CORPORATE FINANCE

Agency Costs, Risk Management, and Capital Structure

Hayne E. Leland
Journal of Finance
vol. 53, no. 4 (August 1998):1213–43

The author develops a model that unifies elements of two capital structure theories—the tax-based arbitrage theory of Modigliani and Miller and the agency-based theory of Jensen and Meckling. The model incorporates the tax benefits from the usage of debt in the capital structure and combines it with the agency costs from the firm's increasing asset risk once the debt is in place. The model's results indicate that agency costs are small relative to tax benefits; however, creditor risk from asset substitution causes a substantial increase in yields. Contrary to conventional wisdom, hedging benefits often are inversely related to agency costs.

Theory about corporate capital structure has been shaped by two theories. Modigliani and Miller (M–M) have developed a tax-arbitrage position and have demonstrated that capital structure does not affect firm value, given the absence of nonfirm claimants. Jensen and Meckling (J–M) have challenged the M–M assumption that investment decisions are independent of capital structure. For example, shareholders in a levered firm could increase asset risk after debt is in place and thereby transfer value from creditors to shareholders. The potential for such asset substitution imposes agency costs that the choice of capital structure must address.

Hayne E. Leland is at the Haas School of Business, University of California at Berkeley. The abstract was prepared by S. Brooks Marshall, CFA, James Madison University.

The development of capital structure theory has been limited in two respects. First, the M–M and J–M approaches have not been integrated. A general theory would need to explain how M–M and J–M approaches interact to optimize the joint choice of asset risk and capital structure. Second, a general theory would also need to provide quantitative advice regarding specifics of debt in the capital structure, including amount, maturity, and call provisions. Because of these limitations, the existing theories have had limited application to corporate decision making.

The author develops a unified framework for elements of the M–M and J–M approaches. The model extends previous work and allows the firm to choose its risk strategy (i.e., the model allows the firm to choose continuously between high-risk and low-risk assets). The model incorporates the tax benefits from capital structure (i.e., the tax deductibility of debt), the value of default costs, the debt issuance costs, the bankruptcy costs, and the agency costs. The author incorporates expected debt maturity into the model as a function of the rate of debt retirement and incorporates the possibility of either the debt being called or the debt being subject to default.

The author applies the model by incorporating parameters that are representative of a typical firm in the S&P 500 Index. The agency costs are the percentage difference in firm value between optimal *ex ante* asset choice, wherein the firm cannot transfer value from creditors to shareholders through asset substitution, and *ex post* asset choice, wherein the creditors are subject to costs from asset substitution. Even when the firm's risk policy can be committed *ex ante* to maximize firm value, the firm increases risk when asset value is low; when the risk choice is made after assets are in place, the firm has considerably higher average risk, reflecting the asset substitution problem.

Agency costs are small, only about 1.37 percent—less than one-fifth of the tax benefits associated with debt. But creditors are sensitive to the prospects of asset substitution. The yield spread with no agency costs is 69 basis points (bps); with agency costs, the yield spread increases to 108 bps. Relative to an otherwise

similar firm (one that can precontract risk levels before debt is issued and thus does not subject the creditor to asset substitution risk), optimal leverage for the firm with agency costs is lower and the debt maturity is shorter. When the firm's risk policy is determined after the debt is in place, the firm will switch to a high-risk level at a much greater asset value. Contrary to conventional wisdom, asset substitution will occur even when no agency costs are present, although to a lesser degree than when they are.

The author also evaluates the firm's incentive to reduce asset risk through hedging. The model indicates that hedging benefits and agency costs are often inversely related.

The author concludes that the model's limitations are that the model assumes managers behave in shareholders' interests, that dividend payout policies are exogenous, and that information asymmetries are ignored. These limitations provide challenges for future research.