



American Finance Association

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Source: *The Journal of Finance*, Vol. 37, No. 3 (Jun., 1982), pp. 751-761

Published by: Blackwell Publishing for the American Finance Association

Stable URL: <http://www.jstor.org/stable/2327706>

Accessed: 27/11/2009 08:18

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Debt Financing, Corporate Financial Intermediaries and Firm Valuation

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ABSTRACT

In this paper we consider the role of financial intermediaries in the valuation of firms and projects. We show that security prices should reflect both used and unused debt capacity if some corporations can act as financial intermediaries and can capture the tax benefits of debt capacity unused by the operating firm. We also provide some reasons why the value of the firm might be increased if the financing and operating risks of the firm are separated and financial intermediaries issue debt rather than the unit operating the asset.

IN THIS PAPER WE consider the role of financial intermediaries in the valuation of firms and projects. We show, using familiar arbitrage arguments [13], that security prices, and therefore shareholders' returns, should reflect both used and unused debt capacity if other corporations can act as financial intermediaries and can capture the tax benefits of debt capacity unused by the operating company. The argument has two important implications. First, the project valuation exercise should include any incremental tax benefits (to the extent that tax benefits do exist) arising from the debt capacity contributed by a project, irrespective of whether that debt capacity is taken up by the firm operating the project or by some other firm which, acting as an intermediary, holds the shares of the operating firm and borrows. We also provide some reasons why the value of the firm might be increased if the financing and operating risks of the firm are separated and financial intermediaries issue debt rather than the unit operating the asset. The second implication of our argument is that all the shares of companies that are underlevered should be held by corporate taxpaying intermediaries rather than by individuals or (partially) tax-exempt funds. To the extent that this takes place, security prices will reflect (most of) the tax advantages of debt capacity even when unexploited by the operating firm. The question of why these outcomes are not widely observed in practice is explored in the final section.

I. The Value of Unused Debt Capacity

Myers [9] properly defined debt attributable to a prospective project as the project's contribution to the firm's debt capacity, with debt capacity defined as

* London Business School and University of North Carolina at Chapel Hill, respectively. We would like to thank R. Hamada, S. Myers, and Yoram Landskroner for their suggestions. We are also grateful to the members of the UNC and LBS finance workshops for helpful comments, especially those of R. Harris, R. Brealey, I. Cooper, C. Baden-Fuller, and S. Hodges.

the shareholders' debt optimum. He assumed implicitly that the firm operated at the optimal debt level where the tax benefits to shareholders from debt financing at the margin were zero, although all supramarginal debt earned the full tax shields. After undertaking each new project, the firm readjusted to the new optimum by issuing debt in the appropriate amount. Similarly, as the project (with a finite life) was exploited through time, the reduction in the present value of future cash flows was matched by a reduction in debt capacity and the retirement of an equivalent amount of debt. He did not, however, consider the case of firms that do not operate at their optimal debt ratio.

In this section we consider firms that are in a position to use the interest tax shield but choose to operate below their optimal debt ratios. If the project's after-tax operating cash flows and the debt issued are perpetuities, the value of a project simplifies to the familiar Modigliani and Miller [8] equation

$$V_0 = A_0 + \tau_c L^* A_0 \quad (1)$$

where A_0 is the present value of the unlevered project, L^* is the optimum proportion of A_0 that can be financed by debt, and τ_c is the corporate tax rate.

When a firm undertakes new investments potential new tax shields are created. There are three ways in which these potential tax shields can be exploited:

- (1) by the operating firm i issuing debt up to the new optimum;
- (2) by another firm acquiring firm i and issuing debt on the unlevered assets. The stock price of the firm i should, as a consequence, reflect the probability of acquisition and the utilization of the debt capacity (see [2]); and
- (3) by taxpaying corporations acting as intermediaries and buying part of the shares of the underlevered operating firm i and borrowing until the stock price of the operating firm reflects all the tax benefits of optimal leverage.

Under scenario (1) the mechanism by which tax shields are reflected in market values is straightforward [$V_0 = A_0 + \tau_c L^* A_0$]. Under scenario (2) the adjusted present value (APV) of a perpetual project will be¹

$$V_0 = A_0 + \tau_c L A_0 + \sum_{t=1}^{\infty} \prod_t \left[\frac{\tau_c (L^* - L) A_0}{(1+r)^t} \right] \quad (2)$$

where

L = actual debt ratio of the project ($L^* \geq L$);

$\prod_t$ = probability of takeover in period t ($t = 1, 2, \dots, \infty$); and

r = discount rate reflecting the risk of the tax shields of debt.

It is assumed that the acquirer uses the spare debt capacity (and obtains the tax shields) instantaneously with acquisition. Thus today's security prices, and consequently the value of a project, should reflect in part the tax benefits of unused debt capacity, contingent on the probability of acquisition.

It is important to distinguish between an acquisition of all the shares of an underlevered firm by a single corporation (scenario 2 above), which is usually described as a merger or takeover, and the purchase of those shares by a large

¹ If the project is not perpetual then the second and third terms on the righthand side of Equation (2) are more complex. One must use the adjusted present value formulas described by Myers [9].

number of corporations acting as intermediaries (scenario 3). First, in scenario (2), trading of the shares of the operating firm ceases, making for less liquid markets, whereas trading continues in scenario (3). Later we shall investigate the implications of tradeability. Second, a single firm's acquisition of 100 percent of the shares of the operating firm normally would require a substantial bid premium and involve legal expenses; the latter might be substantial if the operating management were to resist.

A. The Effect of Financial Intermediaries

We show below that, under certain conditions, it is unnecessary for a company to acquire control over the real assets of the underlevered firm in order to take advantage of its unused debt capacity (as in scenario 2). All that is necessary (scenario 3 above) is for sufficient corporate taxpaying intermediaries, acting on behalf of the shareholders of the unlevered firm or new shareholders, to purchase all the shares of the unlevered or inadequately levered form and to borrow on those shares.² Interest payments on the borrowing are netted with the intermediary's income in order to obtain the corporate tax shields. Thus, in this case (scenario 2) the value of the project to the unlevered operating company should include the total value of the tax benefits to debt contributed by the project irrespective of whether that debt capacity is actually used by the operating firm; Equation (2) thus simplifies to Equation (1).

Stiglitz [13] shows in his Theorem 2 that if free entry of financial intermediaries can be established costlessly, then this will ensure that a set of financial securities will be offered which maximizes the value of the firm regardless of the debt-to-equity ratio of the operating firm. Although Stiglitz did not introduce a tax advantage to corporate borrowing, a similar arbitrage argument can be applied to this case. In the subsequent analysis we shall examine the way in which such a post-tax arbitrage process could function under the U.K. and U.S. corporate tax systems.

B. U.K. Tax System

Let us compare the cash flows received by shareholders when the operating firm borrows, with the cash flows received when a corporate taxpaying intermediary does the borrowing in lieu of the operating firm. In the U.K. such an intermediary can be another operating firm.

Assume that a previously unlevered operating firm i borrows an amount D that is some fraction q of its optimal debt level D^* , with $q < 1.0$. So $D = qD^*$. Then N intermediaries ($n = 1, 2, \dots, N$) purchase all the shares in i and issue debt totalling $(1 - q)D^*$. Each intermediary, for example j , owns some proportion α_j^i of the stock of i , and borrows an amount $\alpha_j^i(1 - q)D^*$. Shares continue to be traded, but trading takes place entirely among intermediaries. Now total debt issued against i 's operating income by firm j and N intermediaries combined is $qD^* + (1 - q)D^* = D^*$, the optimal amount (since $\sum_{n=1}^N \alpha_n^i = 1$).

² There is an assumption here that taxpaying intermediaries cannot reduce taxes by further borrowing because agency costs, expected default costs, and other costs of financial distress limit debt capacity.

A number of conditions must be maintained for such an arbitrage process to take place. First, we have assumed that N intermediaries purchase all the shares of the underlevered firm. Thus, we have implied a clientele effect whereby only intermediaries paying corporate taxes will hold the shares of underlevered companies. To see this, consider the situation where $\sum_{n=1}^N \alpha_n^i < 1$ (the remainder is held by private investors). Assuming that the debt capacity of the financial claim is equal to the debt capacity of the real assets, only the proportion $\sum_{n=1}^N \alpha_n^i (1 - q)D^*$ could be raised on the stock, which must be less than the unused debt capacity $(1 - q)D^*$.

In the arbitrage process, we have assumed that the intermediary j has purchased a proportion α_j^i of i 's stock and issued debt of $\alpha_j^i(1 - q)D^*$, on which interest of $\alpha_j^i(1 - q)rD^*$ is paid. Two conditions will enable firm j to capture the tax shields previously foregone by i : (1) if firm j is paying corporate taxes on other income Y and $Y \geq \alpha_j^i(1 - q)rD^*$; (2) if dividends and capital gains from firm i to an intermediary j are not taxable to j . In the U.K. dividends received by corporations are not taxed, but realized capital gains are subject to a 30 percent tax.

In order for the equilibrium to be reached, there must be sufficient corporate intermediaries with adequate taxpaying capacity to absorb the interest tax shields arising from the unused debt capacity of companies; otherwise security prices will not reflect all the tax benefits of the optimal debt capacity and the intermediaries will obtain economic rents from the transaction. It is useful to note that the intermediary role of taxpaying corporations is very much analogous to the role they play in financial leasing transactions when user companies are in permanent or temporary nontaxpaying positions and therefore are unable to obtain the tax benefits available on capital investment. Here, taxpaying companies (acting as lessors) purchase assets and obtain the tax shields from depreciation and the investment tax credit, which are partially or wholly passed back to the user firm operating the asset via lower lease payments. The exact proportion of the tax benefits obtained by the intermediary depends upon the balance between the supply of taxable capacity available to the leasing industry and the demand for it by temporary or permanently nontaxpaying entities.

C. United States Tax System

An important difference (for this analysis) between the U.K. tax laws and those of the U.S. involves treatment of earnings and dividends of subsidiary firms.

Under current U.S. law, if firm j owns 80 percent or more of i 's stock, the two firms must combine their incomes and pay taxes as a single entity. They may, at their option, file a consolidated return, although this has no effect on the amount of the tax. If j owns less than 80 percent, the two firms are taxed as separate entities. With less than 80 percent ownership, if i pays dividends to j , some fraction (currently 15 percent) is taxed as income to j , with the other 85 percent excluded from the tax computation.

Let t_{ij} represent the fraction of i 's dividend that is taxable to j (currently 15 percent, as noted above). If t_{ij} were zero, the situation would be identical to that

of the UK. Corporations, acting as intermediaries, could recapture all the tax benefits of debt capacity unused by i , providing all earnings were distributed.

Where $t_{ij} > 0$ the situation is different. Suppose, as before, i has issued debt D equal to some fraction q of its optimal debt ratio D^* , with $q < 1.0$. So $D = qD^*$. Thus i is foregoing annual tax savings of $(1 - q)rD^*\tau_c$. Firm j buys a proportion of α_j^i of i 's stock and issues debt of $\alpha_j^i(1 - q)D^*$, thereby reducing its annual tax liability by $\alpha_j^i(1 - q)rD^*\tau_c$ and recapturing a proportion of the subsidy foregone by i . Offsetting this saving is additional tax paid by j on the dividends of i and the taxes on realized capital gains.³ If securities are sold by corporations within one year of purchase, only 15 percent of the gain is taxed. Under these conditions capital gains and dividends would be taxed at the same rate, τ_c , in the hands of the corporate intermediary, and the annual tax savings T would be

$$T = \alpha_j^i(1 - q)rD^*\tau_c - \alpha_j^iX_i(1 - \tau_c)t_{ij}\tau_c \quad (3)$$

where $X(1 - \tau_c)$ is the amount of after-tax earnings. If

$$(1 - q)rD^* > t_{ij}X_i(1 - \tau_c) \quad (4)$$

then $T > 0$. From Equation [3] it is apparent that having N intermediaries do the borrowing instead of i , results in a net tax penalty of $X_i(1 - \tau_c)t_{ij}\tau_c$, reducing earnings to shareholders by that amount.

In the U.S., from a tax point of view it is best for firm i to do the borrowing directly. However, if i does not fully utilize its debt capacity, a large fraction of the tax benefit attributable to the unused debt capacity can be recaptured by intermediaries.⁴ The double taxation of the dividends of i might be reduced by limiting i 's dividend payout and deferring the realization of the capital gain for a sufficient period of time.

The arbitrage arguments presented above for the U.K. and U.S. require some further comment and qualification. The opportunity for such arbitrage to take place is sufficient to cause stock prices to reflect the tax benefits of unused debt capacity provided the market expects the debt to be actually issued. The value placed on that expectation will depend on the probability that the market attaches to the eventual issuance of the debt. The intermediary must have sufficient other taxable income to provide the tax shelter for the interest charges on the debt issued. Finally, the intermediary can finance the purchase of the securities in one of two ways: either from a combination of the tax shields created by the arbitrage process and the dividends received from the operating company, or from funds received by the intermediary from the existing shareholders of the unlevered company. In the second case the shareholders of i are in effect selling their shares and leverage positions to the corporate intermediary in exchange for the latter's shares.

³ Given this double taxation of dividends and capital gains on quoted securities held by a corporation, there is a negative net present value to such holdings. Clearly, there must be advantages which explain these holdings and offset the extra taxes. However, these remain obscure like those which explain why firms pay out dividends and incur greater taxes for some of their shareholders.

⁴ The double taxation of dividends and capital gains would provide a small incentive to acquire the firm outright; however, the required bid premium and other transaction costs would almost certainly exceed the taxes saved.

If intermediaries are able to operate in the manner we have described, most of the tax advantages of debt should be reflected in security prices regardless of whether the debt capacity is fully utilized by the operating firm.⁵ Furthermore, we have also suggested that the project valuation exercise should also include the tax benefits of debt irrespective of whether the debt capacity is used by the operating firm; similarly, pricing, wage, and other decisions will be affected by tax benefits received by shareholders rather than by only those benefits that pass through the hands of the operating firm [4]. In evaluating a prospective investment, the operating firm's management should "look through" the intermediary, treating the intermediary's shareholders as its own.⁶

II. The Advantages of Separating Operating and Financial Risks

Our analysis thus far has assumed that the debt capacity of a firm or project is the same irrespective of whether the operating firm or a financial intermediary does the borrowing. We now discuss some reasons why intermediaries may provide advantages.

A. Monitoring Costs and Liquidity

When a lender is offered tradeable financial claims as security for a loan, there are two advantages compared with the security of real assets.⁷ The first is that continuous unbiased prices are set in the market place. As a consequence the lender has no need to estimate the valuation of the real assets, and therefore there is no need to monitor the actions of the managers and incur the resulting costs.

The second advantage of tradeable financial claims (other than the operating firm's own shares) as security for a loan is that of liquidity. If the value of the borrower's security falls below a certain level, a new call for funds is made, or, failing that, the securities are sold by the bank to realize the loan. Such a

⁵ The extent of the tax advantage to the use of debt is an open question at this point (see Miller [7]). There may be, however, other nontax motives for using debt. One explanation might be that funds raised (by operating firms) via financial intermediaries are cheaper than funds raised via the public markets because of lower information processing costs (see [6]). The financial intermediary acts as agent for both lender and borrower and can acquire and process information at less expense than can large numbers of investors acting individually. This is simply the standard explanation of the economic role of financial intermediaries. Since many types of intermediaries deal primarily in debt contracts, many firms (especially those that are small or little known) might find debt an attractive source of funds even if there were no subsidy due to deductibility of interest. The argument here rests on a reduction of aggregate information processing costs throughout the economy that improves social welfare; there is no subsidy of one group by another. Also, the firm will face a less complete financial market if it is unable to borrow; this is especially important considering the different transaction costs arising from different financial instruments.

⁶ If the unlevered firm subsequently raises debt, then the firm acting as an intermediary will have to unravel its leverage position. This may create some moral hazard for the lender issuing debt to the intermediary, since the intermediary may not unravel its debt position. Any covenants would have to be in terms of aggregated balance sheets or market values of the intermediary and the operating firm.

⁷ There is one potential disadvantage—the lender cannot control or influence the operating policy of the firm directly.

realization can take place virtually instantaneously; therefore, such a loan is close to riskless. The same is not true when the agreement is tied to the value of the operating firm's shares, for even if the operating firm permits the bank a covenant related to the traded price of the securities, the lender is in no sense completely immunized from a loss since it must sell real assets to redeem the loan. The lender has a claim only on the real assets of the firm. Time may be required to realize those assets (real asset markets are frequently imperfect and inactive), and there remains the uncertainty as to the future price of the asset until the sale is made.

B. Moral Hazard

Assume that a sufficiently large number of financial intermediaries own shares in a particular unlevered operating company, so that no single financial intermediary is able to influence the investment policy of the operating firm. Also, assume such financial firms are unable to act in consort to influence those investment decisions. Under these conditions we can argue that certain moral hazard problems described by Myers [10] as pertaining to the lending decision of the operating firm are reduced.

Myers shows why firms will be unable to borrow on future investment opportunities, i.e., growth opportunities. He argues that if the net present values of such opportunities are unique to the management of the firm, a moral hazard problem arises if the value of the assets is less than the value of the debt. Shareholders will have less incentive to exploit profitable investment opportunities if part or all of the net present value accrues to the lender. The lender can recover the net present value only if shareholders require management to exploit the projects⁸ or if the projects can be sold to other parties at prices which reflect such positive net present value. The moral hazard problem provides an explanation of why banks are reluctant to lend on such growth opportunities. Myers' argument seems to apply just as well to loans on assets in place where the present value of the investment in place is unique to the management of the company. It is for this reason that banks will frequently base their loan decisions on the present value of the assets in alternative uses. The values in alternative uses provide the banks with protection from moral hazard problems.

The separation of financing and operating risks through financial intermediaries will reduce such moral hazard problems. However, the intermediary may have an incentive to induce the operating firm's management to pass up good projects if the intermediary risked default for purely capital structure reasons. There are several reasons why the corporate intermediary would have serious difficulty in enforcing changes in the operating firm's investment program. First, not all intermediaries may be in default simultaneously; therefore, the operating firm could not reject profitable opportunities and act unambiguously in favor of all its shareholders. This will be so where the intermediaries hold different assets, and where the assets' returns are varying and imperfectly correlated with the returns of the operating firm. Thus, a decline in the latter's shares will have a

⁸ Shareholders may have no incentive to exploit the project but management may have such an incentive. The failure by management to adhere to contractual obligations will affect the value placed on their services by the market.

varying impact on the probability of default of each intermediary. Also, if each intermediary holds other assets (which are imperfectly correlated with the returns of the operating firm), there will be a reduction in the probability of default as a result of the co-insurance effect; in effect, there will be fewer defaults compared with the situation where the debt was held directly by the operating firm. Second, the managers of the operating company may have some disincentive to reject profitable projects because of the consequent costs that they incur. Such costs are not difficult to find, since, if the managers threaten to pass up profitable projects in order to induce banks to be more lenient with respect to intermediaries, they may increase the probability of their own operating companies' default, and impair their own personal income streams (including their reputations).

C. Asymmetry of Risks between Shareholders and Managers

If financial risks affect the value of the manager's and employees' benefits stream, and such individuals incur higher risks from a given benefits stream than shareholders, then more projects may be rejected that are profitable to shareholders but which are expected to diminish the wealth of managers and employees. The asymmetry of risks between shareholders and managers may prevail because the managers are poorly diversified and therefore they have not obtained the benefits of risk reduction. Moral hazard problems and the concentration of many managers' wealth in the form of human capital may prevent its tradeability and as a result prevent adequate diversification. Thus, the risks of debt financing may be greater for managers than for shareholders and lead to a rejection of projects that will increase shareholders' wealth. If debt can be employed in financial intermediaries, then shareholders may obtain the benefits of debt financing but not the penalties of a lower level of investment.

It may be argued that the managers can always sell those projects which have a positive net present value if they do not wish to undertake them. However, unless the net present value has arisen from a windfall gain, we might reasonably expect part of the supernormal profits to be unique to the skills of the specific management. It might also be argued that specific compensation plans could be developed to provide managers with the incentive to maximize shareholder wealth or that a competitive managerial labor market might encourage managers to pursue shareholder interests (see Heckerman [3], Jensen and Meckling [5], and Fama [1]).

D. Financial Distress

When an operating firm uses debt, the onset of financial distress may put the firm's management at a disadvantage in negotiating with suppliers and customers. The credibility of the firm's guarantee to perform against contracts, to deliver future goods and services, etc., may be reduced. Opportunity costs may be incurred due simply to the diversion of management time from operating to financing matters. Also, creditors may impose unwise constraints on the firm's operations and commercial strategy.

Separating the operating and financing risks by having debt issued by financial

intermediaries could avoid some of these problems and their attendant costs.⁹ So long as the commercial operations of the firm remain economically viable (i.e., having a positive net present value), insulating them from disputes among suppliers of funds should provide advantages. One such advantage may arise (in Miller's world of debt and taxes) when a firm is in financial distress. For example, a firm may wish to raise an issue of equity in order to obtain the value of unused tax benefits; the new equity could be invested in corporate bonds and the interest income would be offset against the unused tax benefits. Thus, shareholders would be able to hold corporate bonds, tax free, via the firm. However, if the firm had debt outstanding, the new equity would reduce the bondholders' risks of default and provide them with windfall gains, at the expense of existing equity holders. Such wealth transfers might explain the puzzle of why firms which are in financial distress (and have risky debt outstanding) are unwilling to resort to new equity issues.

E. Holding Companies as Financial Intermediaries

A question arises as to whether it is possible to obtain all or any of the above advantages when the shares of the operating company are owned by a single intermediary, and where the investment and financing risks are separated via a holding company structure. In the case of monitoring costs and moral hazard it is difficult to see how the holding company structure can provide any benefits. The operating company's stock is not traded, and the management of the operating company would be too close to the management of the holding company to avoid moral hazard problems. Of course, if the holding company held only a major interest in the operating company and the remainder of the shares were traded, then some of the advantages of reduced monitoring costs and moral hazard could be obtained. This situation is not very different from the "N" intermediaries case except that one intermediary has a dominating interest.

In the case of asymmetry of risks and the costs of financial distress, the single intermediary or holding company concept should obtain the related advantages. The holding company structure will permit creditors, customers, suppliers, and managers all the more clearly to distinguish the causes of financial distress, and to determine when distress arises from operating as opposed to financing considerations. Clearly, such gains will arise only if informational imperfections are such that the parties involved find it sufficiently difficult or costly to distinguish the sources of financial distress.

III. Conclusion

We have shown in this paper that if there is a corporate tax advantage to debt, the value of an operating firm's shares may reflect its optimal debt level regardless

⁹ Any reduction in costs will obviously depend upon what kind of intermediary is used. Costs are most likely to be reduced when the intermediary is purely a financial concern such as an insurance company, where assets and liabilities can be valued at small cost, and where the costs of financial distress may be lower than in other operating firms.

of how much debt it actually uses. Our arbitrage arguments follow from those of Stiglitz. The implication for capital budgeting is that the project valuation exercise should include all the tax benefits of the debt capacity contributed by the project, irrespective of the amount actually borrowed by the firm operating the asset (subject to the tax leakage caused by the double taxation of dividends in the U.S.). The implication is that intermediaries will purchase the shares in the inadequately levered firm and borrow in order to obtain the unused tax benefits. The role played by intermediaries in capturing unused debt capacity provides an alternative to merging as a way of obtaining unused debt capacity. As a consequence, the shares of underlevered companies will be held by corporate taxpaying intermediaries.

We have also provided reasons why a financial intermediary may actually be able to borrow more on the financial claims of the operating firm than the operating firm can borrow on the real assets. The tradeability of the financial claims may reduce agency costs and increase liquidity. Furthermore, the separation of the financing and operating risks may reduce moral hazard problems and the costs of financial distress. Finally, a holding company may be able to obtain some of these advantages while eliminating some of the difficulties of having the operating firm look to several sources (i.e., several intermediaries) for financing. This argument may provide a financial rationale for the past popularity of the holding company organizational structure.

Our final observation is an empirical one. Our analysis suggests that borrowing is best done by financial intermediaries rather than directly by operating firms, whereas in practice we observe that operating firms do borrow. Some might find this fact to be supportive of Miller's argument [7] on the grounds that it is tax benefits which motivate our argument in Part I of this paper. If operating firms do borrow, then perhaps those tax advantages are smaller than they appear, just as Miller argues. However, this proposition is not totally persuasive since we have found nontax advantages which would recommend debt financing by intermediaries rather than by the operating firm. A second reason for borrowing by operating firms may be that capital structure is used by such firms as a signalling device where there is information asymmetry (see Ross [12] and Rendleman [11]). The use of financial intermediaries in the role we have prescribed would deprive operating management of such signalling devices. A third possible reason may be that the managers of operating companies prefer to see the advantages of debt financing reflected in their own firms' income account, rather than through the income account of a corporate intermediary, since their compensation is frequently related to earnings rather than to stock returns. Finding a suitable explanation is made more difficult by the fact that we do not have a comprehensive model of the capital structure decision of the firm.¹⁰

¹⁰ There may also be constraints on the supply of intermediaries who may be able, or willing, to perform the intermediary function. For example, banks are prohibited by law from owning common stock. Taxpaying industrial companies may not find the intermediary role compatible with their existing activities.

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