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Author(s): R. A. Taggart, Jr.

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I think the paper's most important point is the following one. Suppose regulators set x^* (the instantaneous rate of allowed earnings on the rate base) such that market value equals rate base when their decision is announced. Brennan and Schwartz call this a consistent policy. Then x^* is *not* equal to the instantaneous cost of capital or any sensible average of future costs of capital. Since the earnings rate x wanders randomly between hearings, the firm can invest more when earnings go up, less when they go down. This is a valuable option. Therefore x^* is less than the cost of capital, other things equal.

This is the story stressed by Brennan and Schwartz. However, there are other reasons why x^* should differ from the cost of capital. For example, if x wanders with a downward drift, then x^* has to be larger than in the no-drift case.

Also, regulatory intervention is probably asymmetrical. When costs are declining, regulators may allow excess earnings so long as prices charged consumers are cut from time to time. In other contexts, regulators may be more effective in setting ceilings than floors for profitability or market value. Some regulated firms' values would fall short of their rate bases even if rate of return regulation were abolished.

The distinction between fair return and the cost of capital is not in itself original, but it hasn't had much impact on regulatory theory or practice. The Brennan-Schwartz paper, and the work it will stimulate, could have an important impact. Therefore, it's an important paper.

The natural next step is a much more extensive numerical analysis—a sensitivity analysis to show what factors or situations are likely to give the greatest spread between the fair return x^* and the cost of capital. This will be a lot of number crunching, but worth it.

Brennan and Schwartz's model could also be applied to unregulated firms. For example, suppose we interpret x as the current operating earnings of an unregulated firm. The firm has some market power, but is vulnerable to entry. If x goes up, the probability of entry increases. When entry occurs, the earnings rate reverts to x^* .¹ This firm's investment policy, risk and value ought to behave as the regulated firm's do in the Brennan-Schwartz paper.²

¹ The probability of entry could be set at zero for $x < x^*$. If not, "entry" when $x < x^*$ would have to be interpreted as exit of other firms in the industry.

² Brennan and Schwartz's equations would not fit unregulated firms perfectly. For example, if the firm has some market power, then its current operating earnings should depend on the investment rate. In principle, the regulated firm's investment rate and current earnings should be linked also.

DISCUSSION

R. A. TAGGART, JR*: Just as his classic 1958 paper with Franco Modigliani did, Merton Miller's "Debt and Taxes" has stimulated a large volume of new research. A spate of papers has followed in its wake, examining the key assumptions, generalizing the basic results and integrating Miller's model with such other aspects of finance as the theory of portfolio selection.

Han Kim's paper is best viewed, I think, as a survey of this new research on

*J. L. Kellogg Graduate School of Management, Northwestern University.

optimal capital structure theory. Emphasis is placed on how the nature of the capital market affects investors' portfolio selection generally, and in particular the tendency of investors to form leverage clienteles. The paper is useful in collecting the results from this body of new research and in presenting some of them in a different way so as to give additional insight into how they work. The paper also reflects, however, some areas where current knowledge could be further developed.

Since Section II of the paper was emphasized in the presentation, I will focus most of my remarks on that section, in which two different sets of capital market environments are contrasted. The first set includes the case in which all investors are risk neutral and the complete markets case.¹ Under these conditions, investors' portfolios are specialized as to types of securities held: low tax bracket investors hold only taxable bonds (as well as taxable contingent claims in the complete markets case), while high tax bracket investors hold only tax-exempt bonds and corporate stock. At the same time, as long as the equilibrium condition, $r = r_0/(1 - \tau_c)$, holds, all shareholders are indifferent to changes in firms' capital structures.

The alternative environment is the incomplete markets case, in which low tax bracket investors must hold corporate stock if they wish to hold any risky assets. Under these conditions any firm capital structure will not be as good as any other. Rather, firms adopt either highly levered or unlevered capital structures and investors sort themselves into leverage clienteles. The basic contrast in this section, then, can be summarized as follows: in the first case, investor portfolios are highly specialized but there are no leverage clienteles, while in the second, investor portfolios are less specialized but leverage clienteles do exist.

I would make two points about this contrast. The first is that a portfolio operation is being allowed in the incomplete markets case that is not allowed in the previous case, and this contributes importantly to the contrasting results. This operation is borrowing on personal account by high tax bracket investors for the purchase of corporate stock, and it is equivalent to simultaneously short-selling a taxable security and purchasing a tax-exempt one.

In the complete markets case, high tax bracket investors can transfer resources backward and forward through time at the certainty equivalent of the tax-exempt rate, r_0 . As long as the effective cost, $r(1 - \tau_c)$, of corporate borrowing is exactly equal to r_0 , then, these investors will be indifferent to the amount of corporate borrowing. If these investors could borrow, however, and thus transfer future resources backward at an effective rate of $r(1 - \tau_p)$, they would no longer be indifferent. Rather, they would prefer to substitute borrowing on their own account for corporate borrowing, just as they do in the incomplete markets case.

To fully understand the contrast between these two cases, then, it is necessary to precisely specify the assumed tax arbitrage restrictions. The discussion of the incomplete markets case boils down to whether it is advantageous to substitute personal for corporate leverage or vice versa. In the complete markets case, however, no such substitution takes place, since low bracket investors hold no stock and high tax bracket investors are barred from borrowing at the taxable rate to purchase stock.

¹ The certainty case would also yield the same results.

The second point about Section II concerns the mean-variance portfolio diagrams that are used in discussing the incomplete markets case. While these diagrams seem useful in demonstrating the comparative advantage of personal or corporate borrowing for investors in different tax brackets, their implications for investors' equilibrium portfolios are troublesome.

In particular the diagrams suggest that high tax bracket investors would reach equilibrium with a portfolio of stocks having different business risk from that of low tax bracket investors. This in turn implies that either or both of these investors groups are not fully diversified and that they are sacrificing diversification for tax benefits. It is not clear, however, why it would be necessary to make this sacrifice. One could imagine a situation, for example, in which all operating companies finance themselves entirely with stock. Part of this unlevered stock could be sold to high tax bracket investors, while the rest could be sold to a holding company which could then borrow and sell levered shares to low tax bracket investors. This scheme would allow investors to take a share in every business risk in the economy and thus be fully diversified while at the same time enjoying the tax benefits of holding either unlevered or highly levered equity.

Space remains for only brief mention of the paper's ensuing sections. These are largely devoted to the introduction of risky debt and leverage-related costs. Valuation expressions are derived, and the incidence of these leverage related costs is analyzed.² In addition, it is suggested that, since the relationship between leverage-related costs and the amount of debt issued will differ across firms, certain types of firms will find it profitable to specialize in particular capital structures. It is this case, it seems to me, in which investors are most likely to face a tradeoff between diversification and tax benefits. If all firms in a certain risk class find it economical to be unlevered (because leverage-related costs are high), then a low tax bracket investor must decide whether to sacrifice owning a share in this risk class in order to specialize in holding levered equity.

In summary, Han Kim's paper usefully surveys the work that has followed in the wake of Miller's "Debt and Taxes". A reading of the paper also makes clear, though, that more details about the relationship between portfolio selection at the investor level and the capital structure choice at the firm level remain to be filled in.

REFERENCES

- Barnea, A., R. A. Haugen and L. W. Senbet, "An Equilibrium Analysis of Debt Financing Under Costly Tax Arbitrage and Agency Problems" *Journal of Finance* 36 (June 1981), 569-581.

² The incidence analysis parallels similar work by Barnea, Haugen and Senbet (1981).