

**DIVIDEND POLICY IN PERSPECTIVE:  
CAN THEORY EXPLAIN BEHAVIOR?**

by

Jean Crockett and Irwin Friend

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**RODNEY L. WHITE CENTER FOR FINANCIAL RESEARCH  
The Wharton School  
University of Pennsylvania  
Philadelphia, PA 19104-6367**

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**RODNEY L. WHITE CENTER FOR FINANCIAL RESEARCH**

## DIVIDEND POLICY IN PERSPECTIVE: CAN THEORY EXPLAIN BEHAVIOR?

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### I. Introduction and Preliminary Analysis

One of the major puzzles in corporation finance is why, in spite of the personal tax differential in favor of capital gains, firms pay out a large share of their earnings as dividends instead of retaining them for investment purposes or utilizing them to buy Treasury stock. This is an area in which the contrast between the predictions of theory and observed behavior is so striking as to raise serious questions of investor and/or firm rationality.

Under standard capital market assumptions a dollar of dividends forgone will generate a dollar of capital gains, so long as the firm's investment is independent of earnings retention and an optimal investment policy is pursued. Apart from tax considerations, shareholders should therefore be indifferent to dividend policy. But as Modigliani has pointed out [May 1982], all credible estimates of the effective capital gains tax rate for individuals indicate that it is very much lower than the effective personal income tax rate, at least for the United States.<sup>1</sup> It follows that, while nontaxable investors are indifferent, taxable investors will prefer zero payout if they are rational. If corporations act in the overall interest of their stockholders, they should therefore pay no dividends.

Actually the dividends paid out in the United States to non-corporate investors currently exceed \$80 billion per year. If investors are, as

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<sup>1</sup>Sometimes tax avoidance devices are cited as a basis for minimizing the importance of this tax differential but all the evidence we are familiar with would suggest that in fact very limited use is made of the avoidance devices described by Miller and Scholes [1978]. Direct evidence on the limited use of these devices is provided by Feenberg [1981] and by Peterson, Peterson and Ang [1985].

predicted, indifferent between after-tax dividends and after-tax capital gains, this involves the payment by individual stockholders of many billions of unnecessary taxes. We estimate that institutional investors currently receive no more than half of the dividends paid. This figure is based on findings by Blume and Friend [1987] that institutional investors held less than half of outstanding stock in 1985 and that they received a median dividend yield almost identical with that of the market as a whole. Assuming a zero tax rate for institutions, an effective personal tax rate on dividends of between 25% and 50%, and an effective capital gains rate of 5%, it would appear that individual stockholders are currently paying \$8 billion to \$18 billion of unnecessary taxes each year.<sup>2</sup> This is hardly an inconsequential amount.

A number of approaches have been used in the attempt to reconcile observed behavior with received theory. The purpose of this paper is to assess the extent to which they have been successful and to suggest directions for further study.

One such approach hypothesizes a tax clientele effect which would greatly reduce aggregate tax costs. From the standard assumptions it follows that, to the extent that dividends are in fact paid, shareholders in high tax brackets will opt for stocks with relatively low payout, leaving high-payout stock to investors subject to low or zero tax rates. Available evidence indicates that

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<sup>2</sup>The most recent estimate we have seen of the effective rate of taxation on dividend income was about 50%, actually 56.6% on the assumption of a zero tax rate on capital gains (Ang and Peterson [1985]). Other post-World War II estimates ranged from 25% by Friend and Puckett [1964], 35% by Elton and Gruber [1970], 36% by Jolivet [1966], to 46% by Weston and Brigham [1966], based on several different approaches and periods. The effective capital gains tax in the United States for the post-World War II period has been estimated to be roughly .05 in magnitude in two independent studies by Feldstein [1976] and by Friend and Hasbrouck [1982].

tax clientele effects are surprisingly weak. Most recent and most telling is the Blume-Friend finding, previously mentioned, that institutional portfolios show virtually the same dividend yield as the market as a whole, in spite of the low or zero tax rate applicable to institutions.<sup>3</sup> Even for individual investors, where a study by Blume, Crockett and Friend [1974] for 1971 does provide direct evidence of a greater preference by high-income than by low-income investors for stocks with low dividend yields, it is found that substantial amounts of dividend-paying stock are held even in the highest brackets and the difference in yield across brackets is not nearly so marked as might have been expected from differential tax effects.<sup>4</sup>

One investor subgroup should be noted which may quite rationally show a preference for dividends: elderly individual investors, who hold a substantial and rising share of the stock owned by individuals and are probably subject to relatively low tax rates. Pettit [1977] found a very strong positive relationship between investors' ages and the dividend yield of their portfolios. He attributes this finding in large part to the greater dependence of the older stockholders on current income from investment for consumption purposes and their desire to avoid the transactions costs involved in realizing the required funds by systematically selling off part of their stock. While the needs of elderly low-income investors contribute something to the explanation of the very large dividend payout observed, they do not go

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<sup>3</sup>This reinforces on a comprehensive basis more selective evidence by Poterba [1986] and Hobeika [1980].

<sup>4</sup>In 1971, the yield was found to range from .027 to .030 for income groups under \$15,000; from .024 to .026 for income groups between \$15,000 and \$50,000; and from .021 to .022 for income groups over \$50,000.

very far. Only in the lowest tax brackets could transactions expenses bulk large relative to the tax cost of dividends.<sup>5</sup>

A second approach to the dividend puzzle is to utilize cross-section data on stock prices or rates of return to test whether investors do in fact disfavor dividend payout as would be predicted by traditional theory. The problems with statistical analyses of the type that have been undertaken are discussed in some detail in Section II. Here we note only that even if it can be established that investors pay higher prices or require lower rates of return for low payout stock, this only leads us to the conclusion that corporate managers are acting in gross disregard of the preferences and interests of their stockholders in paying out so large an amount of dividends and are as a consequence paying an unduly high cost of equity. Unless some convincing explanation can be produced for a large, persistent overpayment of dividends relative to shareholder preferences, a finding that shareholders do in fact prefer low payout fails to reconcile behavior with theory.<sup>6</sup>

A third approach to the dividend puzzle is to modify the theoretical model by relaxing some of the unrealistic assumptions (e.g., homogeneous information, absence of transactions costs) that underlie it. We have already indicated that the transactions costs (implicit and explicit) of liquidating

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<sup>5</sup>A second investor subgroup, which may rationally prefer dividends, corporations which are stockholders in other companies, is addressed by Schliefer and Vishny [1986], who note that such investors are subject to relatively low intercorporate tax rates on dividend income as against much higher capital gains tax rates. This group is excluded from the \$80 billion dividend payment referred to earlier.

<sup>6</sup>The lack of adequate investment opportunities, which is sometimes mentioned as a possible explanation, is not convincing since corporations could buy back their own shares or buy equally risky marketable securities of other corporations. There is no tax cost in buying Treasury stock and the maximum effective tax cost of income earned on other corporate shares would have amounted to only 7.5%, or roughly one-half of 15%, if all returns were received as dividend income.

stock may overcome tax disincentives for individual investors in low tax brackets if they have large, recurring liquidity needs. Apart from the elderly, we can think of no quantitatively important group of stockholders for which this is likely to be the case. The transactions costs to small or medium-sized firms of new equity issues are potentially of greater significance, especially when informational asymmetries exist. These may lead to a dependence of investment on earnings retention, undermining the theoretical model.

The implications of asymmetric information, assuming managers to be better informed than the market, are currently a focus of considerable interest. Dividend signalling models fall in this category and we are particularly interested in investigating how far they can go in reconciling empirical evidence with investor rationality. Another promising approach, not yet much developed in the literature, would join asymmetric information with agency costs. Here it is assumed that stockholders are not sufficiently well informed to know whether or not management is acting in their best interests in making investment decisions and controlling management perquisites. With high payout there is less discretion for actions that benefit managers at the expense of stockholders. Thus investors may be willing to pay a tax cost to reduce agency costs.

In Section II of this paper we briefly review prior studies that examine whether stockholders prefer dividends (at least on an after-tax basis), considering both the direct evidence on this point and indirect evidence based on cross-sectional regressions. In Section III we note the surprising lack of time series tests of the impact on dividend behavior of large changes in personal tax rates; and we offer some preliminary results using this approach. In Section IV we look at several approaches which accept the

existence of (after-tax) dividend preference and attempt to justify it through modifications of the standard model. In particular, we assess the potential contribution of dividend signalling toward a reconciliation of behavior with theory and suggest some ways in which a further relaxation of unrealistic theoretical assumptions might serve this end. Section V contains a summary and some conclusions.

## II. Do Stockholders Prefer Dividends?

There are several items of direct evidence as to the value placed on dividends relative to earnings retention, all of which tend to support the view that the market is indifferent between a dollar of before-tax dividend income and a dollar of other corporate return or actually prefers dividend income in spite of the higher taxes that result. In two well-known cases, two corporations (Citizen's Utility and General Public Utilities) offered their shareholders a clear choice between dividends and retained earnings.<sup>7</sup> The response in both cases was inconsistent with stockholder preference for retained earnings.

Much more broadly based are two other sources of information, both of which point to some market preference for dividend income. The first is a survey of a large sample of U.S. individual investors in different socio-economic classes conducted in the latter part of 1975 by Blume and Friend [1978], and the second consists of two surveys of corporate financial and related policy conducted by Blume, Friend and Westerfield [1982, 1984]. The 1975 survey of individual investors indicated a preference for dividends over retained earnings by investors in all economic classes including those with

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<sup>7</sup>The Citizen's Utility case has been analyzed by Long [1978]. The GPU case is discussed in Shefrin and Statman [1984].

over \$50,000 in yearly income and over \$100,000 in market value of stock holdings. The corporate surveys indicated that 47% of the managers believed that their stock's market price would go up as a result of increased dividends compared with 17% who believed that market price would go down. Informational effects were cited most often as the reason for the expected price change, with higher stock prices resulting if greater future profitability was inferred and lower prices if the dividend increase was viewed as indicating a lack of profitable investment opportunities. The next most important reason for an expected increase in price, cited by 12% of the respondents, was that cash dividends are valued by investors more highly than uncertain but potentially greater dividends in the future. Less than 1% expected a decrease in prices because investors have a tax-based preference for capital gains rather than dividends.

In addition to these various items of direct evidence, which indicate either investor indifference to payout or even some preference for dividend income, there is an extensive body of indirect evidence in the form of cross-section analyses of stock prices or market rates of return, from which inferences about investor preferences may be drawn. Sharply conflicting results emerge, depending on the type of test undertaken.

Early cross-section studies regressed stock price or holding period return (which is inversely related to stock price) against the dollar amounts of dividends and retained earnings and tested for significant differences in the estimated coefficients. If retained earnings are preferred to dividends on account of the tax advantage of the associated capital gains, then we would expect the coefficient of retained earnings in the price regressions to exceed the coefficient of dividends, while the opposite would be expected in the return regressions. However, when dividends and retained earnings are the

only two independent variables used, their estimated coefficients may be distorted by correlation with omitted factors that are significant for stock price--in particular, company risk and the availability of profitable investment opportunities. In various studies, attempts were made to control for these two factors with varying results. A further statistical problem lies in the understatement of the retained earnings coefficient that may arise because measurement error is likely to be relatively high for that variable. Much of the early evidence, using price as the dependent variable, indicated that dividends were actually preferred to retained earnings,<sup>8</sup> but Friend and Puckett [1964], using a number of different procedures to control for risk and investment opportunities, found little difference in the two effects, with some preference for retained earnings in growth industries and dividends in other industries. This would still suggest a preference for dividends vis-a-vis capital gains on an after-tax basis.

Analyses using holding period return as the dependent variable incorporate the theory that the required rate of return (an ex ante concept) is positively related to risk (as measured by such proxies as covariance ( $\beta$ ), residual risk ( $\sigma_u$ ), leverage or industry dummies) and attempt to test whether it is affected by the payout ratio as well. If dividends are disfavored, this should produce a positive relationship between the payout ratio or dividend yield and the required rate of return. In other words, the required sum of the two components of return (dividend yield and the growth derived from earnings retention) should increase as the mix becomes less attractive. Unfortunately, it is the ex post rate of return that serves as the dependent variable in virtually all cross-section studies; and it becomes quite

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<sup>8</sup>For example, Gordon [1962]; Lintner [1962].

difficult to determine whether any given explanatory variable affects the required rate of return or the deviation of the ex post rate from the ex ante rate or both.<sup>9</sup>

A particularly interesting early study of holding period returns, by Nerlove [1968], controls for earnings growth, sales growth and a number of other variables, including a measure of leverage and industry dummies. Here the coefficient of dividends was found to be quite small relative to that for retained earnings, a result consistent with dividend preference.<sup>10</sup> Since the growth rates of earnings and sales, if correctly anticipated, should already have been embedded in initial price and in the ex ante rate of return, their observed effect must be attributed to unanticipated growth and they should serve in large part to account for deviations of ex post from ex ante return, thus minimizing distortion in other coefficients that might otherwise result from these deviations.

All of these early studies are broadly consistent with the direct evidence previously cited. Another type of test relates the realized rate of return to a particular measure of risk,  $\beta$ , and to the dividend yield (rather than to the levels of dividends and retained earnings or the payout ratio). This is a joint test of the capital asset pricing model and the hypothesis that investors value equally an after-tax dollar of (expected) dividends and an after-tax dollar of (expected) capital gains. Under this joint hypothesis,

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<sup>9</sup>Of interest in this connection are some limited tests using ex ante returns as the dependent variable. For example, the paper by Ang and Peterson, referred to earlier, carries out a cross-section regression of Value Line ex ante stock returns on ex ante dividend yields, obtaining the theoretically expected positive yield coefficient in most years. Combining results, the findings are statistically significant at the 90% level.

<sup>10</sup>Nerlove seems to misinterpret his results since he treats them as showing the "unimportance of dividends over short periods as contrasted with retained earnings."

the required rate of return should rise linearly as dividend yield increases. By and large the CAPM-based tests support the predictions of the joint hypothesis,<sup>11</sup> implying that retained earnings are preferred to dividends on a before-tax basis, and thus that dividend-paying firms are acting contrary to their stockholders' interest. However, one of these studies, a careful paper by Blume [1980], strongly suggests nonlinear behavior in which the required rate of return initially decreases with dividend yield until a fairly high level of this yield is reached. Litzenberger and Ramaswamy [1982] also find some evidence of nonlinearity, although their results are not significant at the usual 95 percent level.

Tests of this type are subject to the same difficulties as other cross-sectional analyses: the estimated coefficient of dividend yield may be subject to bias either because this variable is correlated with omitted causal factors or because it is correlated with measurement error in the dependent variable.<sup>12</sup> The CAPM-based tests are subject to two additional problems. Since they invoke the capital asset pricing model as a maintained hypothesis, they are less than compelling to those who are not convinced that this model has been unambiguously established by empirical evidence. Furthermore, the model relates conceptually to dividend yield and total rate of return based on equilibrium price at the beginning of the period. To the extent that the price variable actually used is subject to some error as a measure of initial

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<sup>11</sup>See Litzenberger and Ramaswamy [1982] for a summary.

<sup>12</sup>In particular, upward bias may occur either because proxies used for expected dividend yield may incorporate some information as to the deviation of ex post from ex ante return (Miller and Scholes [1981]) or because dividend signalling behavior produces a positive correlation between the (current and lagged) dividend yield and expected profitability.

equilibrium price, correlated measurement errors will be introduced on both sides of the regression, again producing upward bias.

The CAPM based results are generally inconsistent with earlier studies and with the direct evidence. While confirming rational investor behavior (as predicted from standard capital market assumptions), they lead to the conclusion that corporations choose to incur an unduly high cost of equity by paying more dividends than their shareholders want.<sup>13</sup> It is not hard to find reasons why managers might wish to pay lower dividends than stockholders prefer;<sup>14</sup> but it is far from clear what stockholder or management interest could be served by paying a dividend so high as to raise the cost of equity, when the alternative exists of using the funds to repurchase Treasury stock or buy stock of other companies of equal risk. In summary there is much evidence, direct and indirect, to suggest that dividends are preferred, at least on an after-tax basis. The only contrary evidence is subject to a number of statistical problems and implies irrationality on the part of firms, at least in the absence of strong tax clientele effects.

### III. Effect of Tax Changes on Payout Ratios

In view of the large number of cross-section studies and the conflicting results and potential for statistical bias that characterize them, it is

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<sup>13</sup>The Litzenberger-Ramaswamy studies introduce clientele effects arising from capital constraints to reconcile management behavior with investor preference for earnings retention. But in the absence of direct evidence supporting strong tax clientele effects, their results do not go very far toward rationalizing the \$80 billion of dividend payout observed.

<sup>14</sup>Under less-than-perfect capital markets, some firms may be dependent on earnings retention to finance profitable new investment. Furthermore, some managers may wish to increase their own power, status and financial reward by expanding the asset base they control beyond the level justified by stockholders' interests or may wish to avoid the tighter discipline and reduced margin for error associated with high payout.

surprising that almost no attempt has been made to utilize time series data to cast light on the unresolved issues.<sup>15</sup> Two obvious questions that might be addressed with such data are: (1) How closely are retained earnings (which are predicted to generate an equal amount of capital gains) actually correlated with capital gains in the aggregate? (2) To what extent do changes in tax structure appear to influence payout policy?

In this section we make some preliminary analyses along these lines. The statistical relationship between aggregate retained earnings and capital gains is not impressive. In four regressions covering the post-World War II period, annual capital gains of NYSE firms were not found to be significantly related to retained earnings for the same year or for recent years, and the multiple correlation coefficients adjusted for degrees of freedom were close to zero.<sup>16</sup> Particularly notable is the decade of the 1970s, when a substantial volume of retained earnings was associated with substantial capital losses.

Very considerable changes in tax rates have occurred since 1940, and the payout ratio has fluctuated widely over this period. Regression analysis however shows tax rates to be at best marginally significant as a determinant of payout ratios when other relevant variables are included in the regression and correction is made for the very substantial autocorrelation of residuals.

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<sup>15</sup>Time series studies of the Lintner type have traditionally been used to investigate the determinants of payout policy, though not the impact of such policy on stock prices. It is interesting that a very recent study, Marsh and Merton [1987], still assumes constancy in the target payout ratio in spite of the large reductions in personal income tax rates that occurred during the post World War II period.

<sup>16</sup>In these regressions, undistributed earnings were measured both in aggregate terms and as a fraction of profits, while capital gains were measured both as the absolute change in the stock price index and in percentage terms. Undistributed earnings were based on national income accounts profit data after capital consumption and inventory valuation adjustments, not on book value of profits.

The tax variable utilized was the mean of the rates for the lowest and highest Federal income tax brackets.<sup>17</sup> This mean rate falls very substantially over the post war period, largely in two steps occurring in 1964 and 1982. During 1946-63, it averaged 54 percent; in 1964-81, 43 percent; and since 1982, 31 percent. It would be preferable to use the differential between the effective tax rate on current income and on capital gains instead of the rate on current income alone, but in view of the fairly stable relationship between statutory rates over the 1940-85 period and the likelihood that the effective capital gains rate has been close to zero throughout, the significance of the tax variable should not be substantially affected by our failure to do so.

Since dividend levels are sticky, the payout ratio is strongly influenced by volatility in earnings, and a large proportion of its variance is explained by the profit residual, defined as the deviation from the semi-log time trend of real after-tax corporate profits after capital consumption and inventory valuation adjustments. Two other variables of less importance are the corporate bond rate (Moody's AAA) and an investment requirements variable, defined as the ratio of real expenditure for nonresidential fixed investment to real after-tax corporate cash flow. Both would generally be expected to have negative effects on dividend payout, although the John-Williams analysis (J-W) discussed in Section IV would imply that the impact of investment requirements should be positive.

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<sup>17</sup>Two other tax variants were tested with similar results: the rate in the highest Federal tax bracket and an average tax rate, computed as the ratio of personal tax payments in the national income accounts to personal income. The tax variables were tested with and without the logarithmic transformation and performed at least as well and sometimes better in log form.

Table 1 shows the results of the regression analysis. The first regression omits any tax variable. The profit residual is found to have a strongly significant negative effect, which it retains throughout the analysis. The bond rate and the investment variable are negative but insignificant. When the tax variable is added, it is significant and the bond rate becomes significantly negative, while the investment variable becomes completely insignificant. However, the Durbin-Watson statistic is extremely low. The last two regressions on the right are corrected for first-order autocorrelation, and the tax variable now falls short of significance. The bond rate becomes insignificantly negative and the investment variable, when included, is significantly positive. We would place little weight on the last equation, regarding the positive effect of the investment variable as implausible, but someone of the J-W persuasion may prefer it. In any case, the tax effect is very weak, once the Cochran-Orcutt correction is made.

Two further tests analyzed the residuals from the basic regression shown in column 1. When these residuals are regressed against the tax rate, the effect is significant at the 5 percent level, but the correlation is very low ( $\bar{R}^2 = .112$ ) and the Durbin-Watson statistic is unsatisfactory (1.40) even after correction for first-order autocorrelation. A second test, comparing the means of the residuals that occurred under each of the three postwar tax regimes, found no significant differences among these means.

These results cast further doubt on the existence of any strong tax effect on dividend behavior. Two other studies by Poterba and Summers [1984] and by Venthienen and Vermelen [1985] based respectively on changes in British and Belgian tax policy in the post-World War II period find a somewhat stronger inverse relationship between the level of personal taxes on dividend income and the payout ratio. All these studies are entirely consistent with a

preference for after-tax dividends which partially or completely offsets the tax disincentive for many holders.

#### IV. Modifications of the Model

Recently, attention has focused on signalling as an explanation for the payment of dividends in spite of personal tax disincentives. Here the basic theoretical model is modified by the assumption of asymmetric information, with corporate insiders better informed than the market as a whole. Dividends are assumed to affect stock price because the market believes that they signal favorable insider information. Insiders are motivated to pay (or raise) dividends in order to communicate information (or misinformation) and thus achieve a higher market price for the firm's stock than would otherwise prevail.

Some empirical evidence suggests that current and past dividends have little predictive advantage over current and past earnings in forecasting future earnings.<sup>18</sup> While at present it is true that a dividend announcement may provide otherwise unavailable information on current earnings, a question immediately arises as to why insider information relating to current and even future earnings cannot be conveyed to the market in some other way involving less tax cost to the stockholders than the payment of dividends--for example, by the earlier release of full information on current earnings or the regular publication of earnings projections for the period ahead. To make a convincing case for the use of dividends for signalling purposes, it would appear that something more than an improved estimate of current earnings must be communicated--for example, whether a change in earnings is due to transitory factors or is believed to be permanent. Even so it strains

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<sup>18</sup>Ross Watts [1973]; and Nicholas J. Gonedes [1978].

credulity to argue that the additional information conveyed by dividends, as compared with alternative forms of communication, can be sufficiently valuable to individual investors to offset the heavy tax cost to them.

Apart from this general point, specific signalling models invoke scenarios that are quite unlikely to be replicated in real world corporate behavior. For example, a recent paper by Miller and Rock [1985] hypothesizes that management, in order to benefit those stockholders who wish to sell their stock in the interval between the dividend announcement and the full disclosure of current earnings, will reduce planned investment below the level assumed by the market and raise dividends accordingly. Since the increment in dividends is known to the public but the reduction of planned investment to a suboptimal level is not, a false inference is induced as to the stochastic component of current earnings and a mistaken increase in the price of the stock occurs. M-R claim that there is no initial damage to stayers (original stockholders who do not wish to sell in the interval between the dividend announcement and the earnings announcement), but this is not quite correct even in a tax-free world. The stayers will be worse off to the extent that a differential exists between the cost of capital and the rate of return that would have been earned on the forgone investment. For finite reductions in investment, this differential is not zero. (In the real world, stayers would also be hurt by having to pay taxes on the increment in dividends.)

M-R show that under their assumptions a signalling equilibrium does exist, but at the cost of a level of investment that is suboptimal. Once this equilibrium is achieved, stockholders are no longer deceived; but the adjustment is not instantaneous. In the meantime management's intent is to generate misinformation by raising dividends and keeping them higher than would be justified under full information. The effect is to benefit one group

of stockholders; those on the verge of selling their stock. They will be replaced by new purchasers, who are twice cheated: first because they have been misled as to the stochastic component of current earnings, as they will soon learn; and second because the deterministic component of future earnings has been reduced through underinvestment. The displeasure of these new stockholders is a considerable cost for managers to incur in order to benefit a group who plan to sell their holdings and thus will have no further influence on managerial tenure or rewards.<sup>19</sup> Therefore it seems to us quite unlikely that a real-world management would undertake the strategy that would lead eventually to the signalling equilibrium that M-R present. Even if it did so, the persistent underinvestment that would occur under the signalling equilibrium would make the company a prime target for acquisition by a group intending to take it private. We conclude that this model cannot contribute much to the explanation of real-world dividend behavior.

Another recent model by John and Williams is more conventional in that signalling is intended to convey correct information as to earnings potential. It is interesting in that the liquidity requirements of both the firm and the stockholders are permitted to affect the dividend decision. If the liquidity requirements of the firm for investment, when added to those of the stockholders, are large relative to cash flow, dividends are paid and the stockholders' needs are served in part by the dividends they receive and in part by the higher stock price generated by the payment of dividends, which permits them to liquidate on favorable terms.

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<sup>19</sup>There may be an offset to this cost if the managers themselves are planning to sell shares in the interval between the dividend and earnings announcements. This might provide a considerable temptation to generate misinformation, in the absence of disclosure requirements for insider trading. Under the current law, the risk of stockholder displeasure would be considerably increased if management succumbed to such a temptation.

The J-W assumptions lead to what appears an implausible conclusion: zero-payout firms are not expected to be those that are capital constrained but those with small investment relative to cash flow. The solution for the signalling equilibrium depends, perhaps critically, on the assumption of stockholder homogeneity as to liquidity needs: all stockholders liquidate the same fraction of their holdings in any given year. Realistically, some stockholders sell out entirely and some do not sell at all. This non-homogeneity will produce a conflict of interest between the sellers and the stayers in case the cash flow is sufficient to meet investment needs but insufficient to satisfy also all stockholders' liquidity needs through the firm's repurchase of Treasury stock. In that not unlikely case, dividends will be paid and the sellers will benefit from the higher price associated with dividend payment, while the stayers will pay the tax cost of the dividend without benefitting from the higher price. As in the Miller-Rock case, it seems implausible that a rational management, concerned with its own tenure, will impose this cost on the stayers for the sake of the sellers.

If the benefits that dividends provide by communicating information and meeting stockholders' liquidity needs seem insufficient to justify the large tax cost, then a further relaxation of the assumptions underlying the theoretical model is needed to explain behavior. As indicated earlier, one promising approach lies in the combination of asymmetric information with agency costs. This involves an argument similar to the "control hypothesis" for bonds [Jensen, 1986], which holds that debt reduces the agency costs of free cash flow by cutting down the cash available for spending at the discretion of management. Similarly, it might be argued that cash dividends could be considered as providing some protection to the firm against a management that might wish to benefit itself at the stockholders' expense.

It should be noted that any resulting reduction of agency costs provides a true rationale for (after-tax) dividend preference, other things equal. In this, it is like the reduction of transactions costs and liquidity risk for investors with high liquidity needs, but differs from signalling effects or the effect noted by Arditti, Levy and Sarnat [1976], in which dividend payout is related to the unobserved variance of the firm's true economic earnings. In the latter two cases, dividends are not desired per se but because the market believes they are correlated with desirable nonobservable variables. These informational considerations, while they serve to rationalize a positive impact of dividends on price (negative impact on cost of equity) and thus help to justify the payment of dividends, operate by changing the subjective probability distributions that investors associate with future earnings. They are perfectly consistent with indifference between after-tax dividends and after-tax capital gains, given the expected value and riskiness of the future earnings stream.

A further rationale for true dividend preference emerges if we allow for capital constraints or for substantial transactions costs in new equity issues. Then the common assumption that investment is independent of dividend policy loses plausibility and the capital gains derived from earnings retention may be perceived as riskier than current dividends. If investment depends on internal funds, then stockholders will perceive the reduction in retained earnings that results from the payment of dividends to involve the loss of a claim on the risky earnings stream that would have been generated by the forgone real investment. The impact of such a reduction on end-of-period price is uncertain, both because the forgone earnings stream is uncertain and because the risk premium which the market would have applied to it at the end of the period is uncertain.

Consider a simplistic one-period holding-period model without taxes, in which the end-of-period dividend is considered essentially certain while the end-of-period capital gain associated with earnings retention is uncertain for the reasons discussed above.<sup>20</sup> If the expected value of capital gains equals the increment in assets resulting from earning retention, with no change expected in the price-earnings multiple, then

$$E(P_1) = P_0 + E(Y) - D \quad ,$$

where  $Y$  and  $D$  are earnings and dividends per share in the current period and  $P_1$  is end-of-period price.

Apart from signalling effects, the beginning-of-period price is therefore given by

$$P_0 = \frac{D}{1+i} + \frac{E(P_1)}{1+i'} = D\left(\frac{1}{1+i} - \frac{1}{1+i'}\right) + \frac{P_0 + E(Y)}{1+i'} \quad ,$$

where  $i$  is the riskfree rate and  $i'$  is the risky rate of return appropriate for the uncertain proceeds from end-of-period liquidation. Clearly this is positively affected by the level of dividends.

However, the assumption that expected capital gain,  $E(P_1) - P_0$ , equals the asset increment,  $E(Y) - D$ , is not realistic if marginal return on new assets is a declining function of investment. As payout rises it is likely that increasingly attractive investment projects will be forgone and we may expect that the sacrifice of expected capital gain associated with a further increment in dividends will eventually exceed the dividend increment. If  $(1+\epsilon)$  is the reduction in expected capital gain associated with an

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<sup>20</sup>Obviously this model does not hold at very high payout levels, since without a substantial cushion of asset and earnings growth the dividend would be endangered by earnings variance.

additional dollar of dividends, then it pays to increase dividends until

$$(1 + \epsilon) = \frac{(1 + i')}{(1 + i)} .$$

In equilibrium  $\epsilon > 0$  and a dollar of dividends is valued more highly than a dollar of expected capital gains.<sup>21</sup>

## VI. Some Conclusions

Three reasons for (after-tax) dividend preference that have been advanced--dividend signalling, risk aversion on the part of investors in firms that are capital constrained, and the transactions cost/liquidity risk associated with systematic liquidation of stock--all help to rationalize much of the evidence on investor and management behavior. Individually, each of these reasons appears inadequate to offset the heavy tax cost of dividends, but the case may become somewhat more convincing when all three are combined. We retain our reservations about the importance of the signalling motive for dividend payout both because the signalling becomes ambiguous once investment is permitted to depend on earnings retention (since low investment potential rather than favorable earnings prospects may be indicated) and because alternative signals mentioned earlier would appear to be less ambiguous and very much less expensive. The other two motives apply only to particular subgroups of investors or firms, although these subgroups may be quantitatively quite significant.

However, a number of anomalies remain. To explain the failure of institutional investors to hold higher payout stock than individuals, in spite of the tax differential, it is necessary to argue that the three reasons for

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<sup>21</sup>This model is further developed in a subsequent paper: Crockett

dividend preference are less compelling for institutions than for individuals. Probably for most institutions liquidity considerations are less important and the transactions cost of meeting them is lower than for many individual investors. It may also be argued that institutional investors feel somewhat greater confidence in their estimates of capital gains in view of the larger amount of resources they devote to detailed company analyses, and therefore discount this component of return less heavily than individual investors.<sup>22</sup> Similarly, it is possible that the informational content of dividends is less important to institutions than individuals since it adds less to the information they already have, although the historical record of institutional portfolio performance does not lend much support to such an assumed informational superiority.

The Citizens' Utility and G.P.U. cases are harder to explain. While the transactions cost/liquidity risk rationale works in the right direction, it would become more convincing if there were reason to believe that the G.P.U. shareholders and the holders of dividend-paying Citizens' Utility stock were predominantly elderly and/or low income individuals.

Remaining unexplained are: (1) the payment by some firms of dividends so large as to increase the before-tax required rate of return on equity, and (2) the failure of the payout ratio to rise significantly in response to declining tax rates in the post-World War II period. The first is strongly suggested by the CAPM-based rate-of-return regressions, at least in the absence of important tax clientele effects, but this approach may be subject to substantial statistical biases. With respect to the postwar tax cuts, the

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<sup>22</sup>Institutions are known to have much higher stock portfolio turnover ratios than individual investors, reflecting a greater emphasis on short-term trading profits in an attempt to achieve superior market performance.

absence of a more substantial response seems to us to imply either a failure of investors to adjust their valuation of dividend-paying stock to a substantial change in tax rates or a failure of firms to respond to the tax-motivated shift in stockholder preferences or both. If there was a significant decline in investment opportunities subsequent to the 1950s as is frequently maintained, this would make it even more difficult to explain the absence of any substantial increase in dividend payout after the 1964 cut. However, the failure to raise payout might be rationalized in terms of a divergence of management from stockholder interests. Such an argument would tend to reinforce the relevance of agency costs as a fourth factor enhancing dividend preference.

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TABLE 1

**Regressions Explaining Dividend Payout**  
 (Annual Data: 1940-42, 1946-85)

Independent Variable	Ordinary Least Squares		Cochran-Orcutt First-Order Correction	
	1	2	3	4
Profit Residual	-.422 (-11.5)	-.468 (-14.4)	-.448 (-13.6)	-.428 (-14.4)
Corporate Bond Rate	-.002 (-.8)	-.015 (-4.1)	-.004 (-.9)	
Investment Requirements	-.104 (-1.2)	-.043 (-.6)		.199 (2.7)
log TAX		-.274 (-4.2)	-.112 (-1.6)	-.077 (-1.3)
Constant Term	.567 (10.0)	.393 (6.3)	.413 (9.9)	.266 (4.0)
$\bar{R}^2$	.760	.832	.840	.879
DW	.74	.97	1.88	1.93
$\rho$			.617	.798