree to which others rely upon the study. Most important was the total lack of specification and measurement of indirect costs. He also finds that the average market value of his small, restricted sample of rail-road firms falls continuously for seven years before bankruptcy approaches. This can be true for railroads, which may take an excruciatingly long time to 'die', but it is certainly not necessarily true for the vast majority of failing firms. Hence, Warner's empirical work does not specifically address the marginal character of the cost/benefit analysis of the capital structure decision and does not consider time value elements.

Miller (1977) also argues that the expected bankruptcy costs are relatively insignificant and thus should not affect a firm's financing decision. He also criticizes Warner (1977)'s data which covers only the direct costs of reorganization in bankruptcy. He is of opinion that if the indirect cost of
bankruptcy were included, the total costs might have emerged significant enough to affect a firm's financing decision. However, he says that if the direct and indirect bankruptcy costs of a loan contract dilutes the net effects of the tax savings, other forms of debt contracts with lower expected bankruptcy costs can be used instead. Here, an important case of income bonds was given. Interest payments on such bonds were made only in the year when income was earned by the firm. But, if the income was not earned in any year, the bond-holders did not carry any rights of forcing the firm into liquidation. Further, such interest payments were fully tax-deductible. The interest payments if not paid in any year, cumulated for a short period of time - usually two to three years - and then, were added to the principal. Hence, the income bonds seemed to have all the tax advantages of debt, without the bankruptcy cost disadvantages. However, such bonds were rarely issued and hence, it proved that they were more theoretical than practical. This suggests that the bankruptcy costs were not so prominent to induce the extensive use of such bonds.

As such, the author summarizes that there is unnecessary emphasise on the bankruptcy costs in the discussions of optimal capital structure policy. Specially, for the large-size businesses, the supposed trade-off between tax gains and bankruptcy costs gives a good "recipe for the fabled horse-and-rabbit stew—one horse and one rabbit."

The indirect costs of bankruptcy were empirically investigated by Altman (1984). In this paper, the author provides evidence as to the size of bankruptcy costs and actually measures the indirect costs of bankruptcy, namely the lost profits that a firm can be expected to suffer due to significant bankruptcy potential, customer wariness, dealer problems, and managerial opportunity costs. Further, a simple format for measuring the
present value of expected tax benefits from interest payments on leverage as an trade off with present value of expected tax benefits from interest payments on leverage is provided. Here, he argues that in addition to the costs of liquidation, there are other relevant costs including those which arise due to the process of bankruptcy (either liquidation or reorganisation) and those due to the perceived significant potential of bankruptcy (lost opportunities and abnormal loss of sales and profits). He includes the opportunity costs of lost managerial energies as part of the indirect costs which was in contrast to the Warner’s analysis of direct costs of bankruptcy where he had listed managerial opportunity costs as a direct cost of bankruptcy. Other aspects of indirect costs which have been included is the lost sales and profits resulting when potential buyers of a product or service perceive that default is likely. They were found to occur even after the firm has declared bankruptcy and is attempting to operate and manage a return to financial health. Further they were not limited to firms which actually do fail. Firms which have high probabilities of bankruptcy, whether they eventually fail or not, still can incur these costs.

In an attempt to measure the bankruptcy costs, Altman included 19 industrial firms which went bankrupt over the period 1970-78 and a second sample of seven recent large bankrupt companies. The results were quite strong indicating that the bankruptcy costs are not trivial. In fact, in many cases they exceeded 20 percent of the value of the firm measured just prior to bankruptcy and even in some cases measured several years prior to bankruptcy. On average, bankruptcy costs ranged from 11 percent to 17 percent of firm value up to three years prior to bankruptcy. Indirect costs were essentially defined as unexpected losses due to the financial embarrassment of the firm. A second method for measuring indirect costs
was based on security analyst's expectations of earnings vs. actual earnings, and these results also show that bankruptcy costs are significant. The present value of expected bankruptcy costs for many bankrupt firms was found to exceed the present value of tax benefits from leverage. Hence, this implied that bankruptcy-cost factor is a potentially important ingredient in the discussion of optimum capital structure, especially, when the firms were overleveraged.

Castanias (1983) examines the relationship between failure rates and leverage measures for smaller firms in different businesses and concludes that the capital structure irrelevance hypothesis is not consistent with his results. Based on nonparametric cross-sectional tests of bankruptcy risk and leverage, Castanias finds that firms that tend to have 'high' failure rates also tend to have less debt. More important, his results state that 'ex-ante' default costs are large enough to induce a firm to hold an optimum mix of debt and equity, i.e., it influences debt policy. Although Castanias acknowledges the significance of the indirect costs of bankruptcy, he concentrates on industry data and does not attempt to measure unique firm characteristics, and the indirect bankruptcy costs. Castanias argues that a useful alternative measure of a firm's bankruptcy probability is the frequency of insolvency in its industry. With this measure, he goes on to test whether firms act as if they have optimal leverage ratios that involve trading off the net tax advantage of debt with the expected bankruptcy cost disadvantage. If they do, then firms with higher probabilities of bankruptcy should choose lower leverage ratios, other things remaining the same. Hence, the author concentrates on the bankruptcy probability characteristics of the industry as a whole and concludes that higher the market risk, lower would be the demand for leverage in the industry.
The issuance of secured debt can increase the total value of a firm, even in the absence of corporate taxes (as argued by Scott, 1977). For example, he states, that one of the hazards of engaging in commercial activity lies in the fact that a disgruntled customer, supplier, or injured party may file suit and win legal damages from the firm. Since there is always the possibility that the firm will become obligated to pay future legal damages, the present value of expected damages constitute a liability of the firm. By the issuance of secured debt, the firm can increase the value of its securities by reducing the amount available to pay legal damages in the event that the firm should go bankrupt. This follows since (1) upon bankruptcy the claim of a secured creditor to the assets pledged as security ranks ahead of claims for legal damages, and (2) potential victors in legal suits are unable to protect themselves from the issuance of secured debt if, at the time of issuance, they do not yet have cause for legal action.

Scott presents an analysis which shows that the issuance of secured debt can increase the value of the firm. Since when the firm sells secured debt, stockholders are selling not only a promise of future repayment but the right to be first in the order of priority upon bankruptcy as well. This is a valuable right, which stockholders themselves cannot exercise because the nature of the corporate form requires that stockholders rank last upon bankruptcy. Since they cannot exercise it, it follows that it is optimal for them to sell it. Therefore, one would expect to find that in practice firms attempt to issue claims which have characteristics similar to the secured debt. The most important of these characteristics is that upon default their claim has priority over unprotected creditors. Hence, this paper demonstrated through valuation formulas derived for equity, subordinated
debt, and secured debt that a firm following an optimal policy should issue as much secured debt as possible.

Haugen and Senbet (1978), challenges the contemporary view of optimal capital structure by arguing that bankruptcy costs, which affect the capital structure decisions, are trivial or non-existent if one merely assumes that capital market prices are competitively determined by rational investors. In other words, they argue that bankruptcy costs related to capital structure decisions cannot be of sufficient magnitude to act as an offset to the tax subsidy and hence provide an reconciliation between the M-M theorem and observed firm behaviour. They say that the truly significant 'penalty' costs that are commonly attributed by other authors to bankruptcy are more appropriately attributed to liquidation, which is a capital budgeting decision and hence, should be considered independent from the event of bankruptcy. Here, the author assumes a market in which there are a large number of participants i.e. customers and suppliers who are all rational in their behaviour. Under this assumption, it is argued that the indirect costs are insignificant. Decisions on the part of these individuals to discontinue or modify relationships with the firm are likely to be based on perceptions regarding its expected tenure as an ongoing entity. The expected term of existence may well be reduced by the decline in profitability that results in bankruptcy, but it is not affected by the mere transfer of ownership that is bankruptcy. In particular, they indicate that all costs associated with liquidating or dismantling the assets of the unprofitable firm are unrelated to capital structure or bankruptcy. These costs include the indirect bankruptcy costs stemming from disruption in supplier - customer relationships and to some extent the costs associated with the denial of carried-over tax losses. Further, the cost of avoiding the transfer of
ownership (from stockholders to creditors) are given by the transactions costs associated with selling new shares and using the proceeds to repurchase all fixed claims on the assets of the firm. The present value of these expected transaction costs are argued to be quite small relative to the government subsidy associated with debt financing. In any case, if rationality prevails, the total expected value of the direct and indirect costs of bankruptcy is claimed to be limited to the lesser of these expected bankruptcy costs and the expected cost of avoiding the transfer entirely. Hence, it followed from their argument that the present value of expected costs associated with terminating the operations of the firm are liquidation costs and are perfectly independent from the event of bankruptcy.

Titman (1984) analyzes an issue closely related to bankruptcy: the impact of debt policy on a firm's liquidation decision. He observes that liquidation of a firm can benefit stockholders and bondholders by allowing the firm to break various implicit or explicit commitments with employees, customers, or suppliers. Titman observes that these affiliated parties can be materially hurt by a firm's liquidation. Since there can be a causal link between bankruptcy and the liquidation decision, these groups expect to be hurt if the firm falls into financial distress. Given their risks of losses under liquidation, stockholders can in times of financial distress extract concessions from the various parties with contractual ties to the firm so as to avoid bankruptcy. Titman argues that these risks cause financially weak firms to suffer significant losses in revenue prior to bankruptcy because of the adverse reactions of these suppliers, employees, and customers to increase in their risk of future losses.

Titman and Shapiro, suggest that the costs of financial distress yield a clear economic rationale for firms that maximize value to appear risk
averse in choosing their operating and financial decisions. Titman argues that this risk averse behaviour should be greater for firms producing relatively unique goods. The losses to such a firm's suppliers, customers and employees from liquidation are greater because of higher costs, both in abrogating customer and employee contracts to supply specialized services and in customers losing specialized servicing for their product.

While the introduction of bankruptcy costs in the presence of tax subsidies leads to a theory which defines an optimal capital structure, it is argued that this theory is seriously incomplete since it implies that no debt should ever be used in the absence of tax subsidies if the bankruptcy costs are positive.

Bulow and Shoven (1978), investigates the circumstances under which a firm will be forced into bankruptcy. The model developed can be viewed as part of a larger framework which would be necessary to address the question of optimal financial policy in the world of taxation, bankruptcy costs, uncertainty, etc. The model focuses on the conflicts of interest among various claimants to the assets and income flows of the firm (the stockholders, bondholders, and bank lenders). They illustrate the importance of the liquidity of the assets and the maturity structure of the debt, in setting off bankruptcy. Several examples have been highlighted by the author to arrive at the above conclusion. The latter part of the paper considers merger with the healthy company as an alternative to bankruptcy. Under this section they have shown that the tax system has an important effect on the choice between merger and bankruptcy. Hence the major purpose of this article had been to establish the precise conditions under which bankruptcy would occur in a model with three asymmetrical claimants on the assets and income flows of the firm. The key assumption
of the model being that the bank plus equity holders have the bankruptcy decision power and act in their own joint interest, not considering the outcome of the third set of claimants, the bondholders. The actions of the bank plus the equity holders are therefore found to be not based on maximising the total value of the firm and may be taken at the expense of the bondholders.

Hence, it has been viewed above, that there exists conflicts of interests among various claimants to the assets and income flows of the firm. As the capital structure of a firm decides the proportion of claims of various stakeholders in the firm, the conflicts of interests of these stakeholders gives rise to certain costs of capital structure recognised as the agency costs of financing mix. Such agency costs are in turn, believed to act as a trade-off against the expected benefits of a particular financing decision, resulting in an optimum capital structure policy. In fact, there is an extensive literature on the agency costs of capital structuring decision which has been up in the following chapter.

References


Debt - Equity Agency Costs

Possibilities of financial distress may give rise to certain conflicts of interest between stockholders and debt holders, as viewed in the earlier chapter. During times of financial distress, both claimants would want the firm to recover, but their individual interests may be in conflict. These conflicts stem from the fact that the firm's debt holders bear the default risk while shareholders have limited liability residual claims and further, they are seen as influencing the managerial decision-making process. During the times of financial distress, there is an incentive for shareholders to forsake the objective of maximising the overall market value of the firm and pursue self-interest promoting schemes. Though these conflicts are at zenith during times of financial distress, they exist at other times too, regardless of the financial situation of the firm. This conflict of interest gives rise to certain costs, referred as agency costs. Agency costs, has been considered as a significant determinant of capital structure by researchers in recent times.

Seminal work in this area was conducted by Jensen and Meckling (1976). They identified two types of inherent conflicts. Conflicts between shareholders and managers and conflicts between shareholders and debtholders.

Agency cost of Equity

Conflict between shareholders and managers arise from their agency relationship where shareholders delegate some decision-making authority to the managers. Here, the authors focus on how to structure the contractual relation between the shareholders and manager to provide appropriate incentives for the manager, such that he makes choices that
would maximise the shareholders' welfare. It is shown that if both parties to the relationship are utility maximizers, there exists chances that the managers would not always act in the best interest of the shareholders. The shareholders can limit the divergence from his interest by establishing appropriate and adequate incentives for the manager and also by incurring monitoring costs to limit his diverging activities. In addition, in some situations the manager is expected to guarantee by himself that he would not take certain actions which would harm the shareholders or to ensure that the shareholder will be compensated if he does take such actions. However, it is generally impossible for the shareholder or the manager without incurring any costs, to ensure that the manager will always make optimal decisions from the shareholders' view-point. Hence, in most agency relationships, the shareholders and managers would incur positive monitoring and bonding costs. However, inspite of all that there would be some divergence between the manager's decisions and those decisions which maximises the welfare of the shareholders. The cost of this divergence is a cost of the agency relationship.

Agency costs can be defined as the sum of : (1) the monitoring expenditures by the shareholders (firm), (2) the bonding expenditures by the manager and (3) the residual loss.

J & M has analyzed the effect of outside equity on agency costs by comparing the behaviour of a manager when he owns 100 percent of the residual claims on a firm, to his behaviour when he sells off a portion of those claims to outsiders. The critical assumptions made under this section are as follows:

1. All taxes are zero.
2. All outside equity shares are non-voting.
3. All dynamic aspects of the multi-period nature of the problem are ignored by assuming there is only one production-financing decision to be made by the entrepreneur.

4. The entrepreneur-manager's money wages are held constant throughout the analysis.

5. There exists a single manager with ownership interest in the firm.

If a wholly owned firm is managed by the owner, he will make operating decisions which will maximize his utility. These decisions will involve not only the benefits he derives from pecuniary returns but also the utility generated by various non-pecuniary aspects of his entrepreneurial activities such as the physical appointments of the office, purchase of production inputs from friends, etc.

However, if the manager is assumed to hold less than 100 percent of the residual claim, agency costs will be generated by the divergence between his interest and those of the outside shareholders, since then, he will bear only a fraction of the costs of any non-pecuniary benefits he takes out in maximising his own utility. Hence though shareholders do not capture the entire gain from their profit enhancement activities, they do bear the entire costs of these activities. For e.g. managers can invest less effort in managing firm resources and may be able to transfer firm resources to their own personal benefit by consuming perquisites, by building empires etc. By doing so, the manager captures only a fraction of the total resources of the firm. But he would have to bear the entire cost of refraining from these activities. As a result, managers overindulge in these pursuits related to the level that would maximise firm value. This inefficiency is reduced the larger is the fraction of the firm's equity owned by the managers.
The owner-manager's interest for wealth and non-pecuniary benefits is represented in figure below by way of his utility curves, $U_1$, $U_2$, $U_3$. The indifference curves will be convex as drawn, as long as the owner-manager's marginal rate of substitution between non-pecuniary benefits and wealth diminishes with increasing levels of the benefits. For the 100 percent owner-manager, this presumes that there are not perfect substitutes for these benefits available, as to some extent they are job specific.

Market value of the stream of Manager's Expenditures on Non-Pecuniary Benefits

Graph -10.0

When the manager has 100 percent of the equity, the value of the firm will be $V^*$ where the indifference utility curve $U_2$ is tangent to $VF$, and the level of non-pecuniary benefits consumed is $F^*$. If the owner sells the entire equity but remains as manager, and if the equity buyer can, at zero cost, force the old owner (as manager) to take the same level of non-pecuniary benefits as he did as owner, then $V^*$ is the price the new owner will be willing to pay for the entire equity. In general, however, it is not expected of the new owner to be able to enforce identical behaviour on the old owner at zero costs. If the old owner sells a fraction of the firm to an outsider, he, as manager, will no longer bear the full cost of any non-pecuniary benefits he
consumes. Suppose the owner sells a share of the firm, \( 1 - \alpha \), \((0 < \alpha < 1)\) and retains for himself a share, \( \alpha \). If the prospective buyer believes that the manager will consume the same level of non-pecuniary benefits as he did as full owner, the buyer will be willing to pay \((1 - \alpha) V^*\) for a fraction \((1 - \alpha)\) of the equity. Given that an outsider now holds a claim to \((1 - \alpha)\) of the equity, however, the cost to the manager of consuming $1 of non-pecuniary benefits will no longer be $1. Instead, it will be \(\alpha \times 1\). If the prospective buyer actually paid \((1 - \alpha)V^*\) for his share of the equity, and if thereafter the manager could choose whatever level of non-pecuniary benefits he liked, his budget constraint would be \(V_1P_1\), in the figure and has a slope equal to \(-\alpha\). Including the payment the owner receives from the buyer as part of the owner's post-sale wealth, his budget constraint, \(V_1P_1\), must pass through \(D\), since the manager can, if he wishes to, have the same wealth and level of non-pecuniary consumption, he consumed as full owner.

However, if the owner-manager is free to choose the level of perquisites, \(F\), subject only to the loss in wealth he incurs as a part owner, his welfare will be maximised by increasing his consumption of non-pecuniary benefits. He will move to point \(A\) where \(V_1P_1\) is tangent to \(U_1\) representing a higher level of utility. The value of the firm falls from \(V^*\) to \(V_0\) i.e., by the amount of the cost to the firm of the increased non-pecuniary benefits rises from \(F^*\) to \(F_0\).

If the equity market is characterized by rational expectations the buyer will be aware that the owner will increase his non-pecuniary consumption when his ownership share is reduced. If the owner's response function is known or if the equity market makes unbiased estimates of the owner's response to the changed incentives, the buyer will not pay \((1 - \alpha)V^*\) for \((1 - \alpha)\) of the equity.
The distance $V^*-V_0$ is the reduction in the market value of the firm engendered by the agency relationship and is a measure of the "residual loss" defined earlier. In this example, the residual loss represents the total agency costs engendered by the sale of outside equity because monitoring and bonding activities have not been allowed.

**The role of monitoring and bonding activities in reducing agency costs**

In the above analysis, the potential for controlling the behaviour of the owner-manager through monitoring and other control activities have been ignored. In practice, however, it is usually possible by expending resources to limit the non-pecuniary benefits enjoyed by the owner-manager. These methods include auditing, formal control systems, budget restrictions, and the establishment of incentive compensation systems which serve to more closely identify the manager's interests with those the outside equity holders. The figure below portrays the effects of monitoring and other control activities in the situation presented in the figure above. Without monitoring, and with outside equity of $(1-\alpha)$, the value of the firm will be $V'$ and non-pecuniary expenditures $F'$. Let $F(M, \alpha)$ denote the maximum perquisites the manager can consume for alternative levels of monitoring expenditures, $M$, given his ownership share $\alpha$. Since the current value of expected future monitoring expenditures by the outside equity holders reduce the value of any given claim on the firm, the outside equity holders will take this into account in determining the maximum price they will pay for any given fraction of the firm's equity. Therefore, given positive monitoring activity the value of the firm is given by $V = V - F(M, \alpha) - M$. 


The vertical difference between the VF and BCE curves is $M$, the current market value of the future monitoring expenditures. If it is possible for the outside equity holders to make these monitoring expenditures and thereby to impose the reductions in the owner-manager's consumption of $F$, he will voluntarily enter into contract with the outside equity holders which gives them the rights to restrict his consumption of non-pecuniary items to $F^\prime$. He finds this desirable because it will cause the value of the firm to rise to $V^\prime$. Given the contract, the optimal, monitoring expenditure on the part of the outsiders, $M$, is the amount $D-C$. The entire increase in the value of the firm that accrues will be reflected in the owner's wealth, but his welfare will be increased by less than this because he forgoes some non-pecuniary benefits he previously enjoyed.

Hence, in general if the agency costs engendered by the existence of outside owners are positive, it will pay the shareholders to sell out to an owner-manager who can avoid these costs. However, we don't find large corporations individually owned with a tiny fraction of the capital supplied by the entrepreneur in return for 100 percent of the equity and the rest simply borrowed.
Agency costs of Debt
Conflict between equityholders and debtholders arise because of the several effects, the debt type claims (i.e., non-residual claims) have on the financial structure of a firm. These effects give rise to certain costs, which are as follows: (1) the cost of incentive effects associated with highly leveraged firms, (2) the monitoring costs these incentive effects engender, and (3) bankruptcy costs. J & M has identified these as agency cost of debt, associated with the existence of debt claims on a firm.

The incentive effects associated with debt
The debt contract gives equityholders an incentive to invest suboptimally. More specifically, the debt contract provides that if an investment yields large returns, well above the face value of the debt, equityholders capture most of the gain. If, however, the investment fails, the debtholders bear most of the costs. As a result, equityholders may benefit from investing in very risky projects, even if they are value-decreasing. Such investments result in a decrease in the value of the debt. Equityholders bear this cost to debtholders, however, when the debt is issued in the case, where the debtholders correctly anticipate equityholders' future behaviour. In this case, the equityholders would receive less for the debt than they otherwise would. Thus, the cost of the incentive to invest in value-decreasing projects created by debt is borne by the equityholders who issue the debt. This effect, generally called the 'Asset Substitution Effect', is an agency cost of debt financing.

The role monitoring and bonding costs
It would be possible for the bondholders, by the inclusion of various covenants in the debt contract to limit the managerial behaviour. These covenants may result into reductions in the value of the bonds giving rise to agency costs. To completely, protect the bondholders from the incentive
effects, the provisions which impose constraints on management's decisions regarding such things as dividends, future debt issues, and maintenance of working capital would have to be detailed and cover most operating aspects of the enterprise including limitations on the riskiness of the projects to be undertaken. The costs involved in writing such provisions, the costs of enforcing them and the reduced profitability of the firm (reduced because the covenants occasionally limit management's ability, to take optimal actions on certain issues) would likely be non-trivial. The bondholders will have incentives to engage in the writing of such covenants and in monitoring the actions of the manager to the point where the nominal marginal costs to them, of such activities, is just equal to the marginal benefits they perceive from engaging in them. In addition the manager has incentives to take into account the costs imposed on the firm by covenants in the debt agreement which directly affect the future cash flows of the firm since they reduce the market value of the claims. Because both the external and internal monitoring costs are imposed on the owner-manager it is in his interest to see the monitoring is performed in the lowest cost way.

**Bankruptcy and reorganization costs**

The third major component of debt which helps to explain why debt doesn't completely dominate capital structures is the existence of bankruptcy and reorganisation costs. In practice, bankruptcy is not costless. If there were no costs associated, the total market value of the firm would not be affected by increasing the probability of its incurrence. Hence, it is costly to write contracts representing claims on a firm which delineate the rights of holders for all possible contingencies. Firms incur obligations daily to suppliers, to employees, to different classes of investors, etc. So long as
the firm is prospering, the adjudication is not a problem. But when the firm has difficulty in meeting some of its obligations, the issue of priority of those claims pose problems. As such bankruptcy is not costless, and generally involves an adjudication process which itself consumes a fraction of the remaining value of the assets of the firm. Thus the cost of bankruptcy will be of concern to potential buyers of fixed claims in the firm since their existence will reduce the payoffs to them in the event of bankruptcy. Hence, the total value of the firm will fall, and the owner-manager equity holder will bear the entire wealth effect of the bankruptcy costs as long as potential bondholders make unbiased estimates of their magnitude at the time they initially purchase bonds.

In summary, the agency costs associated with debt consist of: (1) the opportunity wealth loss caused by the impact of debt on the investment decisions of the firm, (2) the monitoring and bonding expenditures by the bondholders, (3) the bankruptcy and reorganisation costs.

Recent approaches to the modeling of agency costs focus primarily on the conflicts identified by Jensen & Meckling (1976), to arrive, at an optimal capital structure. All the other theories based on agency problems use one of the conflicts introduced by Jensen and Meckling as a starting point. Consequently, we have classified the remaining section into two subsections corresponding to the conflict between equityholders and managers and the conflict between equityholders and debtholders.

**A. Conflicts between Equityholders and Managers**

Managers and investors disagree over an operating decision and managers are assumed to want always to invest all available funds even if paying out cash is better for investors in Jensen (1986) and Stutz (1990) models. They
share a common concern with regard to manager-shareholder conflicts, hence both the theories are more or less the same. Debt payment reduces the free cash flow in Stulz (1990), as in Jensen (1986). The cost of debt is that debt payments may more than exhaust free cash, reducing the funds available for profitable investment.

The optimal capital structure is determined by trading-off the benefit of debt in preventing investment in value decreasing projects against the cost of debt to provide investment in value increasing projects. Firms with an abundance of good investment opportunities can be expected to have low debt levels relative to firms in mature, slow growth cash rich industries. Further, firms whose value-increasing investment opportunities create more value than the value decreasing ones destroy, will have less debt than firms in the opposite situation. The reason is that such firms are primarily concerned with not losing the value creating opportunities. Though debt partly mitigates the agency problem, Stulz argues that, in general managers will be reluctant to implement the optimal debt levels but are more likely to do so the greater is the treat of takeover. Thus, firms more likely to be takeover targets can be expected to have more debt while firms with anti-takeover measures will have less debt.

Second type of conflict between manager and shareholders is that managers are assumed to want always to continue the firm's current operations even if liquidation of the firm is preferred by investors as given in Harris and Raviv (1990). Debt mitigates the problem by giving debtholders the option to force liquidation if cash flows are poor; and the assertion of control by debtholders through bankruptcy, entails costs related to the production of information about the firm's prospects used in
the liquidation decision. Hence, optimal capital structure is obtained by trading off improved liquidation decisions versus higher investigation costs. A larger debt level improves the liquidation decision because it makes default more likely. In the absence of default, management is assumed not to liquidate the firm even if the assets are worth more in their next best alternative use. Following a default, however, debtholders control the liquidation decision and they extend resources to obtain additional information pertinent to this decision. Since debt-holders choose an optimal liquidation decision based on their information, default improves this decision. More frequent default, however, is more costly as resources are expended investigating the firm when it is in default. Harris & Raviv predicts that firms with higher liquidation value e.g. those with tangible assets and/or firms with lower investigation costs will have more debt and will be more likely to default but will have higher market value than a similar firms with lower liquidation value and/or higher investigation costs.

B. Conflicts between Equityholders and Debtholders

The inherent conflict between the equity holders and debt holders is intensified in situations where equity holders have a greater discretion in their activities. Myers (1977) highlighted this fact when he separated the firm's assets into two broad groups. The first group consists mainly of tangible assets whose value are comparatively unaffected by further investment. The second group consists mainly of assets in the nature of growth opportunities whose value is contingent on the stream of future investments undertaken. During times of financial distress there is a possibility that a significant portion of the gain from such discretionary investments may go to the bondholders and this might discourage equityholders from taking such investments. Thus, firms with greater
proportions of assets in the nature of growth opportunities have greater conflicts between shareholders and bondholders, holding the level of leverage constant. Thus Myers concludes that firms with high proportions of assets in the nature of growth opportunities would tend to have less leverage in their capital structure. And, even when debt is used as a source of finance, it would predominately be of short duration, which would entail frequent renegotiating thereby mitigating the wealth transfer problem. Managers or firms (shareholders) have an incentive to pursue relatively safe projects out of reputational considerations (Diamond, 1989 and Hirshliefer & Thakor 1989). Diamond's model (1989) considers a firm's reputation, for choosing projects that assure debt repayment. There are two possible investment projects: a safe positive NPV project and a risky, negative NPV project. The risky project can have one of two payoffs (success or failure). The assumption made is that both projects require the same initial investment which must be financed by debt. A firm can be of three types. One type has access only to the safe project, another has access only to the risky project and the third type has access to both. Since debtholders cannot distinguish the firms, the initial lending rate reflects their beliefs about the projects chosen by firms on average. Returns from the safe project suffice to pay to the debtholders, but returns from the risky project allow repayment only if the project is successful. Because of the asset substitution problem if the firm has a choice of projects, maximisation of equity value would lead the firm to choose the risky project. If the firm can convince lenders that it undertakes only the safe project, it will enjoy a lower lending rate. Since lenders can observe only a firm's default history, it is possible for a firm to build a reputation for having only the safe project by not defaulting. The longer the firm's history
of repaying its debt, the better is its reputation, and the lower is its borrowing cost. Therefore, older, more established firms find it optimal to choose the safe project i.e. not engage in asset substitution to avoid losing a valuable reputation. Young firms with little reputation may choose the risky project. If they survive without a default, they will eventually switch to the safe projects. As a result firms, with long track records will have lower default rates and lower costs, of debt than firms with brief histories.

Managers may also have an incentive to pursue relatively safe projects out of a concern for their reputations. Consider a manager who has a choice of two projects, each with only two outcomes success and failure (Hirshleifer and Thakor, 1989). Failure means the same for both projects, but from the point of view of the shareholders, the high-risk-high-return project yields both higher expected returns and higher returns if it succeeds. Suppose that from the point of view of the manager's reputation, however success on the two projects is equivalent i.e. the management can only distinguish 'success' vs 'failure'. Thus, the manager maximizes the probability of success while shareholders prefer expected returns. If the safer project has a higher probability of success, the manager will choose it even if the other project is better for the equityholders. This behaviour of managers reduces the agency cost of debt. Thus, if managers are susceptible to such a reputation effect the firm may be expected to have more debt than otherwise. Hirshleifer and Thakor argue that managers of firms more likely to the takeover, targets are more susceptible to the reputation effect. Such firms can be expected to have more debt. Conversely, firms that have adopted anti-takeover measures will use less debt, other things being equal.
There has been considerable empirical work to study the implications of shareholders-manager and shareholders-bondholders conflict of interest. The underlying theme which almost all the papers arrive at is that the inherent conflict between shareholder-bondholders create incentives for shareholders to act in a manner which benefit themselves at the expense of bondholders and such action, is not always necessarily in the overall benefit of the firm. On the other hand, conflict between manager-shareholders are reflected in the debt ratios which are seen to be negatively related to management's shareholding.

The convertibility clause and warrants attached to bonds as mitigating the tendency of the shareholders in undertaking investment projects which have negative expected net present values and increase the overall risk of the firm, was analysed by Smith and Warner (1979) and Green (1984). As such various features of debt contracts have been attributed to the underlying conflict between debtholders and equityholders. Hence, incentives are created for firms to offer protective covenants to investors, which would limit possible actions that would transfer wealth from debtholders to equityholders. However, the extent to which these covenants are able to mitigate the agency problem depends on the associated cost of contracting which includes costs of originating, monitoring, and enforcing the covenants.

Because of the agency problem, shareholders show reluctance in taking up low risk but profitable projects as bondholders are perceived to capture most of the resulting gain. However, with a call provision in debt contracts, the shareholders can limit the transfer of value to bondholders (Bodie and Taggart, 1978 and Thatcher 1985). Furthermore, since the value of the call provision declines with a fall in firm value, it mitigates the tendency of the
shareholders to go for high risk but unprofitable projects. Thus, even though bonds will have to be issued at a discount because of the call provision, there is a possibility of increased firm value due to decreased agency costs.

Issuance of secured debt represents another form of contracting between the equity holders and the debtholders design to reduce agency costs. Smith and Warner (1979) and Myers and Majluf (1984) explain that the issuance of secured debt obviates the problem of 'Asset Substitution' whereby the tendency of equity holders to substitute the firms existing assets for riskier ones is reduced. By creating a collateral for the debtholders, it reduces the uncertainty which results in agency costs. Secured debt helps reduce the 'under-investment' problem (according to Stulz and Johnson, 1985). An under-investment problem arises when there is a possibility of substantial portion of the gains arising from new investments accruing to the existing unsecured debt holders. This discourages the equity holders from undertaking the investment. Issuing secured debt implies giving the secured debtholders prior claim over the particular assets, thereby limiting the gains which would accrue to the outstanding unsecured debtholders.

Analysis on how the existence of debt directly changes the equity owner's choice of an operating policy for the business was done by Mello and Parsons (1992). For this purpose, contingent claims model of Brennan and Schwartz (1985) for valuing a mine was used by extending it to incorporate the financial structure to recognize the effects of the agency problems. The benefit of using their model was in that, the authors were able to identify precisely the changes in the operating policy of the mine that were induced by the outstanding debt. Thereby it was possible, to directly relate the
agency costs of debt with clearly sub-optimal decisions in real productions. The agency problems that arise are the under-investment problem that were identified by Myers (1977), as well as the costs of bankruptcy. The established model have measured these cost and thereby compared the tax benefits of debt with the agency costs of debt. The results show that the agency costs of debt amounted to three-tenths of a percent of firm value or almost 2% of the value of debt sold. Therefore, authors concluded that agency costs of this magnitude should certainly be an important determinant of the firm's capital structure decision even though the firm appeared far from bankrupt.

Hence, all the authors above have discussed one or the other conflict of interest between the stakeholders of the firm. Having the conflict identified by these authors, optimal capital structure to redress the conflict has also been suggested by them. However, both the conflicts i.e. the conflict between shareholders and managers and the conflict between shareholders and debtholders has only been identified in the pioneer work of Jensen and Meckling (1977). They have argued that an optimal capital structure can be obtained by trading off the agency cost of debt against the benefit of debt.

A number of implications follow - First, one would expect bond contracts to include features that attempt to prevent asset substitution, such as interest coverage requirements, prohibitions against investment in new, unrelated fines of business etc.

Second, industries in which the opportunities for asset substitution are more limited will have higher debt levels. Thus, for e.g. the theory predicts that regulated public utilities, banks, and firms in mature industries with few growth opportunities will be more highly levered.
Third, firms for which slow or even negative growth is optimal and that have large cash inflows from operations should have more debt. Large cash inflows without good investment prospects create the resources to consume perquisites, bad empires, overpay subordinates etc. Increasing debt reduces the amount of 'free cash' and increases the manager's fractional ownership of the residual claim.

References:


Capital Structure Approach under Corporate - Control Considerations

As it was brought out in earlier discussion on the agency cost theories, manager enjoys certain non-monetary perquisites because of which they may not necessarily act in the best interest of shareholders, wherein the firm's value is maximised. They enjoy these perquisites by virtue of their being “in control” of operations. Though there are mechanisms by which this conflict can be minimized in terms of its monetary impact on the firm value, by means of monitoring and bonding, it cannot be totally eliminated. In fact, the monitoring and bonding activities in itself are expensive. Obviously these perquisites are valuable to the manager and therefore he would like to be in control of the operations and management. In other words, there is an incentive to be in control of the management of the firm and this control has a value.

With the growing importance of takeover activities in the 1980s, the finance literature began to examine the linkage between the market for corporate control and capital structure. It mainly focus on the fact, that common stock carries voting rights while debt does not. It suggests ways of evaluating the price for corporate controls. The composition of the capital structure influences the ownership and consequently the control.

Three major corporate control theories came about in late eighties, highlighting different facets of corporate control considerations in capital structure practices. In Harris & Raviv (1988) and Stulz (1988), capital structure affects the outcome of takeover contests through its effect on the distribution of votes, especially the fraction owned by the manager. In Israel (1989), capital structure affects the distribution of cash flows between voting (equity) and non-voting (debt) claimants.
However, these corporate-control theories of capital structure bear an extremely narrow focus on the aspects determining the long-term financing of a firm because the models which derive optimal capital structure can be implemented only in response to hostile takeover activities. Justifiably there isn't large literature on this subject because it is not a comprehensive capital structure theory but explains only the short term capital structure strategy under the threat of takeover.

The first models to exploit the differential voting rights of debt and equity are those of Harris & Raviv (1988) and Stulz (1988). The main assumption in these theories are that, there are firms which are target for takeover due to various reasons and there is an incumbent manager who wants the control of the firm and the existing management is resistant to these moves.

These two models generate a relationship between the fraction of the equity owned by a firm's manager and the value of outside equity (i.e. equity held by non-managerial shareholders). The relationship follows from the dependence of firm value on whether the firm is taken over and, if so, how much is paid by the successful bidder. The manager's fraction of equity ownership is determined in part by the firm's capital structure. Thus, capital structure affects the manager's fraction of equity ownership, which in turn, affects the probability of takeover, the price effects of takeover and the value of the firm.

In Harris and Raviv (1988), manager's equity ownership is determined indirectly through the firm's given capital structure. In particular, the manager is assumed to have a fixed amount of wealth represented by his initial stake. He can increase his stake by making the firm repurchase equity from the passive investors and financing the repurchase by issuing...
debt. Debt decreases the value of equity allowing the manager to purchase a large fraction, with his given wealth. Maximising the manager's pay off is actually accomplished by choosing a debt level that determines the manager's maximum share. On the other hand, since Harris & Raviv assume that the expected private control benefits of manager decreases with the debt level, the incumbent manager would prefer to choose the lowest debt level. From the above arguments, it follows that the optimal ownership share is determined by the incumbent manager by trading off the benefit of debt in increasing his ownership stake against the cost of debt in the loss of any personal benefits. Hence, since the manager's ownership share is determined indirectly by the firm's capital structure, this trade-off results in a theory of capital structure.

Stulz (1988) also similarly focuses on the ability of shareholders to affect the nature of a takeover attempt by changing the incumbent manager's ownership share. Stulz obtains the result that takeover targets have an optimal debt level that maximises the value of outside investors' shares. Therefore, as the incumbent manager's share increases, the premium offered in a tender offer increases, but the probability that the takeover occurs and the shareholders actually receive the premium is reduced. Hence, targets of hostile takeovers will have more debt than firms that are not targets. Since a takeover target is good news for it involves exchanges of debt for equity, the firm can experience stock price increases to accompany such an event. Moreover, the probability of a takeover, by rival is negatively related to the target firm's debt equity ratio and the takeover premium is positively related to this ratio.

A similar approach was undertaken by Israel (1989). In his model too, the probability of takeover by rival is negatively related to the target firm's
debt/equity ratio but positively related to the gains in form of takeover premium to other shareholders, other than managers. The explanation to this, as given by Israel is that: debt commands a contractually fixed share of any gains from takeover. The incumbent manager and other shareholders bargain over that portion of the gains that was not previously committed to debt holders. But now, with more debt, less gain is left for both to split. Further, smaller is the portion of gain captured by the other shareholders, the payoff to incumbent manager shareholding is increased by increased debt given that takeover occurs. The optimal debt level, hence, is determined by balancing this effect against the reduced probability of takeover resulting from the reduced share of the gain to the remaining shareholders.

Hence, these theories explain short term changes in capital structure taken in response to imminent takeover threats, since the optimal capital structure derived may be implemented in response to hostile takeover activity only. As a result, theories based on corporate control considerations do not account for long term capital structure of firms.

References

Models based on Product / Input Market Interactions

The capital structure models based on product-input market interactions have explored the relationship between capital structure and either product market strategy or characteristics of products/inputs. The strategic variables considered are product price and quantity. These strategies are determined to affect the behaviour of competitors, and capital structure in turn affects the equilibrium strategies and payoffs. Models involving product or input characteristics have focused on the effect of capital structure on the future availability of products, parts and service, product quality, and the bargaining game between management and input suppliers. The models mainly revolve around the game theory among the various competitive firms.

These models can be classified into two categories. One class of approach exploits the relationship between a firm's capital structure and its strategy when competing in the product market. A second class of approach addresses the relationship between a firm's capital structure and the characteristics of its product or inputs. Consequently, we have classified this section into the above two categories.

A. Capital Structure and Product Market Strategy

The industrial organisation literature has assumed that in choosing its competitive strategy, the firm's objective is to maximise total profits which in turn is expected to maximise total firm value. The finance literature, on the other hand, has focused on maximisation of equity value while generally ignoring product market strategy. The new literature linking capital structure and product market strategy adopts the latter view, that managers generally have incentives to maximise equity value as opposed
to profits or total value. Here, leverage changes the payoffs to equity and thus affects the equilibrium product market strategies.

One of the initial research in this line was done by Brander and Lewis (1986). They argue that product markets and financial markets have important linkages because the choice of financial structure can affect the output. They used the basic idea of Jensen and Meckling (1976) that increases in leverage induce the equity holders to pursue riskier strategies. Limited liability commits a leveraged firm to increase risk by a more aggressive output policy. The limited liability provisions of debt financing imply that changes in financial structure alter the distributions of returns between debt and equityholders, and therefore change the output strategy favored by equityholders. Thus, to commit to pursuing a more aggressive output strategy in an oligopoly, firms choose positive debt levels. Given the behaviour of a rival firm, a firm which ignores the strategic effect of financial decisions would have lower total value than a firm that takes advantage of these effects. They also show that oligopolists will turn to have more debt than monopolists or firms in perfectly competitive industries. In fact, a monopolist or a perfectly competitive firm would choose a corner solution with no debt because the strategic effect of debt financing is not relevant and firms would have no reason to use debt. Therefore, strategic commitment through financial structure does not apply to monopoly and perfect competition in the way, it applies to oligopoly.

B. Capital Structure and the Characteristics of its Product or Inputs

The second industrial - organisation based approach to capital structure determination is to identify the characteristics of product and product market that is affected in a significant manner with the changing debt
levels. The variables included here are customers' need for a particular product or service, the need for the workers to invest in firm-specific human capital, product quality and the bargaining power of workers or other suppliers.

The initial contribution in this line was made by Titman (1984). Liquidation of a firm may impose costs on its customers such as inability to obtain the product, parts, and/or firms' services, etc. These costs are transferred to the stockholders who have to finally bear them in the form of lower prices for the firm's product. Consequently, the stockholders would like to liquidate only in those states in which the net gains to liquidation exceed the costs imposed on customers. Unfortunately but, when the firm's investors make the liquidation decision, they ignore these costs. Therefore, Titman shows that capital structure can be specifically designed to be used to commit the shareholders to an optimal liquidation policy. Specifically, capital structure is arranged such that stockholders never wish to liquidate and the bondholders always want to liquidate the firm in bankruptcy, and the firm would default only when the net gain to liquidation exceeds the costs to customers. In general, for unique and/or durable products, the costs imposed on customers when a producer goes out of business is higher than for non-durable products. Similarly, the costs imposed on customers is less for products that are highly competitive i.e. those made by more than one producer. Hence, firms for e.g. computer and automobile companies will have less debt, other things equal than firms that impose less cost on customers at the time of liquidation, e.g. hotels and restaurants.

Secondly, firms that can produce goods of high or low quality in any period and if the consumers cannot distinguish quality until after consuming the
goods, should have less debt, other things being equal (Maksimovic and Titman, 1991). The rationale being, that though high quality costs more to produce, it may prove worthwhile for the firm if it can establish a reputation of being a high quality producer. However, this reputation may be lost if the firm goes bankrupt. Hence, the theory says that high quality firms should have less debt since the value of goodwill lost is more in case of high quality firms.

Third, debt strengthens the bargaining position of equity holders in dealing with the input suppliers (Sarig, 1988). He says that bond holders suffer with a large share of the costs of bargaining failure but are facilitated with only regular interest payments or repayment of their debt with successful bargaining. Hence, bond holders insure stock holders to some extent against failure of negotiations with suppliers. Increase in leverage increase the extent of this insurance and therefore increase the equity holders bargaining power in negotiating with suppliers. As a result debt can increase firm value. It implies that a firm having greater bargaining power and/or the market alternatives of its suppliers should have more debt. Thus, Sarig predicts that highly unionized firms and/or firms that employ workers with highly transferable skills will have more debt.

Hence, models based on product-market strategy are determined to affect the behaviour of rivals, and capital structure in turn affects the equilibrium strategies and payoffs. On the other hand, models based on product / input market interactions have focused on the effect of capital structure on the future availability of products, parts and service, product quality, and the bargaining game between management and input suppliers.
However, capital structure models based on product / input market interactions are still in their early stage of development. These models have focused only on a single facet i.e. the business strategies designed to affect rivals in a competitive market, which in turn are effected by the capital structure of a firm. They highlight total risks undertaken by a firm in a competitive environment and the direct linkage between business and financial risks of a firm. A trade-off is achieved by the firm at a point where it balances business as well as financial risks through an optimum product market strategy. As such, these product-strategy models cannot be considered to form a comprehensive capital structure theory.

References

Theories on Asymmetric Information

The debate on capital structure took entirely a new turn with the concept of information asymmetry between the insider and the outsider to the firm. The insiders being the managers, who are in the control of the private information of the company and are deciding the direction of capital structure of the firm, have much more information compared to the outsider like shareholders, debtholders etc. In particular, they have better information on the future cash flow abilities of the firm compared to the outsiders. These future cash flows determine the market value of the firm. As discussed in the earlier chapter, management and the outsiders do not necessarily have common objectives. In fact the management might act contrary to the interests of the outsiders. Therefore, outsiders will have to make an estimate of the future cashflows of the firm by interpreting the actions of the management. Financing decision is one such powerful mechanism which signal to the outsiders, the management confidence of firms' future cash flow.

M&M (1958), had made a basic assumption of the existence of perfect market competition in their famous “Capital Structure Irrelevancy Theorem”. One of the aspects of this assumption is that, full information of the firm is available, i.e. there is no of information asymmetry between the insiders and the outsiders. This assumption is not validated by the present practices. Particularly in the recent time, complexities of business makes it virtually impossible to convey all the information to all the stakeholders. Therefore, managers do possess certain information on the firms' future cashflow which, they will have to convey to the outsiders in order to generate the true value of the firm. This concept was formalized by Ross (1977). His main arguments are that managers know the true distribution of
firm returns, but investors do not know. Hence, investors take changes in capital structure that involve large debt levels, as a positive signal of increase in the firm value. The explanation is that investors assume that management is better informed about expected cash flows and hence perceive an increase in leverage equivalent to increases in future expected cash flows. Managers benefit if the firm's securities are highly valued by the market but are penalized if the firm goes bankrupt. Since lower quality firms have higher marginal expected bankruptcy costs for any debt level, managers of low quality firm do not imitate higher quality firms by issuing more debt. Hence Ross concludes that firm value and the debt-equity ratio are positively related. It is also shown that increase in the bankruptcy penalty, decreases the debt level and the probability of bankruptcy. Thus, firm value, debt level and bankruptcy probability are all positively related in Ross's model.

Leland and Pyle (1977) signaling model, predicts that changes in management stock holdings cause similar changes in firm value. Investors assume correctly that management is better informed about the expected cash flows and that, from a diversification standpoint, it is costly for the risk-averse managers to hold a significant fraction of firm stock. Thus, managers have incentives to hold large stock positions only if they expect future cash flows to be high relative to the firm's current market value. Therefore, rational investors will consider management's equity ownership to be credible evidence of their confidence in the firm's future earnings. Under these conditions, firms with larger fraction of the equity owned by managers, would have larger debt levels and would be of higher quality. The inverse is also true, i.e., a decrease in management's fractional shareholdings, induced by a stock offering to outside investors, is a
negative signal about firm value. This prediction was empirically supported in a study of initial public offerings of stock by Downes and Heinkel (1982).

In another signalling model by Miller and Rock (1985), changes in outside financing are signals to investors of opposite changes in firm's current earnings. This prediction is derived from the firm's sources and uses of funds constraint assuming that investment decisions on average are unchanged. Thus, this model predicts a negative stock price reaction proportional to the dollar size of announced security offerings which should be larger for dual debt-common stock offerings than for the stock offerings alone.

Myers & Majluf (1984), have taken a different approach to explain the information adjusted between the managers and the outsiders. He has divided the outsiders into three categories: old shareholders, new shareholders and bondholders. These three categories have different interest in the firm and these interest at times may be in conflict. Myers & Majluf (1984) have postulated the problem of asymmetric information that exists between managers and investors over the value of assets-in-place and the investment opportunities of the firm. This asymmetry may be attributed to the following main factors. First, sensitive information, if released to the market, would also be known to competitors who would take advantage of it, thereby reducing the value of the firm. Second, specific information that might be available to both managers and investors would be better understood by the managers because of their position in the firm. The authors showed that if managers always acted in the existing shareholders' interest, the firm would issue securities and invest only if the net present value (NPV) of the investment opportunities exceeded the change in the value of the issued securities (donated by dN) upon removal
of the information asymmetry. An important insight of Myers and Majluf was to show that not all positive NPV projects would be undertaken. If the NPV of the project but less than $dN$, a project might be rejected. However, this would happen if there were internal funds that avoided the need to raise external equity and incurred $dN$. Therefore, this supports the view that managers prefer internal vis-a-vis external financing.

Myers and Majluf further agreed that when there were valuable projects and internal funds were not sufficient, external financing would be raised. To reduce the change of forgoing positive NPV projects, the firm would try to reduce $dN$ by issuing the "safest" security, that is, securities whose value changes the least, when inside information not previously available is released. They pointed out that option pricing theory shows that debt is 'safer' than equity. Thus, the reasoning here supports a preference of debt over equity.

Further, it was argued that if the inside information is unfavorable and $dN$ negative, the firm will want to benefit existing shareholders by issuing equity at the expense of new shareholders. Following this rule, the firm is likely to issue debt when inside information is favorable, and issue equity when inside information is unfavorable. However, investors would perceive this and, knowing that this is practiced, refuse to buy an equity unless the firm has exhausted its debt capacity. Through this logic, the authors show that a firm is constrained to follow a "pecking order" (Myers, 1984) in financing new projects regardless of the nature of the inside information.

In conclusion the authors have explained that: (1) It is generally better to issue safe securities than risky ones. Firms should go to bond markets for external capital, but raise equity by retention if possible. That is, external financing using debt is better than financing by equity. (2) It is good for the
stockholders when the firm has sufficient financial slack to undertake good investment opportunity. (3) If the firm is generating cash by selling stock, divided should not to be paid.

A variation from the basic Myers-Majluf set up is that managers are assumed to have an equity stake in the firm whose true value they maximise, as given in Constantinides and Grundy (1989). They allow firms to issue any type of security and to repurchase existing equity. Constantinides and Grundy show that there is a fully separating equilibrium in which all types of firm take the positive NPV investment financed by an issue of a security that is neither straight debt nor equity. The new security is issued in an amount sufficient to finance the new investment and repurchase some of the firm's existing equity. The basic idea is that the repurchase of equity makes it costly for firms to overstate their true value while the issuance of a security that is sensitive to firm value makes it costly to understate true value. Separation is attained by the design and size of the new issue so that, at the true value of the firm, these effects balance at the margin. In this model, the under investment problem is costlessly resolved. Although firms may issue some form of debt, the model does not support the 'pecking order' rule.

Therefore, Brannan and Kraus, Constantinides and Grundy, and Noe demonstrates that allowing firms a wider range of financing choices can invalidate the Myers - Majluf results in some cases. However, Noe says that average quality of firms issuing debt is higher in equilibrium than that of firms, issuing equity. Therefore, like Myers - Majluf, Noe's model predicts a negative stock market response to an announcement of an equity issue. Noe also predicts a positive market response to an announcement of a debt issue. Moreover, when Constantinides and Grundy
further extend the model to allow different firm types to have different optimal investment levels and assume that investment is observable, they show that firms can fully separate using investment and the size of a straight bond issue as signals. Thus in this situation straight debt is preferred financing tool, although the reason here is that it helps to signal a firm’s true type while in Myers - Majluf, debt is a device to avoid signaling.

Agency theory models as developed by Jensen and Meckling (1976) predict that larger percentage shareholdings by management decrease the potential conflicts of interest between managers seeking to maximise their own utility and outside shareholders seeking to have share value maximised. Thus, any increase in outstanding shares, which decreases management percentage shareholdings, is predicted to have a negative impact on firm value and stock price. The larger the proportional size of the stock offering, the larger the predicted negative effect on the firm (assuming management does not subscribe to the offering), which is further exacerbated by management share sales, which often occur in combination primary-secondary stock offerings.

Masulis (1983) observes that if managers adjust financial leverage to maximise firm value, changes in management information regarding a firm’s expected cash flow is signalled to investors through changes in leverage, given that tax rates, expected bankruptcy costs and non-debt tax shields are relatively stable. This can be viewed as an extension of the DeAngelo and Masulis (1980) optimal capital structure model where changes in firms’ expected cash flows induce positively correlated changes in optimal leverage levels. Thus, rational investors infer that a decrease in leverage, caused by an equity offering possibly coupled with a decrease in outstanding debt, is a negative signal of firm value.
With respect to capital expenditure revision, a signaling model developed by Trueman (1985) predicts that capital expenditure increases will be accompanied by positive stock price reactions. Evidence on such reactions however, is limited. In a recent study, McConnell and Muscarellia (1985) assume that managers are motivated to maximise current security-holder wealth through the acceptance of positive net present value investment projects. Thus, when a firm unexpectedly announces a capital expenditure increase, investors adjust its market value upwards; with a capital expenditure decrease, a downward adjustment occurs. McConnell and Muscarella find that on average stock prices rise approximately one percent with capital expenditure increases (treating last year's expenditure level as this year's expectation) and fall approximately one percent with capital expenditure declines. These findings suggest that the predicted negative stock price reaction to equity offering announcements can be partially offset by subsequent announcements of capital expenditure increases.

Heinkel (1982) shows while the insiders know both the true value of their firm, and the value of any given debt repayment promise made by the firm, outsiders know neither. As a result, insiders can potentially profit by selling overpriced securities. For example, if insiders know that the equity of their firm is under-priced and the debt of their firm is overpriced, they can profit by issuing more debt and less equity to finance the required investment. Such a possibility would in general lead to market disequilibrium. This eventuality is avoided here by a restriction on the joint distribution of firm value and credit risk: high value firms have less valuable, more risky, debt than do low value firms with the same promised debt repayment. As a result, a firm which represents itself as being of high value benefits by
realizing a high price for its shares; on the other hand, it can sell debt at a low price only. Under certain conditions, investors, by offering only a restricted menu of acceptable debt-equity combinations, are able to eliminate the incentive of firm insiders to misrepresent the characteristics of their firm, and indeed are able to identify the characteristics of a firm from the particular debt-equity financing combinations chosen.

All of these theories relating to capital structure consistently predict that stock offering announcements will lower stock prices; several predict that the decline is related to the proportional change in shares outstanding. Nevertheless, since predicted causes of these price changes are different, Masulis and Korwar (1986) have empirically tested these models by analysing the relationships between the stock's announcement price change and various explanatory variables, e.g., changes in leverage, percentage of outside stock and the use of the equity offering proceeds. In addition, differences in market reactions to regulated public utility and industrial firm announcements of stock offering are examined. Pre-announcement data which can improve the market's ability to predict the forthcoming equity offering is also explored.

According to Krasker (1986), larger security offerings have more negative effects. The author allow firms to choose the size of the new investment project and the accompanying equity issue. The author confirms the results of Myers and Majluf in this context and also shows that the larger the stock issue, the worse the signal and the fall in the firm's stock price. The Myers and Majluf model suggests explanation for several aspects of corporate financing behaviour, including the tendency to rely on internal
sources of funds, and to prefer debt to equity if external financing is required. Myers (1984) refer this to as a 'pecking order' theory of financing. This dynamic concept (as said by Myers, 1984) has developed a new explanation of the debt-equity choice from the perspective of asymmetric information. It has been described in detail in the following chapter.

References:


**Pecking Order Theory of Capital Structure**

All the capital structure literature can be broadly classified into two sections. The first category is the one advocating, that there is an optimal capital structure for a firm and the second being the one, that stresses the irrelevance of the capital structure. The theories advocating optimal capital structure always strives to arrive at a unique optimal capital structure for each firm in its class, i.e., to aim at a single point optimality. On the other hand, the irrelevance argument focused on refuting the existence of a single point optima. However, they did not tend to answer the alternatives which governs the capital structure of a firm.

This drive for the optimal capital structure was known as the static trade-off approach to capital structure. This approach forms an inherent part of all the theories of capital structure reviewed until now, except the Modigliani & Miller (1958). Since according to them, there is no optimal capital structure to pursue as the different combinations of debt and equity do not affect the cost of capital of a firm. However, the inclusion of real world considerations - namely taxes - by Modigliani and Miller (1963), posed the extreme suggestion that the optimal capital structure should be 100 percent debt. On the other hand, Jensen and Meckling (1977) argued that an optimal capital structure can be obtained by trading off the agency cost of debt against the benefit of debt. The works of Baxter (1967), Taggart (1977) and Marsh (1982) also support the trade-off stance which balances the benefits against the costs of the financial distress. As a result of this trade-off, there is a target debt equity ratio towards which the firm always strives to move.

In the empirical literature, rigorous studies by Scott (1977), Bradley, Jarrel, and Kim (1984), and Boquist and Moore (1984) did not conclusively support
this trade-off approach to debt-equity choice. Hence, while theoretically rich, there is a dearth of empirical evidence to support this decision-making process towards the choice of a corporate capital structure (according to Myers, 1984).

Recent literature has developed a new explanation of the debt-equity choice from the perspective of asymmetric information. Myers and Majluf (1984) built on the earlier work of Donaldson (1961) provided a new framework to describe the corporate usage of debt and equity, termed the 'pecking order' hypothesis. The hypothesis posits why firms are normally averse to new equity issues and why corporate borrowing tends to be a residual decision based on the desired level of corporate investments and the availability of the inelastic supply of internal funds.

Therefore, standing in contrast to the trade-off approach is the pecking order approach (PO) which stems from Donaldson (1961) with an empirical and theoretical updating from Baskin (1989). Donaldson (1961) studied a sample of large corporations and found that the management of these corporations strongly favored retained earnings over the use of external funds. He argued that this preference arose from the inherent benefits of internal funds. A key advantage was that in using retained earnings, no additional interest or dividends was payable nor would it result in a dilution of earnings. Other benefits cited included the avoidance of lengthy negotiations with outside parties, undue publicity, and red tape associated with external financing. Donaldson also reported that firms set target dividend-payout ratios based on expected future investment opportunities. However, target payout ratios are gradually adjusted to changes in the availability of investment opportunities. Consequently, firms might not always have sufficient funds to cover capital expenditures and, therefore,
resort to external financing. In doing so, firms would issue debt first, then hybrid securities like convertibles, and finally, equity. Donaldson explained that debt is preferred because the transaction cost of debt issuance is invariably lower than equity issuance. Debt also has little impact on key management-performance indicators like earnings per share, unlike the issue of equity. Thus, he suggested that there was a 'pecking order' of financing.

More recently, Donaldson (1985) confirmed his theory empirically with a follow-up study of large U.S. companies. He observed that companies generally fund their long-term growth from retained earnings, supplemented by a conservative amount of debt. Companies also prefer to scale back growth rather resort to equity issues. While internal funds constitute the principal form of financing, with debt as the second choice, there is an inherent aversion to equity issuance.

Hence, the PO approach suggests that capital structure is a residual determination tied to the investment decision and the unavailability of internal financing. The basic tenets of the pecking order hypothesis holds that capital structure is passively arrived at when investment-funding needs confront the imperfectly liquid source of retained earnings. Further, given a choice of investment funding, one would first choose internal equity and then debt and external equity would be the last resort. In other words, pecking order hypothesis is comprised of two strands: (1) firms prefer internal funding to external financing, and (2) if internal funds are insufficient leading to the need for external financing, debt would be preferred to equity.

Earlier, corporate financial theory had focused primarily on the effect of risk and taxes on the valuation of cash flows with known statistical
characteristics. Ignoring other factors, capital structure logically becomes determined out of a static trade-off between the tax advantage of debt and the risk of bankruptcy. Instead casual observation according to Baskin (1989) suggests that the old pecking order idea promulgated by Donaldson (1961) appeared to describe corporate practice. According to him, established firms normally avoid new equity issues, and borrowing tends to be determined as the residual between desired investment and a relatively inelastic supply of retained earnings. With the increased understanding of the consequences of asymmetric information which started with the contribution of Myers and Majluf (1984), it was possible to cast pecking order behaviour as the rational response not only to tax and transaction costs, but also as a signaling equilibrium. Myers and Majluf (1984) demonstrate that with asymmetric information, equity issues was rationally interpreted on average as bad news, since managers were motivated to make issues when the stock is overpriced. Asquinth and Mullins (1986), Masulis and Korwar (1986), and Mikkelson and Partch (1986), all empirically observe that announcements of new equity issues were greeted by sharp declines in stock prices. Harris and Raviv (1991), provides a summary of research on event studies reporting price reactions to changes in capital structure. All debt increasing transactions are shown to convey good news, and debt decreasing transactions, bad news. This was one major reason why equity issues were comparatively rare among large established corporations. Asymmetric information not only impeded the ability of firms to raise funds through new issues of common stock, but it also creates an imperfectly elastic supply of equity funds by limited access to retained earnings.
In addition to the effect of asymmetric information, taxes and transaction costs also tend to motivate pecking order behavior. The direct costs of retained earnings may be less than those of new equity issues. Firstly, there is the obvious savings in the banker fees and secondly, a firm may be able to reduce taxable current dividends by limited security issues. On the margin, holding constant the amount of debt and investment, an increase in equity issues necessarily results in greater dividends, and greater dividends in turn give rise to a larger burden of personal taxation. The implication is that issues of common stock will give rise to a larger burden of personal taxation. Moreover, transaction costs are generally smaller for debt than for equity issues. These facts alone motivate the firm to prefer internally generated funds to those raised from external security issues, and to prefer outside debt to equity.

Finally, it was also emphasised that debt finance escapes income taxation at the corporate level, and so the direct costs of new equity finance may be immense when compared to those of borrowing. In addition, of course, the issue of new equity to new investors dilutes current voting control, and this may jeopardize the position of management.

A large quantity of accumulated evidence which distinguishes pecking order behaviour from the continuous adherence to statically defined optimal capital structure was provided by Baskin (1989). He has also confirmed the predictions of the hypothesis. According to the static theory of optimal capital structure, book value debt ratios ought to be positively correlated with return on assets before interest and taxes. More profitable firms have more income to shelter, are more likely to be subject to high marginal tax rates, and are in less danger of bankruptcy. Therefore, it follows that more profitable firms ought to maintain a higher book ratio of debt to assets at
the static optimal capital structure. However, the fact disclosed from Baskin's (1989) study is that the converse is true. He used a large sample of 378 U.S. firms and showed the following: (1) a negative relationship between the use of debt (net debt-to-assets ratio) and profitability (return on total assets); and (2) negative relationship between the use of debt and growth (the ratio of invested capital over a period of eight successive years). Baskin concluded that the evidence from his study does not support the trade-off hypothesis and is consistent with the pecking order hypothesis.

Some other studies which have also found profitability having a significant negative coefficient when included in a regression with leverage are Arditti (1967), Hall and Weiss (1967), Gale (1972), Baker (1973), Hurdle (1974), Nakamura and Nakamura (1982), Long and Malitz (1985) and Titman and Wessels (1988). International evidence was provided by Toy (1984) in which the sample consisted of firms from US, Holland, Norway, Japan and France. Kester (1986) reports the same relationship in a sample of Japanese and US companies. Allen (1993) extended the work of Baskin (1989) to the Australian context, and further confirmed the pecking order approach. The theory was also tested for firms in Singapore by Koh, Phoon, and Tan and also by Theodore Bos and Thomas A. Fetherston in the Asian arena of Korea, Taiwan, and Thailand. The evidence was found consistent with the pecking order hypothesis and there was support for the observation that firms prefer internal financing. External financing (debt or equity) was not considered unless internal funds are exhausted. If external funds were required, debt was considered first and new equity would not be raised unless the debt capacity had been exceeded. These findings provide strong support for the pecking order hypothesis.
The pecking order hypothesis originally arose as a description of corporate practice. On the other hand, the theory of static optimal capital structure was deductively derived from basic axioms, which in particular ignore the material role of asymmetric information. As, Baskin (1989) points out, the lack of rational theoretical justification limited the acceptance of pecking order hypothesis, despite of the empirical support. However, with substantial current research having been devoted to the consequences of asymmetric information, the pecking order framework has received theoretical justification as a signaling equilibrium. Hence, pecking order behaviour explained with a rational theoretical basis and the much supported empirical evidence by Baskin (1989) forms an important and widely accepted theory of capital structure. Further, overall the empirical evidence obtained provides support for the pecking order hypothesis.

However, Myers (1993) points out that, the pecking order framework does not describe financing practices in entirety. The framework is violated each time, a firm issues equity, when it could have otherwise issued investment-grade debt. The PO hypothesis has also been criticized by Brennan and Kraus (1987), Noe (1988), and by Constantinides and Grundy (1989). They point out that debt is not always preferred to equity, particularly in cases where a richer set of options are available. In Brennan and Kraus, the under-investment problem is mitigated by using the part proceeds of the equity issue to repurchase debt simultaneously. In their model, equity increasing transactions are accompanied by positive stock price reactions.

References


Donaldson (1961), Corporate Debt capacity, Division of research Graduate school of Business Administration, Harvard University Press, Cambridge, MA.


REVIEW OF PRACTICES

In the developed countries, it has been observed that Pecking Order behaviour prevails in Private Corporate Sector. Number of studies have been conducted to confirm the existence of this theory like, Baskin (1989), Allen (1993), Koh, Phoon, and Tan (1993). All the above studies have used fairly reliable statistical models to prove the existence of Pecking Order theory.

In his seminal contributions, Mayer (1988, 1990) has investigated on a comparable basis, the corporate financing patterns for the period 1970 to 1985 for a series of industrial countries. On the basis of his analysis, Mayer suggested the following ten stylized facts about corporate financing patterns in industrial countries.

1. Retentions are the dominant source of finance in all the countries.
2. There are some marked variations in self-financing ratios among countries.
   These ratios are greater in the Anglo-Saxon countries than elsewhere.
3. Corporations do not raise a substantial amount of finance from the stock market in any country.
4. Banks are the dominant source of external finance in all the countries.
5. Bank finance is particularly pronounced in France, Italy and Japan. It represents a surprisingly small portion of the total German corporate financing.
6. United Kingdom investment has been consistently financed from retentions (91 percent on average). Bank finance has contributed close to zero (3 percent on average) on a net basis.
7. There is a strong inverse relation between the proportion of expenditure financed from retentions and bank credit.
8. Securities markets have declined in significance as sources of finance for British industry. Trade credit increased in importance at the end of the 1960s and early 1970s.

9. Small and medium sized firms are considerably more reliant on external finance than large firms. A smaller proportion of small than large company finance comes from securities markets.

10. Bank (and short-term) finance accounts for approximately two-thirds of United Kingdom companies' total debt but more than five-sixths of small companies' total debt.

These stylized facts about corporate financial pattern in advanced countries are widely accepted and are particularly influential in relation to current theoretical work. Leading theorists, [Stiglitz (1992), Hellwig (1992)] use them as points of departure for their analysis. It is important to emphasize however that the above generalizations (1-5) about financing proportions are based on flow of funds accounts; the others (i.e. 6-10), employ accounting data. Nevertheless, Mayer (1990) has also carried out the financing proportions exercise using Organization for Economic Cooperation and Development (OECD) corporate accounting data for Finland (1975-84), France (1976-84), Japan (1972-84) and the United States (1970-85). He reports that the average financing ratios "looks similar for the two sources of data":

Compared to the studies mentioned above, there has been very little work done in this area, in the context of developing countries. One of the major studies conducted recently in this area was authorized by International Finance Corporation (IFC) and initiated by Singh and Hamid in 1992. The empirical analysis of this study was based on corporate accounting and
stock market information from nine countries - India, Republic of Korea, Jordan, Pakistan, Thailand, Mexico, Malaysia, Turkey and Zimbabwe. This research yielded quite unexpected results. Singh and Hamid came to two important conclusions. First, their results showed that the developing country corporations rely in general, very heavily: (a) on external funds, (b) on new issues of shares to finance their growth of net assets. Secondly, comparing their results with Mayer’s (1990) stylized facts concerning the financing patterns of advanced country corporations, Singh and Hamid concluded that there were important differences between the two groups of corporations. Specifically, they suggested that Less Developed Countries’ (LDC) corporations used both external finance and particularly equity finance to a much greater extent than their counterparts in advanced economies. Both these conclusions ran contrary to most economists’ priori expectations. The results suggested almost the reverse of the "pecking order" pattern of finance observed for advanced country corporations.

These results were not very surprising from the point of view of today’s liberalizing scenario in India. However, initially India had a very constrained environment where capital structure was not a choice to be made but a government norm to be followed. In fact, in the last three decades i.e. in the pre-liberalization era, several analysis and surveys (cited in Bala, 1993) have revealed two clear trends in corporate financing patterns of public limited companies in India: first, a marked movement away from internal financing particularly in the late eighties, and second, within external financing, a growing reliance on borrowings in preference to risk bearing equity. Debt in proportion to equity rose from 87.4 percent in 1960-61 to 154.8 percent in 1982-83, (see Table-
1). It may be noted that notwithstanding this marked rise, debt constituted a little more than one and a half of the equity funds in 1982-83 as against the debt-equity norm of 2:1. This norm was further relaxable on the merit of each case in the case of capital intensive industries as was fixed by the Government of India in the guidelines issued under the Capital Issues (Control) Act. This suggested that there could be further increase in the share of the debt. However, the corporate sector's earning capacity did not allow for such an increase in the debt-equity ratio. The analysis of the debt coverage ratio shows that coverage ratio declined persistently from 6.2 in 1960-61 to a mere 1.5 in 1982-83. Thus, the interest charges and repayments increased more than four-fold on the corporate sectors' earning. Surprisingly, it was found that despite heavy debt-equity ratio, trade associations, State Governments etc. had been requesting the Government of India to relax the debt-equity norm beyond 2:1.

Table - 1.0: Capital structure of medium and large public limited companies in Private Sector.

<table>
<thead>
<tr>
<th>Rs.in lakhs</th>
<th>1960-61</th>
<th>1970-71</th>
<th>1980-81</th>
<th>1982-83</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liabilities</td>
<td>13163</td>
<td>23260</td>
<td>37088</td>
<td>44880</td>
</tr>
<tr>
<td>Net worth</td>
<td>(40.4)</td>
<td>(33.7)</td>
<td>(24.5)</td>
<td>(21.8)</td>
</tr>
<tr>
<td></td>
<td>[53.0]</td>
<td>[-]</td>
<td>[-]</td>
<td>[39.0]</td>
</tr>
<tr>
<td>Paid-up capital</td>
<td>8446</td>
<td>13384</td>
<td>17822</td>
<td>19142</td>
</tr>
<tr>
<td></td>
<td>(22.9)</td>
<td>(19.4)</td>
<td>(11.7)</td>
<td>(9.20)</td>
</tr>
<tr>
<td></td>
<td>[34.2]</td>
<td>[-]</td>
<td>[-]</td>
<td>[16.7]</td>
</tr>
<tr>
<td>Reserves &amp; Surplus</td>
<td>4717</td>
<td>9896</td>
<td>19266</td>
<td>25768</td>
</tr>
<tr>
<td></td>
<td>(17.6)</td>
<td>(14.3)</td>
<td>(12.9)</td>
<td>(12.6)</td>
</tr>
<tr>
<td></td>
<td>[19.0]</td>
<td>[-]</td>
<td>[-]</td>
<td>[22.0]</td>
</tr>
<tr>
<td>Long-term debts</td>
<td>11516</td>
<td>26121</td>
<td>52189</td>
<td>69526</td>
</tr>
<tr>
<td></td>
<td>(35.5)</td>
<td>(37.9)</td>
<td>(34.6)</td>
<td>(33.8)</td>
</tr>
<tr>
<td></td>
<td>[45.7]</td>
<td>[-]</td>
<td>[-]</td>
<td>[22.0]</td>
</tr>
<tr>
<td>Banks</td>
<td>6238</td>
<td>16969</td>
<td>33553</td>
<td>44816</td>
</tr>
<tr>
<td></td>
<td>(19.2)</td>
<td>(24.6)</td>
<td>(22.2)</td>
<td>(21.7)</td>
</tr>
<tr>
<td>Special Financial Institutions</td>
<td>111</td>
<td>902</td>
<td>3624</td>
<td>4363</td>
</tr>
<tr>
<td></td>
<td>(0.38)</td>
<td>(1.3)</td>
<td>(2.4)</td>
<td>(2.1)</td>
</tr>
<tr>
<td>Government</td>
<td>-</td>
<td>77</td>
<td>168</td>
<td>388</td>
</tr>
<tr>
<td></td>
<td>(0.1)</td>
<td>(0.9)</td>
<td>(0.9)</td>
<td>(0.38)</td>
</tr>
<tr>
<td>Other sources</td>
<td>5147</td>
<td>8171</td>
<td>14844</td>
<td>19959</td>
</tr>
<tr>
<td></td>
<td>(15.8)</td>
<td>(11.8)</td>
<td>(9.1)</td>
<td>(9.6)</td>
</tr>
<tr>
<td>Total long-term liabilities</td>
<td>24679</td>
<td>49401</td>
<td>89277</td>
<td>144406</td>
</tr>
<tr>
<td></td>
<td>(75.8)</td>
<td>(71.7)</td>
<td>(59.2)</td>
<td>(55.6)</td>
</tr>
</tbody>
</table>
Net worth trends observed among RBI sample of large and medium size public limited companies, during the period 1951-52 to 1988-89 suggest that net worth, which constituted over 55% of the total liabilities in the early fifties, had progressively declined to between 28% and 32% in the eighties. Another important fact observed was that the major means of increasing equity capital was through reinvestment of company profits rather than new equity claims in the market. Borrowings as a percentage of total funds had almost doubled from around 30% in the early fifties to generally about 53%-58% in the eighties. Predominance of external sources of funding was accompanied by an increasing dependence on borrowings.

A study sponsored by the IFCI and carried out by the Management Development Institute (MDI) in 1976, confirmed the quantitative change in financing mix, favoring debt over equity till the last decade. Performance of companies assisted by the ICICI and IDBI also tend to support the trends outlined above.

According to Gupta (1981) and Balasubramanian (1993), the underdevelopment of the capital market which the industries faced in the beginning of the post independence era provided the underlying logic to the pattern observed in corporate financing during that period. Though the first stock exchange in India was established more than a century ago, as a result of the "dear money" policy followed for quite some time, the capital market continued to be narrow, segmented and subjected to a network of regulatory prescriptions. The role of the capital market in corporate
financing was rather quite limited till the decade of 1970s. Capital issues of equity and debt securities were hovering around Rs.100 crores till the late 1960s. Corporations had very little choice in terms of capital structuring. Most of the corporations were equity financed by promoters or their associates. Even funds that were acquired as loan bear similar risk characteristics of equity. This bias towards equity or funds with similar features of equity persisted even beyond the stages of corporate growth. Bala (1993) cites a NCAER study (1966), which states that during the period 1951-52 to 1963-64, more than 50% of the required resources on a cash flow basis were raised from internal sources in 8 out of the 13 years considered.

The interest rate structure that prevailed in the country also militated against the spread of equity cult. Gupta (1981) shows that during the twelve year period (1962-1974), the overall long-term return on a widely diversified equity portfolios was estimated to be around only 8% to 9%. Since, the investor could earn a higher yield on relatively more secured financial assets like debentures, the preference for debt to equity was obvious. Further, Sharma (1988) shows that the annual average of the ratio of interest expense to gross profits for the period of 1970-71 to 1977-80 increased from 35% to 51.5% during the period of 1980-81 to 1984-85 (cited in Balasubramanian, 1993). This provided further evidence for the debt preference by corporations.

The decade of 1980s witness the capital market becoming a predominant factor in financing corporate growth. Capital issues of equity and debt securities crossed the Rs.200 crores mark for the first time which could be regarded as a significant break with the trend. Entry of the Fera companies to the new issues market with the enactment of the FERA in 1973 was
either to sell part of their foreign principals' holdings or to issue further equity so as to bring percentage foreign holdings in line with laid down norms. Good reputation of these FERA companies resulted in over subscription to these public issues. Mayya (1990) notes that an estimated 115 such companies offered about Rs.125 crores in the late half of the 1970's, generating as a result, approximately 2 million share holders across the country. Also, government's fiscal incentives promoted investments in equity securities and units. Commercial borrowings for the working capital needs also added to the expansion of capital market. Norms were prescribed for different components of working capital in selected industries wherein, preferred current ratios were prescribed for the purpose of computing maximum permissible bank finance. Further, raising of debenture funds were encouraged to meet working capital requirements since the cost of capital for debentures was lower than cash credit facilities. Hence, even during this decade debt component in the long term funds had been steadily rising, and debt in general, accounted for 85% to 90% of all external funds raised during that decade.

The nature and functioning of the private corporate debt market explained the underlying logic. Traditionally, commercial banks and development of financial institutions had fulfilled most of the borrowing needs of the private corporate sector. Use of transferable debt securities like bonds and debentures as an alternative to institutional sources became predominant only in eighties. The nature of debt issues made by non-government public limited companies shows that pure debt instruments like non convertible debentures accounted for an insignificant proportion of funds raised from the external market. Whereas convertible debt instruments which would be converted into equity shares at prices lower than the ruling market price,
were heavily floated. The interest rate policy of the government played a significant role in shaping the debt market. The issue of non convertible debentures, pure debt instruments were subject to Controller of Capital Issues' specified limits. The interest rates on convertible debentures whether partly or fully were also subject to Controller of Capital issues specified ceiling. Further the terms of their conversion of either a part or the entire paid-up amount into shares was decided by Controller of Capital issues only at the time of conversion. This was afterwards changed, wherefore the terms of conversion had to be announced at the time of issue.

The significant preference for Convertible Debentures became apparent in light of the marginal difference in the interest rates as compared to NCDs and also considering the returns resulting, on conversion into shares at rates below market price. Again, company deposits proved to be a more attractive investment opportunity as compared to NCDs. Firstly, because the interest rates were more or less the same and secondly, though NCDs are secured, company deposits have lower maturity and companies in most cases allowing premature encashment, contributed to improved liquidity. Further, the institutional framework affected the growth of a proper market for corporate debt. As per the plan directives, the long term debt requirements of industry were met by the network of financial institutions both at the national and the state level, at terms which were very favorable. Loans from the various financial institutions and commercial banks were available at low interest rates with long repayment periods. Commercial banks provided short term funds which also served the medium and long term needs. This was preferred to issuing of debt securities in the market due to low interest rates as compared to costs of issue of debentures and
associated administrative expenses. Again, while interest income on bank deposits, public sector bonds, dividend income on shares and VII units qualified for tax exemption, debenture interest was fully taxable. Hence, debentures with interest rate restrictions, were no match for other investment avenues when adjusted on the basis of risk-return trade-off.

The guidelines for issue of fresh capital by the office of Controller of Capital issues (CCI) stated that, in any financing project costs, the debt equity of 2:1 would be considered fair and reasonable. However, in the case of capital intensive industries higher debt equity ratio could be considered based on the merits of the particular case. The process of relaxing the stringent norms governing capital structure began with imperatives of industrialization gaining momentum in the second plan objectives. This was reflected in a 3:1 ratio being allowed in cases such as fertilizer, aluminum, paper and cement plants in the private sector, whereas shipping was allowed a debt equity of as high as 6:1, as a case apart.

As such, in the Indian context, prior to freeing of the capital market, debt to equity ratios were usually in the region of two. Capital intensive projects had higher debt to equity ratio of four or six. This was because the economy was heavily dependent on banks and financial institutions to raise resources. Also significant under-pricing under the erstwhile CCI, corporates had preferred debt to equity as a means of financing. Hence, with such government norms and interest rate structure prevailing, corporates in India remained highly geared till the last decade.

However, as the government launched a decisive economic liberalization programme in 1991-'92, companies were now free to exercise their choice of means of financing. In the capital markets, the pricing of the corporate debentures, which were subject to interest rate ceilings upto August 1991,
has been freed. The office of the Controller of Capital Issues (CCI) which determined when, how much and at what price equity should be raised, was abolished in May 1992. Equity is now issued under the guidelines of the Securities and Exchange Board of India (SEBI) published in June 1992. Such issues can now be freely priced with exceptions applying to greenfield projects and new companies. Further, since May 1992, domestic capital markets are being revitalized and, liberalization is permitting Indian companies to go overseas with global depository receipts and convertible bonds.

Hence, the decade of 1990s have become a landmark in emerging market corporate finance. Today emerging market companies face a much richer menu of financing instruments than ever before. Governments have initiated regulatory reform and financial liberalisation, recognizing that private sector investment is going to play a dominant role in the economic activity. The growing emphasize on private investment as the primary engine of growth hence, has been accompanied by a new trend of directly financing individual companies rather than sovereign financing.

As such, with financial liberalization now underway, companies are beginning to re-examine their capital structures reflecting the new costs, influenced by the pricing of the instruments and the tax code. As said before, they now have a richer and less constrained menu of instruments to choose from (in terms of pricing), including access to international markets that offer cheaper capital that was previously not available.

This re-examination of financing patterns by the corporates was further supported by a CMIE issue on “The Primary Capital Market”, Oct. 1995 which revealed that contribution of equity raised through public issues from the capital markets to the total issues increased from 19.4 % in 1988-’89 to
74.5% in 1994-'95. At the same time, contribution of debt issues fell from 80.6% in 1988-'89 to 25.5% in 1994 '95 (table-2).

Table 2.0: Funds Raised through Public Issues

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of capital issues</td>
<td>685</td>
<td>1,204</td>
<td>1,039</td>
<td>97</td>
<td>351</td>
<td>379</td>
<td>253</td>
<td></td>
</tr>
<tr>
<td>Capital issues (Rs. Crores)</td>
<td>8068</td>
<td>44,793</td>
<td>38,394</td>
<td>30,364</td>
<td>14,596</td>
<td>11,045</td>
<td>12,287</td>
<td>5,465</td>
</tr>
<tr>
<td>By type of security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td>7,800</td>
<td>33,357</td>
<td>23,379</td>
<td>20,286</td>
<td>6,678</td>
<td>4,245</td>
<td>1,988</td>
<td>1,060</td>
</tr>
<tr>
<td>Convertible debentures</td>
<td>840</td>
<td>8,021</td>
<td>8,397</td>
<td>7,571</td>
<td>3,717</td>
<td>2,536</td>
<td>5,263</td>
<td>1,756</td>
</tr>
<tr>
<td>Non-convertible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>debentures</td>
<td>13</td>
<td>2,810</td>
<td>3,198</td>
<td>1,504</td>
<td>146</td>
<td>581</td>
<td>2,297</td>
<td>2,99</td>
</tr>
<tr>
<td>PSU bonds</td>
<td>215</td>
<td>605</td>
<td>3,420</td>
<td>1,003</td>
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