Dividends, Short Selling Restrictions, Tax-Induced Investor Clienteles and Market Equilibrium: Discussion
Author(s): Patrick J. Hess
Source: *The Journal of Finance*, Vol. 35, No. 2, Papers and Proceedings Thirty-Eighth Annual Meeting American Finance Association, Atlanta, Georgia, December 28-30, 1979 (May, 1980), pp. 482-485
Published by: Blackwell Publishing for the American Finance Association
Stable URL: http://www.jstor.org/stable/2327408
Accessed: 28/11/2009 08:14

CAPM. This is consistent with the Blume (1979) results. In a capital market where short selling is restricted, non-dividend paying stocks would have to pay a premium to attract (unrestricted) investors to absorb the stock, which some investment units may be prohibited from acquiring. This effect is analogous to the effect of institutional restrictions on portfolio and bond prices that was developed by Glenn (1976). Note that the introduction of the dummy variable does increase the estimate of the group I tax bracket, though it is still less than that of group II.

REFERENCES

1. Arrow, K., *Aspects of Theory of Risk Bearing*, Markham, 1975, Chapter 3.
2. Bhattacharya, S., 1979, "Imperfect Information, Dividend Policy and 'the bird in the hand' Fallacy," *The Bell Journal of Economics*, 10, pp. 259–270.
3. Black, F. and M. Scholes, 1974, "The Effects of Dividends and Dividend Policy on Common Stock Prices and Returns," *Journal of Financial Economics*, 1, pp. 1–22.
4. Blume, M., 1979, "Stock Returns and Dividend Yields: Some Further Evidence," Working Paper, University of Pennsylvania.
5. Brennan, M., 1970, "Investor Taxes, Market Equilibrium and Corporation Finance," Unpublished Ph.D. dissertation, Massachusetts Institute of Technology.
6. Elton, E. and M. Gruber, 1970, "Marginal Stockholder Tax Rates and the Clientele Effect," *Review of Economics and Statistics*, 52, pp. 68–74.
7. Glenn, D., 1976, "Super Premium Security Prices and Optimal Corporate Financing Decisions," *Journal of Finance*, 31, pp. 507–524.
8. Gonzalez-Gaverra, N., 1973, "Inflation and Capital Asset Prices: Theory and Tests," Unpublished Ph.D. dissertation, Stanford University.
9. Litzenberger, R. H., and K. Ramaswamy, 1979, "The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence," *Journal of Financial Economics*, 7, pp. 163–195.
10. Mayers, D., 1972, "Non-Market Assets and Capital Market Equilibrium Under Uncertainty," in M. C. Jensen, ed., *Studies in the Theory of Capital Markets*, Praeger, New York.
11. Miller, M. and F. Modigliani, 1961, "Dividend Policy, Growth and the Valuation of Shares," *Journal of Business*, 4, pp. 411–433.
12. Miller, M. and M. Scholes, 1978. "Dividends and Taxes," *Journal of Financial Economics*, 6, pp. 333.
13. Roll, R., 1977, "A Critique of Capital Asset Pricing Theory's Tests," *Journal of Financial Economics*, 4, pp. 122–176.
14. Rosenberg, B. and V. Marathé, 1979, "Tests of Capital Asset Pricing Hypotheses," *Journal of Financial Research*, forthcoming.
15. Ross, S. A., 1977, "The Determination of Financial Structure: The Incentive Signalling Approach," *The Bell Journal of Economics*, 8, pp. 23–40.
16. Rubinstein, M., 1973, "A Comparative Statics Analysis of Risk Premiums," *Journal of Business*, 46.
17. Sharpe, W. F., 1977, "The Capital Asset Pricing Model: A Multibeta Interpretation," in: H. Levy and M. Sarnat, eds., *Financial Decision Making Under Uncertainty*, Academic Press, New York.
18. Wells Fargo Investment Advisory Service, 1979, Security Market Plane, San Francisco, CA.

DISCUSSION

PATRICK J. HESS*: Litzenberger and Ramaswamy (hereafter LR) are interested in providing a theoretical rationale and empirical tests for tax induced clientele

* Ohio State Univesity. I am thankful to S. Buser and G. Hite for their insightful comments.

effects in security prices. My comments focus on the equilibrium implications of the assumptions used in deriving their model and the methodology used in testing their model. LR begin their analysis by identifying G different clienteles in a world of certainty (evidently the number of different clienteles depends upon the distribution of wealth and tax brackets). In deriving these clienteles LR assume that: (1) There are no transaction costs and capital markets are perfectly competitive, (2) investors are not permitted to sell equities short, (3) personal income taxes are progressive, (4) investors are able to borrow and lend freely at the taxable rate r_f, and (5) capital gains are untaxed while dividend and interest income are taxed at ordinary rates and interest expense is fully deductible, i.e. not limited to investment income. In this world the after tax marginal cost of borrowing for investor k is.

$$(1 - T_k)r_f$$

and the after tax marginal return on security i is,

$$R_i - T_k d_i$$

where T_k is the marginal tax rate for investor k, R_i is the pretax return on security i. Since investors are able to borrow and lend freely and since interest payments are fully deductible, equilibrium for individual investors requires that,

$$R_i - T_k d_i - (1 - T_k)r_f \leq 0$$

$$R_i \leq r_f + T_k(d_i - r_f) \tag{1}$$

for each security i and investor k. In particular (1) holds for those investors with the highest and lowest marginal tax brackets. If $d_i \geq r_f$ the binding inequality is the lowest marginal tax bracket and if $r_f > d_i$ the binding inequality is the highest marginal tax bracket. Thus,

$$R_i \leq r_f + T_{\min}(d_i - r_f) \quad \text{if} \quad d_i \geq r_f \tag{2a}$$

$$R_i \leq r_f + T_{\max}(d_i - r_f) \quad \text{if} \quad r_f > d_i \tag{2b}$$

where $T_{\min}$ is the lowest marginal tax bracket in the economy and $T_{\max}$ is the highest. In summary, individual equilibrium permits at most two clientele effects in asset prices: the lowest and highest marginal tax rates in the economy. This is in contrast to LR's conjecture that their assumptions permit the number of clienteles to depend upon the distribution of tax rates and wealth (LR use five in their empirical work).[1]

The relationships shown in (2a) and (2b) have an interesting interpretation. Securities with dividend yields in excess of r_f incur capital losses to adjust for their yields above r_f. As a result these high yield securities are being taxed more heavily than the taxable bond. If these securities are being held by investors with marginal tax rates greater than the lowest marginal rate, it would be possible to reduce the aggregate tax bill by having the lowest tax bracket investors issue

[1] This analysis can be generalized to a world of uncertainty if pretax returns are replaced with risk adjusted returns, e.g. see LR's equation (30).

debt and purchase these securities, (if $d_i \geq r_f$ then $T_{\min}(d_i - r_f) + T_k(r_f - d_i) \leq 0$ for any k). Securities with dividend yields less than r_f have capital gains and therefore permit interest expense in excess of their dividend yields. By holding these securities investors are able to convert other sources of taxable income, e.g. wage income, into untaxed capital gains. Again if these low yielding securities are held by investors with marginal tax rates less than the maximum rate the aggregate tax liability could be reduced, (if $d_i < r_f$ then $T_{\max}(d_i - r_f) + T_k(r_f - d_i) \leq 0$ for any k). The maximum reduction of taxable income occurs when no dividends are paid and the investors in the highest marginal tax brackets issue debt to investors in low tax brackets. Thus the existence of even two clientele effects requires the additional assumption of incomplete supply adjustment.

In their empirical test LR perform a time series of cross sectional regressions of realized monthly risk premiums of individual securities (monthly returns in excess of the one month Treasury Bill rate) on a constant, betas estimated in the previous sixty months and a measure of the individual securities anticipated dividend yields in excess of the riskless rate. All these variables are deflated by the estimated standard errors of a "market" model disturbance, (estimated over the previous sixty months). To illustrate the discussion consider the cross-sectional regression, (see LR's equation (35)),

$$\tilde{R}_{it} - r_{ft} = \gamma_0 + \gamma_1 \hat{\beta}_{it} + \textstyle\sum_{g=1}^{5} \gamma_{2g} \delta_{ig} (d_{it} - r_{ft}) + \tilde{\epsilon}_{it} \tag{3}$$

where δ_{ig} equals 1 if i is in the gth group and zero otherwise. LR estimate betas with the regression equation,

$$\tilde{R}_{it} - r_{ft} = \alpha_i + \beta_i (R_{mt} - r_{ft}) + \tilde{\nu}_{it}. \tag{4}$$

From (3) it follows that,

$$E(\tilde{R}_{it}) - r_{ft} = \gamma_0 + \gamma_1 \beta_{it} + \gamma_{2g} (d_{it} - r_{ft})$$

if i belongs to group g. From (4) we have,

$$E(\tilde{R}_{it}) - r_{ft} = \alpha_i + \beta_i (E(\tilde{R}_{mt}) - r_{ft})$$

Clearly these two unconditional expectations are not consistent. Stated differently, it is inappropriate to ignore γ_{2g} when β_i is estimated or to ignore β_i when γ_{2g} is estimated. Both are parameters in the joint distribution of security returns. LR also cite Litzenberger and Ramaswamy (1979) in claiming the properties of consistency and maximum likelihood for their estimator of γ_0, γ_1 and γ_{2g}. The maximum likelihood claim is ruled out for two obvious reasons: (1) β_i and γ_{2g} are not estimated simultaneously and (2) different data are used to separately estimate parameters (sixty previous months for beta). Their claim of consistency rests upon a tentative and arbitrary conditioning argument. Namely, the variances of measurement errors in beta estimates must be known. Finally, it is worth noting that the cross sectional regression techniques of LR don't allow tests of restrictions on parameters across securities. I argue elsewhere that these restrictions are the most crucial hypotheses implied by tax effects models like LR's equation (30), (Hess (1979)).

REFERENCES

1. Hess, P., "The Empirical Relationship Between Dividend Yields and Stock Returns: Tax Effects or Nonstationarities in Expected Returns", unpublished manuscript, October, 1979.
2. Litzenberger, R. and Ramaswamy, K., "The Effects of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence", *Journal of Financial Economics*, June, 1979.