THE INSIGNIFICANCE OF BANKRUPTCY COSTS TO THE
THEORY OF OPTIMAL CAPITAL STRUCTURE

ROBERT A. HAUGEN AND LEMMA W. SENBET*

I. INTRODUCTION

IN THEIR PATHBREAKING PAPER some 20 years ago, Modigliani and Miller (MM) demonstrated the irrelevance of capital structure to the value of the firm in a taxless world. Their later article (1963) correctly accounts for the effect of taxes and proves that debt financing increases the value of the firm through what effectively amounts to a government subsidy. Several recent studies have replicated the MM results under less restrictive conditions [Baron (1974), Stiglitz (1969, 1974), etc.]. In particular, these studies have demonstrated that the MM thesis is intact even in the presence of a positive probability of costless bankruptcy. The more general proof of this is provided by Stiglitz (1974) who invokes a costless financial intermediary that can reconstitute the firm which alters its debt-equity ratio. That is, the value of the firm must be unrelated to capital structure so long as a costless financial intermediary can be established to maintain the opportunity set facing individual investors. Under this framework, Stiglitz proves that the finite probability of costless bankruptcy has no effect on the value of the firm.

Although the original MM results can be obtained under more general conditions, their theorem in the presence of taxes is troublesome, since it implies the near exclusion of equity financing (or equivalently, a nearly infinite debt-equity ratio). However, a number of authors [e.g., Baxter (1967), Hirshleifer (1970, p. 264)] have noted that bankruptcy costs may provide an economic rationale for the existence of a finite, optimal capital structure, and hence provide a reconciliation between the MM theorem and observed firm behavior. More recently, others [Kraus and Litzenberger (1973), Scott (1976), Kim (1976), etc.] have formally introduced bankruptcy costs in their models. These authors claim that an optimal, finite debt-equity ratio can exist, resulting from a trade-off between the expected value of bankruptcy costs and the tax savings associated with the deductibility of interest payments. Essentially, the optimum is reached when the present value of the

*Graduate School of Business, University of Wisconsin, Madison.
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government subsidy is just offset by the present value of expected bankruptcy costs.

It has been recognized in the literature on at least two occasions [Higgins and Schall (1975) and Van Horne (1977, p. 247)] that bankruptcy costs or penalties are non-existent in the presence of perfect and frictionless markets. However, the studies supporting an optimal financial policy on the basis of bankruptcy costs have either assumed their existence as a result of some unspecified form of market imperfection or have merely introduced these costs without underlying economic justifications. This paper argues that bankruptcy penalties related to capital structure decisions cannot be of sufficient magnitude to act as an offset to the tax subsidy and hence provide a reconciliation between the MM theorem and observed firm behavior.

In this paper, we consider a market in which there are a large number of participants (buyers, sellers, and issuers of financial securities) who are all price-takers and rational in their behavior. Such a market is not necessarily devoid of transaction costs in the traditional sense of a perfect capital market and investors need not possess homogeneous expectations. These are hardly restrictive conditions, but under them it can be argued that any costs truly associated with the event of bankruptcy must be insignificant. Arguments presented here are purely theoretical and are fundamentally different from those which undermine the magnitude of bankruptcy costs on empirical grounds [e.g., Miller (1976), Warner (1976)]. In particular, we indicate that all costs associated with liquidating or dismantling the assets of the unprofitable firm are unrelated to capital structure or, for that matter, the state of the firm (bankrupt or non-bankrupt). These costs include the so-called “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. In addition, any costs associated with bankruptcy, or the transfer of ownership (from stockholders to creditors), must be limited to the lesser of (a) the cost of bankruptcy and (b) the cost of avoiding the transfer entirely. The costs of avoiding transfer are given by the transactions costs associated with selling new shares (at a fair market price) and using the proceeds to repurchase (at a fair market price) all fixed claims on the assets of the firm. The present value of these expected transaction costs are likely to be quite small relative to the government subsidy associated with debt financing.

In short, we argue that the truly significant “penalty” costs that are commonly attributed by others [Kraus and Litzenberger (1973), Scott (1976), Kim (1976), Lee and Barker (1976), etc.] to bankruptcy are more appropriately attributed to liquidation. Liquidation (dismantling the unprofitable firm) is a capital budgeting decision that should be considered independent from the event of bankruptcy (transfer of ownership to creditors). Thus, even if these costs are shown to be significant, they cannot support the contemporary view of an optimal capital structure, and they cannot be used to reconcile modern financial theory with observed firm behavior.

II. Bankruptcy

Bankruptcy occurs when the fixed obligations to creditors cannot be met. In this case, there is a transfer of ownership and a formal reorganization of the capital
structure of the firm. The costs associated with this transfer can be categorized as either direct or indirect. Direct costs include legal, accounting and trustee fees as well as the possible denial of income tax loss carryovers and carrybacks.

Indirect costs relate to opportunity costs resulting from disruptions in firm-supplier or firm-customer relationships that are associated with the transfer of ownership or control. It can be argued that the indirect costs are insignificant or even non-existent, provided customers and suppliers behave rationally. 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 as we show in Section III, it is not affected by the mere transfer of ownership that is bankruptcy.

In any case, if rationality prevails, the total expected value of the direct and indirect costs of bankruptcy must be limited to the lesser of these expected costs and the expected cost of avoiding the transfer entirely. Suppose that a state of nature is reached where the probability is large that bankruptcy will, in fact, occur. The expenditure of funds accompanying the transfer may be avoided by selling new shares of common stock and using the proceeds to repurchase the debt in the open market. Note that the new common is sold at a price that clears a competitive capital market, and the old debt is repurchased at a similarly determined fair market price. Thus, the wealth of the old stockholders is unaffected by the informal "reorganization" of the capital structure that has taken place in the capital market. The only costs associated with this reorganization are the transactions costs of selling the stock and buying the debt. Note also that, given the receipt of a fair market price for their claim, it is in the interests of all claimholders to reorganize the capital structure in this manner and avoid the flows of cash out of the firms that are associated with the direct and indirect costs of bankruptcy. It should be obvious that an informal reorganization of this type may be accomplished by those holding any claim. Should they wish, the owners of the subordinated debentures

1. Congress has adopted, to a degree, the following concepts relating to the utilization of corporate loss carryovers:
   a) The benefits from the loss carryover can be used only by stockholders who suffered the losses.
   b) The carryover can be applied only to income produced by the assets that previously generated the losses. Although the law relating to carryovers is extremely complex, it is clear that the carryover will be denied should the firm cease operations and liquidate. Thus, the loss of carryover should be considered as one of the costs associated with liquidation. Depending on the peculiarities of the situation, the carryover may also be lost if the bankrupt firm's capital structure is reorganized, but the firm continues as an ongoing operation. To the extent that this is true, the loss of carryover and carryback can also be considered as a cost of bankruptcy. However, even if it is, it is subject to the same transactions cost limitation that is associated with all bankruptcy costs to the reorganized firm.

2. Define the intrinsic value of a security to be its market value in a frictionless market that is devoid of transactions costs. In the presence of transactions costs, the price that actually clears the market may fall somewhere in a band bounded by the intrinsic value plus or minus the transactions costs. Suppose that the market price is expected to equal intrinsic value, but that its actual location within the band at any point in time is subject to some degree of uncertainty. In this case, ex ante, the cost of informal reorganization is given by the transactions costs and any additional risk premium associated with uncertainty regarding the relationship between the market price and intrinsic value at the time informal reorganization takes place. In subsequent discussion, we shall refer to the aggregate of these costs simply as transactions costs.
may form a holding company by issuing shares at a market clearing price and using the proceeds to buy the firm through purchase of outstanding claims at fair market values.

Furthermore, we wish to note that all parties, including outsiders, have an incentive to avoid the costs associated with formal reorganization, should they be greater than the costs of informal reorganization. Suppose that the firm has three classes of securities outstanding—first mortgage bonds, subordinated debentures, and common stock. Assume also that it is known with certainty that the value of the assets exceeds that of the first mortgage bonds. Given the priority of their claim, the first mortgage bondholders are perfectly secure in the sense that they would be paid in full with a 100 per cent probability. There is dispute, however, regarding whether the value of the assets exceeds that of the claims of both the mortgage bonds and the subordinated debentures. Since default on an interest payment is imminent unless informal reorganization takes place, this dispute will be settled formally at a cost. If the cost of formal reorganization exceeds that of its informal counterpart, which party has an economic incentive to move to the latter option? Since there is apparently some probability that the common stockholders will share in a redistribution of wealth by the court, the costs associated with this redistribution can be expected to be borne in some relative proportion by the stock and debenture holders. Note, however, that if the market values of the two classes of securities reflect the expectation that the bankruptcy cost will be incurred, these costs can be captured in whole by the mortgage bondholders. The holders of this secured claim can purchase the stock and the subordinated bonds in the market place and enjoy an immediate increase in the value of their holdings as there will no longer be any meaningful dispute to be resolved through formal reorganization. The common stockholders and debenture holders, of course, may also capture the costs in their entirety. Note also that they may also be captured by outsiders to the firm by purchasing all three claims at their respective market values. In this sense, all parties have an incentive to choose informal procedures over formal ones when their associated costs are lower.3 In the presence of these arbitrary incentives, the aggregate market value of the claims must be within a transactions cost of the intrinsic value of the underlying assets, and if its associated costs are lower, informal will dominate formal reorganization as an economic alternative.4

3. It may be argued, however, that the transactions costs of avoiding bankruptcy may, under some circumstances, be smaller for one party than for another. For example, the common stockholder may repurchase just enough debt to avoid default on a forthcoming interest payment. In addition, if the value of equity is extremely small relative to the value of debt, the debtholders can capture the costs of formal bankruptcy at a relatively small transactions cost.

4. Suppose that it is certain that the bondholder's claim exceeds the value of the assets of the firm, but in spite of this, equityholders see it appropriate to precipitate a dispute which could lead to formal bankruptcy. This would induce bondholders to prevent bankruptcy by purchasing the equity at a price up to the cost of bankruptcy. If so, the total market value of debt claim will fall below its intrinsic value by the amount of bankruptcy costs and accordingly, the total market value of equity will rise by the same amount. Thus, the total value of the firm is unaffected by this operation. In other words, although the threat of bankruptcy generates a phenomenon similar to the recently recognized issue of "wealth redistribution" [see, for example, Myers (1974, pp. 121 and 130) and Higgins and Schall (1975)], it would not affect the aggregate amount claimed by the security holders. This would be true even if there exists an indenture which calls for the sharing of bankruptcy costs between bondholders and shareholders.
Thus, we argue that the bankruptcy costs associated with a formal reorganization through the courts must be limited to the lesser of the cost of formal bankruptcy and the transactions costs associated with an informal reorganization of the capital structure through the capital markets. It is highly unlikely that the present value of these possible future transactions costs serves an important offset to the government subsidy associated with debt financing. In fact, it is almost certainly true that the value of the transactions cost associated with issuing the original debt serves as a more significant offset given the opportunity for transactionsless internal equity financing. These costs are known to be incurred with certainty and are to be incurred immediately after the capital structure decision. In spite of this, they have been given little attention as a potential offset in the literature, presumably because they are trivial relative to the magnitude of the tax subsidy.

Here we have a transfer of wealth between bond and stockholders, and there are no bankruptcy costs (in the traditional sense) which represent an external drain in the system and which change the size of the “pie” to be distributed. In the absence of an external drain, the threat of bankruptcy, which may lead to “wealth redistribution,” cannot support the existing financial models which concentrate on determining the capital structure that maximizes the total value of the firm. Furthermore, the problem of “wealth redistribution” which arises from a dispute precipitated by stockholders may well be anticipated at the time of capital structure decisions. If so, bondholders will pass on the entire ex ante costs to stockholders and the taxing authority through higher contractual interest payments.

Suppose that bondholders and equityholders will instead seek to resolve the dispute through formal bankruptcy proceedings and incur the associated costs. These costs now represent a true external drain in the system and will reduce the aggregate amount payable to the securityholders. The size of the “pie” is reduced. However, this creates an arbitrage incentive for outsiders to capture these costs by purchasing the securities at their respective market prices, if formal bankruptcy costs exceed the transactions costs. This mechanism of bankruptcy avoidance has been discussed in detail earlier in the paper. Nonetheless, we wish to emphasize again that, in the presence of an arbitrage incentive, informal reorganization will dominate its formal counterpart, if the bankruptcy costs exceed the transactions costs.

5. We also argue that the costs associated with technical insolvency [e.g., Lee and Barker (1976)] are subject to the same limitation as those for bankruptcy. If current earnings are insufficient to meet the promised interest payments, bankruptcy or financial crisis can be avoided by selling additional common stock. If the stock is sold and the debt is purchased at fair market prices, the wealth of the initial stockholders must remain intact.

6. The existence of formal bankruptcy proceedings may be explained empirically by the fact that the costs associated with a formal transfer may indeed be less than the transactions cost limitation discussed in this paper. Warner’s (1976) estimates indicate that these costs averaged 5.3% of the total value of the firm, measured in the month in which the firm filed a bankruptcy petition. However, notice that the more relevant measure should be the ratio of the expected bankruptcy costs to the market value of the firm at the time of capital structure decisions. Warner reports that such a ratio averaged only 1% of the value of the firm seven years before the petition was filed. These costs should be reduced much further if they are appropriately adjusted to reflect their present value and the probability of bankruptcy actually occurring.

7. It may be argued that, because the market value of the firm is likely to shrink as bankruptcy approaches, the transactions costs associated with informal reorganization are likely to be large as a percentage of the firm at that time. We point out, however, that this percentage value is irrelevant to the question of an optimal capital structure. The relevant magnitude is the dollar present value of the expected (and risk adjusted) transactions costs as it compares with the present value of the tax subsidy at the time of capital structure decisions. Any shrinkage in the value of the firm is likely to reduce the dollar amount of the transactions cost even if it increases it as a per cent of the value of the near bankrupt firm.
Under what conditions might the process discussed above be expected to break down? In our view, the conditions are such that (1) capital market participants are irrational enough not to take advantage of profitable arbitrage and hence eliminate it in equilibrium, and/or (2) they operate in an environment that systematically impedes an arbitrage operation. Therefore, those who formally introduce bankruptcy costs in their models must presumably postulate the existence of either systematic irrationality or a market environment that results in a situation whereby investors expect to buy or sell securities only at unfavorable terms.

Some might argue that management may be more interested in their own continued employment than in maximizing the stockholder wealth. The best interests of management may be inconsistent with choosing the less costly of the two alternatives (informal vs. formal reorganization) to resolving the dispute to ownership of the firm. Should this be the case, and the market values of the stocks and bonds of the firm reflect the probability of occurrence of significant, formal bankruptcy costs, these costs will again be immediately captured by anyone in the open market. This can be accomplished by forming and financing a holding company through the sale of equity and/or debt, and by using the proceeds to purchase the debt and equity of the bankrupt firm at prevailing market prices. Having done this, there is no longer any meaningful dispute between competing claims and no need for formal bankruptcy proceedings or the occurrence of its associated costs. The value of the firm should now rise by the amount of these costs, and the profit should accrue to the owners of the new venture. The existence of many investors who are attracted by such opportunities for profit should preclude the act of formal reorganization at costs significantly greater than those associated with informal reorganization as well as the reduction in the market values of debt and equity by an amount in excess of the transactions costs associated with informal reorganization.

Some may also argue that our conclusions for the irrelevance of bankruptcy costs hold mainly for a static framework, because in a dynamic context a highly levered capital structure may call for “frequent” informal reorganizations, the aggregate cost of which may lead to an optimal capital structure similar to those held by actual firms. We wish to argue otherwise. In a dynamic context, the marginal debt decision is entirely dependent on its marginal attributes to the firm. If bankruptcy costs arise as a result of capital structure decisions, the relevant costs are those expected marginal costs associated with the issuance of the marginal debt. Thus, in putting an additional marginal unit of debt in place, the relevant, associated costs of informal reorganization are those of removing it through repurchase. Since the decisions to put subsequent units in place (after informal reorganization) are independent of the decision regarding this particular unit, their associated costs are irrelevant to the present capital structure decision.

The conflicts between the arguments presented in this paper and those presented by the advocates of an optimal financial policy are best resolved by noting that the mechanisms we use to limit the magnitude of bankruptcy costs are precluded under the assumptions of previous papers. To illustrate, Kim [1976] bases his analysis on the single period capital asset pricing model. He specifies the existence of “option holders” (lawyers, accountants, etc.) who have a priority claim, equal to the bankruptcy costs, that is assumed to be automatically exercised if the period-end
value of the assets is less than the fixed obligations. Thus, the firm makes a capital structure decision at the beginning of the period and that decision is irreversible throughout the period. Under more general conditions, the date of probable bankruptcy is known and fixed by the maturity date of the future priority claim that the firm is unlikely to be able to meet. If bankruptcy costs are truly significant, the manager can avoid them through informal reorganization at any point up to the claim's maturity date. The assumptions of Kim's model, by precluding this option, gives rise to bankruptcy costs that are assumed to be significant.8

On the other hand, Scott deals in a multiperiod framework, but he argues that if the value of equity held by current stockholders falls to zero (it cannot be negative under limited liability), it is impossible to issue additional equity to avoid bankruptcy and its associated bankruptcy costs.9 This argument cannot survive on two grounds. First, if the competing equity claim has a zero value, debtholders can eliminate it and the dispute to the ownership of the assets by acquiring it as a free good without incurring bankruptcy costs. Second, it can be shown that any bankruptcy costs associated with competing debt claims must also be insignificant. This follows from the possibility of the purchase of competing claims by anyone (including existing stockholders and debtholders) in the open market. So long as this market opportunity is not precluded, one can readily see that bankruptcy costs must be insignificant. To show this, note again that if they are significant and the market values of the competing debt claims reflect their probable occurrence, the bondholders, the old stockholders, or for that matter anyone can capture the expected value of these bankruptcy costs by forming a holding company, financing it by selling shares and/or debts, and using the proceeds to purchase the competing claims at prevailing market prices. Having done this, there is no meaningful dispute to resolve, and the settlement costs can be retained. Note also that the benefits of the tax subsidy can also be retained by relevering the holding company to the full extent desired.

We wish to stress that our arguments hold in an ex ante, as well as in an ex post sense. If rationality prevails, the expected value of future bankruptcy costs must be that attributable to the more efficient means (formal vs. informal) of reorganizing the firm. Consequently, it is our position that this value is limited to the lesser of the expected cost of bankruptcy and the expected cost of transacting informal reorganization in the capital markets.

8. It is also interesting to note that Kim's results hold only if the bankruptcy cost option holders constitute a true drain on the system. If the lawyers and accountants are members of a firm that is priced in accord with all other assets in the system, then under a simple separation property, there can be no bankruptcy costs of significance, since we are merely taking money out of one pocket and putting it into another pocket of the same consumer-investor. One might also call into question the relevance of bankruptcy costs in a single period framework. Bankruptcy costs are associated with the transfer of ownership to creditors. In a single period model, the firm terminates operations and is liquidated. If there is insufficient cash to pay the creditors' claims, the firm is declared bankrupt and the creditors walk away with the entire proceeds of liquidation. In this framework, how can there be significant costs associated with the transfer of ownership when there is no continuation of ownership in the firm?

9. Scott allows additional share sales to avoid "technical insolvency" or "financial crisis." This situation occurs when the current earnings are insufficient to meet the promised current interest payments.
III. Liquidation

Liquidation is the sale of the dismantled assets of the firm. It is a capital budgeting decision. Liquidation occurs when the market value of the dismantled assets exceeds their aggregate value as the organized, ongoing firm.

Whoever is in control, it is in the interests of the owners to liquidate when and only when

$$V_L > V_M$$

where $V_L =$ The total value of the assets when dismantled and sold piecemeal less any associated costs.

$V_M =$ The total market value of the assets of the firm as given by the price that clears a competitive market.

The costs of liquidation may again be classified into direct and indirect groupings that are very similar to those relating to bankruptcy. It is possible that the direct costs associated with liquidation and the indirect costs associated with an increasing probability of its occurrence are quite large. Our arguments are not addressed to their magnitude. We contend that, however large their expected value might be, these costs are independent of the capital structure decision. If the cash flows associated with continuing operation are such that it is a rational decision to liquidate a bankrupt firm, it should also be a rational decision to liquidate an otherwise identical non-bankrupt firm. The decision rule of (1) holds fully for either firm. If $V_L$ is known and $V_M > V_L$, the firm will not be liquidated no matter who is in control (stockholders). It is more profitable for either group to dispose of their holdings, should they desire, in the capital market. If $V_M < V_L$, the firm will be liquidated again, no matter who is in control. In fact, it is in the interests of everyone to buy the firm at $V_M$ and liquidate to obtain an immediate profit.

If $V_L$ is not known with certainty, it is still easy to show that the decision to liquidate is independent of the state of the firm even in the presence of disagreement on the part of bondholders and stockholders concerning the liquidating value. Suppose that the relationships of Table 1 prevail between the liquidating and the going concern values. Debtholders and stockholders may hold unanimous or divergent opinions about the liquidating value of the firm.

Presume first that debtholders and stockholders are unanimous about the magnitude of $V_L$. If $V_L < V_M$, liquidation does not occur irrespective of whether or not

| TABLE 1 |
|---|---|---|---|
| Unanimity | Divergence |
| I. No Bankruptcy | No Liquidation | Liquidation | Liquidation | Liquidation |
| (Stockholders) | (Debtholders) | (Debtholders) | (Stockholders) |
| II. Bankruptcy | No Liquidation | Liquidation | Liquidation | Liquidation |
| (Debtholders) | (Debtholders) | (Stockholders) | (Stockholders) |
the firm is bankrupt. If the firm is bankrupt, it is in the interest of the old debtholders to either carry on the business as the new stockholders or to sell their stock in the ongoing firm. If, on the other hand, \( V_L > V_M \), and the firm is not bankrupt, the existing stockholders liquidate; if the firm is bankrupt, it is in the best interest of the new stockholders (old debtholders) to liquidate. That is, given the rule in (1), liquidation and its associated costs occur irrespective of the state of the firm or its capital structure.

Presume now that there is the following divergence of opinion between the debtholders and the stockholders:

\[
D \quad V_L > V_M \\
S \quad V_L < V_M \tag{2}
\]

where \( D \) and \( S \) are the estimated liquidating values of the firm for debtholders and stockholders, respectively.

If bankruptcy has occurred and the debtholders have ownership and control, the firm is obviously liquidated. This will also happen, however, even if bankruptcy has not yet occurred. To see this, note that it is in the best interest of the debtholders to sell their claims at a competitive price and/or raise capital by selling shares at a competitive price and use the proceeds to buy the stock at a price equal to \( V_E = V_M - V_D \) (where \( V_D \) is the market value of their claim). As owners, they can now issue new shares to repurchase the outstanding debt, and then liquidate with the expectation of obtaining a profit equal to \( D V_L - (V_E + V_D) \).

Suppose, instead, that the following difference of opinion is in effect:

\[
D \quad V_L < V_M \\
S \quad V_L > V_M \tag{3}
\]

If bankruptcy has not occurred, the firm will be liquidated because it is in the interest of existing stockholders to do so. If bankruptcy has occurred, and the debtholders have ownership and control, the old stockholders can still force liquidation by forming a holding company to raise the additional proceeds required to buy the firm from the debtholders at a price equal to \( V_M \) with the expectation of obtaining a profit equal to \( S V_L - V_M \).

Thus, we conclude that in the presence of rationality and in the absence of systematic errors in pricing by the capital market, the liquidation decision is best considered as being independent of the state of the firm or the nature of its capital structure. It follows that the present value of expected costs associated with terminating the operations of the firm are also unrelated to the degree to which the firm employs financial leverage. These costs should not play a significant role in the determination of an optimal capital structure and cannot be evoked to reconcile financial theory with capital structures observed to exist in the real world.

Again, the apparent conflicts between this paper and others are best resolved by noting the assumptions of previous papers. Scott [1976] assumes that, upon bankruptcy, the firm automatically ceases operations and liquidates. Scott then assumes
that bankruptcy costs arise because the productive assets of the firm are sold in imperfect secondary markets. In this paper, we argue that there is no basis for such an assumption because the liquidation decision is independent from the event of bankruptcy.

IV. CONCLUSION

The irrelevance of capital structure in the absence of corporate taxes and the domination of debt in capital structure in the presence of corporate taxes can both be demonstrated under the framework of perfect markets and associated costless bankruptcy. It is now a matter of consensus in the literature of finance that under market imperfection bankruptcy penalties arise and the trade-off between bankruptcy costs and the tax subsidy makes possible an internal optimal capital structure. We have challenged this contemporary view of optimal capital structure by arguing that bankruptcy costs, which affect the capital structure decisions, must be trivial or nonexistent if one merely assumes that capital market prices are competitively determined by rational investors. Those who argue otherwise must presumably postulate the existence of either systematic irrationality or a market environment that results in a situation whereby investors expect to buy or sell securities only at unfavorable terms.

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