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Debt and Taxes and Uncertainty: Discussion

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DISCUSSION

GEORGE M. CONSTANTINIDES*: Ross' reexamination of Miller's [3] leverage irrelevance proposition is both economically interesting and technically important. Ross summarizes his contribution as follows: "Our main result is the finding that there is a relationship between the capital structure of the firm—as induced by tax effects—and ordinary (beta) measures of risk. This relationship is particularly surprising because we will find that firms have optimal internal financial mixes in the absence of any bankruptcy costs or any agency, asymmetric information or signalling effects."

Under completeness in both the equity-taxed and debt-taxed markets, De Angelo and Masulis [1] prove that each firm has a unique interior optimal debt-equity ratio if there are leverage-related costs. One source of leverage-related costs is the assumed inability by the firm to sell its tax deductions in excess of earnings in the bankrupt states. We consider these costs as leverage-related because both the potential tax deductions are higher and the probability of bankruptcy is higher, the higher the debt-equity ratio.

Although Ross does not assume completeness in both equity-taxed and debt-taxed markets, he does assume the above leverage-related costs. Therefore, his finding that firms have optimal internal financial mixes should not come as a surprise. Later on, Ross correctly points out that if firms can merge and spin off in an arbitrary fashion, the leverage-irrelevance proposition is restored. Mergers and spinoffs effectively make tax credits marketable and the earlier leverage-related costs disappear.

Theorem 7, the main result, states: "In a cross-section of firms with the same total variance, those with higher (positive) cash flow betas will have lower debt levels." The intuition is simple: two firms with the same distribution of cash flows (but not perfectly correlated) will have the same expected tax credits and, therefore, the same expected bankruptcy costs. However, the present value of the expected bankruptcy cost will be higher for the high-beta firm because these costs are incurred in the states that the marginal utility of consumption is higher than in the low-beta firm. Therefore, the high-beta firm will choose a lower debt-equity ratio.

Whereas the intuition of Theorem 7 is simple, the formal proof is technically challenging. Ross' primary contribution lies in proving this technical result by using the methodology developed in the companion paper by Dybvig et al. [2].

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Theorem 7 hinges on the assumption that the leverage-related costs occur in the low-consumption states of nature. However it is in the high-consumption (euphoric) states of nature that management is more likely to consume perks and auditors are less likely to spot misdeeds. If we interpret leverage-related costs more broadly to include this sort of agency costs, the conclusion of Theorem 7 may be reversed. However, the contribution of Theorem 7 remains valid, in that it links the cash flows' beta to the firms' leverage in a cross-section of firms.

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