

# DIVIDEND POLICY THEORIES AND THEIR EMPIRICAL TESTS

by

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## Abstract

The subject of corporate dividend policy has captivated economists for a long time, resulting in intensive theoretical modeling and empirical examinations. A number of conflicting theoretical models lacking strong empirical support define current attempts to explain the puzzling reality of corporate dividend behavior. The purpose of this paper is to determine if the method of analysis employed, sample period, and/or data frequency are responsible for this inconsistent support. The results presented here are consistent with the contention that no dividend model, either separately or jointly with other models, is supported invariably.

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# DIVIDEND POLICY THEORIES AND THEIR EMPIRICAL TESTS

## I. INTRODUCTION AND BACKGROUND

Corporate dividend policy has captured the interest of economists of this century and over the last five decades has been the subject of intensive theoretical modeling and empirical examination. A number of conflicting theoretical models (all lacking strong empirical support) define current attempts to explain corporate dividend behavior. The purpose of this paper is to examine the academic efforts to model dividend policy and to test the empirical validity and significance of the paradigms they fashion.

Initial forays into theorizing corporate dividend policy are divided as to their prediction of the dividend payment's effect on share price. Over the last century, three schools of thought have emerged. One faction sees dividends as attractive and as a positive influence on stock price. A second bloc believes that stock prices are negatively correlated with dividend payout levels. The third group of theories maintains that firm dividend policy is irrelevant in stock price valuation.

Theoretical and empirical models of corporate dividend policy of late better separate into a different taxonomy. In this taxonomy, the qualifying criterion is the nature of the market structure and/or the underlying rationale of the investor. Accordingly, recent models are broadly segregated, based on their rationale, into models formulated in states with full information, models in states with information asymmetries and models using behavioral principles.

Section II is a brief review of theoretical models based on the last categorization. Section III presents the statistical analysis of empirical research into dividend policy. In Section IV, we offer our summary and concluding remarks.

## II. DIVIDEND THEORIES<sup>1</sup>

### A. Full Information Models--The Tax Factor

Tax-adjusted models surmise that investors require and secure higher expected returns on shares of dividend-paying stocks. The imposition of a tax liability on dividends causes the dividend payment to be grossed up to increase the shareholder's pre-tax return. Under capital asset pricing theory, investors offer a lower price for the shares because of the future tax liability of the dividend payment.

One consequence of the tax-adjusted model is the division of investors into dividend tax clienteles, an argument first proposed in the seminal work of Miller and Modigliani (1961). In later research, Modigliani (1982) finds that the clientele effect is responsible for only nominal alterations in portfolio composition rather than the major differences predicted by Miller (1977). Masulis and Trueman (1988) model cash dividend payments as products of deferred dividend costs. Their model predicts that investors with differing tax liabilities will not be uniform in their ideal firm investment/dividend policy. As the tax liability on dividends increases (decreases), the dividend payment decreases (increases) while earnings reinvestment increases (decreases). Differences are minimized by segregation of investors into clienteles.

The model developed by Farrar and Selwyn (1967) assumes that investors maximize after-tax income. In a partial equilibrium framework, investors have two choices. Individuals choose the amount of personal and corporate leverage and also whether to receive corporate distributions as dividends or capital gains. This model contends that no dividends should be paid; rather, that share repurchase should be used to distribute corporate earnings.

The Farrar and Selwyn (1967) model is extended into a general equilibrium framework by Brennan (1970). In this setting, investors maximize their expected utility of wealth. Although the model is more robust, the predictions are similar to those of the Farrar and Selwyn model; an equilibrium with dividend-paying firms is not consistent with a zero required return per unit of dividend yield.

Auerbach (1979a) develops a discrete-time, infinite-horizon model in which shareholders (as opposed to firm market value) maximize their wealth. If a capital gains/dividends tax differential exists, wealth maximization no longer implies firm market value maximization. Subsequently, Auerbach (1979b) posits that dividend distributions occur because of the consistent, long-term undervaluation of corporate capital. The undervaluation is the result of a dynamic process encompassing multiple periods of total reinvestment of all firm profits followed by firm returns less than the returns expected by investors.

Tax-adjusted models are criticized as incompatible with rational behavior; this criticism prompts Miller (1986) to suggest a strategy of tax sheltering of income by high-tax-bracket individuals. Individuals can refrain, of course, from purchasing dividend-paying shares to avoid the tax liability of these payments. Alternatively, using a strategy first advanced by Miller and

Scholes (1978), shareholders can purchase dividend-paying stocks and receive the distributions, then simultaneously borrow funds to invest in tax-free securities.

The use of dividend-specific, personal tax shelters (for example, the existing dividend income exemption) to avoid tax liabilities is advanced by DeAngelo and Masulis (1980). They contend that the Miller and Scholes' (1978) tax shelter strategy is not sufficient to induce positive dividend payment at equilibrium. Fung and Theobald (1984) model tax shelters that are not based on interest charges and apply the theoretical results to French, German, British, and U.S. tax systems.

## B. Models of Information Asymmetries

### 1. Signaling Models

The market imperfection of asymmetric information is the basis for three distinct efforts to explain corporate dividend policy. The mitigation of the information asymmetries between managers and owners via unexpected changes in dividend policy is the cornerstone of dividend-signaling models. Agency cost theory uses dividend policy to better align the interests of shareholders and corporate managers. The free cash flow hypothesis is an ad hoc combination of the signaling and agency costs paradigms; the payment of dividends can decrease the level of funds available for perquisite consumption by corporate managers.

Akerlof's (1970) model of the used car market as a pooling equilibrium in the absence of signaling activities illuminates the costs of information asymmetries. The generalization of Akerlof's model by Spence (1973, 1974) became the prototype for all financial models of signaling. The model defines a unique and specific signaling equilibrium in which a job seeker

signals his/her quality to a prospective employer. Although the scenario is developed using the employment market, Spence contends that extension to a *limited* number of other settings (admissions procedures, promotions, and credit applications) is possible.

Bhattacharya (1979, 1980), Talmor (1981), Hakansson (1982), John and Williams (1985), Miller and Rock (1985), Bar-Yosef and Huffman (1986), Makhija and Thompson (1986), Ambarish, John and Williams (1987), Ofer and Thakor (1987), Kumar (1988), Kale and Noe (1990), Rodriguez (1992), and many others offer signaling models of corporate dividend policy. The proponents of signaling theories believe that a corporate dividend policy used as a means of putting the message of quality across has a lower cost than other alternatives.<sup>2</sup> The use of dividends as signals implies that alternative methods of signaling are not perfect substitutes (Asquith and Mullins, 1986).

## 2. Agency Cost

The recognition of potential agency costs associated with the separation of management and ownership is not new; differences in managerial and shareholder priorities have been recognized for more than three centuries. Adam Smith (1937) adjudged the management of early joint stock companies to be negligent in many of their activities. These problems were especially prevalent in the British East Indies Company and attempts to monitor managers were largely unsuccessful because of inefficiencies and costs associated with shareholder monitoring (Kindleberger, 1984). Scott (1912) and Carlos (1992) question these assertions--while control and organization were less than ideal, the continued success and long life of the corporation imply

generally sound managerial practices. Although some fraud no doubt existed, the majority of managerial activities coincided with shareholder desires.

Modern agency theory seeks to explain corporate capital structure as the result of attempts to minimize the costs associated with the separation of corporate ownership and control. Agency costs are lower in firms with high managerial ownership stakes because of the better alignment of shareholder and manager goals (Jensen and Meckling, 1976) and in firms with large block shareholders that are better able to monitor managerial activities (Shleifer and Vishney, 1986). Agency problems result from information asymmetries, potential wealth transfers from bondholders to stockholders through the acceptance of high-risk and high-return projects by managers, and failure to accept positive net present value projects and perquisite consumption in excess of the level consumed by prudent corporate managers (Barnea, Haugen, and Senbet, 1981).

Dividend policy influences these relations in two ways. Fama and Jensen (1983a, 1983b) espouse that potential shareholder and bondholder conflicts can be mitigated by covenants governing claim priority. These orderings can be circumvented by large dividend payments to stockholders.<sup>3</sup> Debt covenants to minimize dividend payments are necessary to prevent bondholder wealth transfers to shareholders (John and Kalay, 1982). Although potentially substantial in precipitation of agency costs, its dividend policy is not a major source of bondholder wealth expropriation. In firms where dividend payouts are limited by bondholder covenants, dividend payout levels are still below the maximum level allowed by the constraints (Kalay, 1982b).

The second way dividend policy affects agency costs is the reduction of these costs through increased monitoring by capital markets. Large dividend payments reduce funds available for perquisite consumption and investment opportunities and require managers to seek financing in capital markets. The efficient monitoring of capital markets reduces less-than-optimal investment activity and excess perquisite consumption and hence reduces the costs associated with ownership and control separation (Easterbrook, 1984).

### 3. The Free Cash Flow Hypothesis

Prudent managers working in the shareholders' best interests should invest in all profitable opportunities. Management and owner separation affords corporate managers the temptation, however, to consume or otherwise waste surplus funds. The inefficient use of funds in excess of profitable investment opportunities by management was first recognized by Berle and Means (1932). Jensen's (1986) free cash flow hypothesis updated this assertion, combining market information asymmetries with agency theory. The funds remaining after financing all positive net present value projects cause conflicts of interest between managers and shareholders. Dividend and debt interest payments decrease the free cash flow available to managers to invest in marginal net present value projects and manager perquisite consumption. This combination of agency and signaling theory should better explain dividend policy than either theory alone, but the free cash flow hypothesis does a better job of rationalizing the corporate takeover frenzy of the 1980's (Myers, 1987 and 1990) than it does of providing a comprehensive and observable dividend policy.

#### C. Behavioral Models

No paradigm discussed thus far completely explains observed corporate dividend behavior. Investor behavior is substantially influenced by societal norms and attitudes (Shiller, 1984). Unfortunately, this motivation has been ignored by financial theorists for the most part because of the difficulty of introducing investor behavior into traditional financial pricing models (Arbel, Carvell and Postnieks, 1988). According to Shiller (1989), including these influences in modeling efforts can enrich the development of a theory to explain the endurance of corporate dividend policy.

Ordinary investors are faced not with risk, but with uncertainty--a lack of concise judgment and sense of objective evidence (Knight, 1964). Social pressures can lead to errors in judgment and trading activities by shareholders that cannot be logically explained. These errors in judgment are only mistakes, not lapses of rational investment activity. Mass investor psychology profoundly influences aggregate market activity (Shiller, 1984).

Dividend policy is inconsistent with wealth maximization of the shareholder and is better explained by the addition of a socioeconomic-behavior paradigm into economic models. Dividend payouts can be viewed as the socioeconomic repercussion of corporate evolution--the information asymmetries between managers and shareholders cause dividends to be paid to increase the attractiveness of equity issues (Frankfurter and Lane, 1992).

The systematic relation between industry type and dividend policy reported by Michel (1979) implies that managers are influenced by the actions of executives from competitive firms when determining dividend payout levels. Managers, realizing that shareholders desire dividends, pay or increase dividends to mollify investors (Frankfurter and Lane, 1992). Dividend payments

to shareholders should help increase the corporation's stability by serving as a ritualistic reminder of the managerial and owner relationship (Ho and Robinson, 1992). As Frankfurter and Lane (1992) contend, dividends are partially a tradition and partially a method to allay investor anxiety.

### 1. Managerial Surveys

Lintner (1956) surveyed corporate chief executive officers and chief financial officers and found that dividend policy is an active decision variable because managers believe that stable dividends lessen negative investor reactions. The active determination of dividend policy implies that the level of retained earnings and savings is a dividend decision byproduct. Darling (1957), Turnovsky (1967), and Fama and Babiak (1968) find empirical support for Lintner's findings; dividends are a function of current and past profit levels, and expected future earnings, and are negatively correlated with changes in the level of sales. Current income remains the critical determinant of corporate dividend policy 25 years after Lintner's original survey (DeAngelo, DeAngelo, and Skinner, 1992).

Other factors not considered by Lintner (regulatory constraints, investment magnitude, debt and firm size) also affect dividend policy. Variations in dividend policy are primarily due to a combination of endogenous and exogenous elements (Dhrymes and Kurz, 1964).

Harkins and Walsh (1971) find that shareholder dividend desires and management need of retained earnings for investment opportunities conflict. A compromise policy partially satisfying both parties is chosen. Managers consider current and expected earnings, dividend

payment history, dividend level stability, cash flows and investment opportunities, and shareholder desires in their determination of the payout level.

Surveys of chief financial officers (CFO's) by Baker, Farrelly, and Edelman (1985) and Baker and Farrelly (1988) confirm the Lintner (1956) results. The CFO's cite the importance of dividend continuity, the belief that share prices are affected by dividend policy, and the difference in classification of regular and unusual cash flows as important determinants of dividend policy.

Managerial views of dividend policy are essentially unchanged 30 years after Lintner's study; dividends are paid because shareholders expect continued dividend growth and managers believe investors want to receive dividends. Managers believe that dividend payments are necessary to maintain or increase share price and to attract new investors. Dividend payout policy is determined using criteria including sustainability, current firm profitability, future cash flow expectations, and industry norms.

## 2. Theoretical Behavioral Models

Feldstein and Green (1983) model the corporate dividend decision as the last step in a process that evaluates inputs from five sources. First, dividend policy is a consequence of investor consumption needs. The tax liabilities from dividend payment are less than the transaction costs of selling shares to provide income if earnings are retained. Second, the market value of retained earnings is less than the market value of dividends. Third, dividend payment is consistent with steady state growth and an optimal debt/equity ratio. Fourth, dividend payments are a byproduct of the separation of corporation owners and managers; dividend

payments help to diminish the agency costs arising from separation of corporate owners and managers and are used for signaling activities. Finally, although asymmetric information and agency costs are present in the model, the paradigm is not dependent on these market imperfections. The involvement of shareholders with diverse tax liabilities and diversification goals in an equilibrium with uncertainty results in dividend payments.

Shefrin and Statman (1984) explain dividend preference by using the theory of self-control (Thaler and Shefrin, 1981) and the descriptive theory of choice under uncertainty (Kahneman and Tversky, 1982). Information models are used to justify the presence of corporate dividends while the tax liability of dividends is used as a counter-argument. This model is also consistent with dividend clienteles.

Dividends and capital gains are not always perfect substitutes (even in a world without taxes and transaction costs) because of a lack of self-control to delay gratification (Thaler and Shefrin, 1981). In financial theory, dividends and capital gains have the same value; this is not the case in a world modeled using the theory of self-control. Dividend checks are appreciated more than capital gains and provide an automatic control device on spending levels (Thaler, 1980). Risky alternatives, costs, and payoffs are evaluated separately.

The greater effects shown following dividend decreases also support this contention; losses are more significant than gains. Kahneman and Tversky (1982) posit that the sale of shares of stock causes more investor regret and anxiety than the spending of the cash received from dividend payments. A subsequent price rise of shares sold for income needs increases the shareholders' contrition. Clearly, in this model, capital gains and dividends are not perfect

substitutes. Regret aversion can induce a preference for dividends through the use of a consumption rule based on the utilization of dividends, not invested capital. Dividend yields are positively correlated with the planned dissaving rate. If dissaving is positively related to age and negatively related to income, portfolio dividend yields will be positively correlated with age and negatively correlated with income.

Marsh and Merton (1986) develop a rational expectations model of dividend policy as management's response to permanent earnings. In equilibrium, dividend levels are determined using future earnings expectations. Using dividends as signals is incompatible with this model.

### **III. ANALYSIS OF EMPIRICAL TESTS OF DIVIDEND THEORIES**

The conflicting results of empirical analyses are commonly blamed on differences in modeling, method of analysis, data type or sample period. The choice of variables included in, or omitted from, a model (Watts, 1976b; McCabe, 1979; Frankfurter and Gong, 1993) and the definition used in the estimation of important factors (Miller and Scholes, 1982) can significantly influence a study's results. Roll (1977) asserts that the lack of an adequate proxy can make a theoretical model untestable.<sup>4</sup> The use of different methods across studies can limit the comparability of the results (Morgan, 1982).

As shown by Baker and Farrelly (1988), attempts to empirically validate theoretical dividend models are thus far inconclusive or in some cases even contradictory. Numerous

rationales have been offered as explanations for these divergent results; the model and empirical method of analysis applied (Watts, 1973; and Morgan, 1982), the frequency of sample observation (Watts, 1976a; and Laub, 1976), and the period of the sample (Watts, 1973) are specified as possible causes of the inconsistencies. The purpose of this analysis is to examine the empirical studies of corporate dividend policy and determine whether the choice of method of analysis, frequency of sampling observation, or sample period influences the results of the tests of dividend policy.

This examination is important for several reasons. Results that cannot be duplicated over diverse sample periods are likely to be the artifacts of a particular period. In contrast, findings that persist through time can lead to the development of more descriptive models. Finally, results that change over time can be indicative of changes in the returns-generating mechanism (Amihud and Mendelson, 1987).

#### A. Method of Analysis

The Categorical Data Analysis Method [CDAM] is used to determine whether the method of analysis, observation frequency, and sample period can predict and explain the results of a study. CDAM is a specialized, multivariate analysis technique for evaluation of response and explanatory variables via weighted least squares [WLS] procedures. This approach is useful in the examination of dichotomous (i.e., studies supporting or failing to support a hypothesis), non-ordered, polytomous (i.e., differences in method of analysis), and ordered polytomous (i.e., early, middle, and late sample periods) discrete variables.

CDAM had been around for quite some time (Fienberg, 1980). The technique uses a multidimensional contingency table to cross-classify data into categories. Each category count represents the frequency of a unique combination of categorical variables in the sample. The population variable-level combination probability is estimated using iterative WLS and the observed frequency. Iterative WLS improves WLS estimates by first estimating the weights, fitting the regression function and calculating the residuals using WLS. The residuals from the first estimation are then used to re-estimate the weights and to refit the regression. The process repeats itself until no significant changes occur in the weights.

The explanatory variables used in the analysis are assumed to represent true categorical variables and not a blend or combination of the explanatory variables. Each of the variables used in the analysis is an independent categorical variable. In addition, explanatory variables are assumed to be fixed, play a defining role, and can be either continuous or discrete. The method also assumes that explanatory variables are mutually independent--the knowledge of one of the independent categorical variables does not ensure correct prediction of another explanatory variable. In CDAM the table frequencies presupposed to follow a product multinomial distribution. This is a requirement for each observation in the sample to be classified based on its unique combination of explanatory variables.

CDAM and ANOVA are similar methods of analysis and belong to the family of general linear models. CDAM and ANOVA similar to the extent that they both estimate the interaction between variables. Yet, there is a difference; ANOVA models estimate the effects of the independent variables on the dependent variable and partition the overall variability of the model.

CDAM, on the other hand reflects on the structural relation between the variables by estimating the parameters and testing hypotheses about linear combinations of these parameters. That is why we think that, although rarely if ever used in financial economics, the CDAM fits better the objective and purpose of this study.

The null hypothesis is formulated so as to test the fit of the model. The test statistics calculated are generalized Wald (1943) statistics that approximate an asymptotic  $\chi^2$  distribution.

The multidimensional contingency table displays cross-classified counts based on each of several sets of categories and facilitates CDAM. The table rows represent samples determined by unique combinations of independent variables, while the table columns are determined by dependent variable response. The count in the  $(i,j)$ <sup>th</sup> cell is the quantity of individuals in the  $i$ <sup>th</sup> population that have the  $j$ <sup>th</sup> response. The sample proportion,

$$p_{ij} = n_{ij}/n_j, \quad 1$$

estimates the probability of the  $j$ <sup>th</sup> response ( $p_{ij}$ ). The proportion vector  $\mathbf{p}$  is converted into a function vector  $\mathbf{F} = \mathbf{F}(\mathbf{p})$ . If the true probabilities for the entire table are represented by the vector  $\pi$ , the functions of the probabilities  $\mathbf{F}(\pi)$  follow the linear model

$$\mathbf{E}_A(\mathbf{F}) = \mathbf{F}(\pi) = \mathbf{X}\beta, \quad 2$$

where  $\mathbf{E}_A$  indicates the asymptotic expectation,  $\mathbf{X}$  is the fixed constant design matrix, and  $\beta$  is the parameter vector that is estimated.

The WLS estimation method is used to estimate the structural relation between the variables. The weights are determined from the inverse covariance matrix of the  $\mathbf{F}(\mathbf{p})$  functions of

$\mathbf{F}$  and  $\mathbf{b}$  ( $\beta$  estimate), and the weighted residual sum of squares is minimized. If  $\mathbf{S}$  is defined as the estimated covariance matrix of  $\mathbf{F}$ , the fit of the model is determined using the test statistic

$$\mathbf{F}'\mathbf{S}^{-1}\mathbf{F} - \mathbf{b}'(\mathbf{X}'\mathbf{S}^{-1}\mathbf{X})\mathbf{b}, \quad 3$$

which is asymptotically distributed  $\chi^2$ . The goodness of fit of the model is tested with the null hypothesis

$$\mathbf{H}_0: \mathbf{C}\beta = \mathbf{0},$$

where  $\mathbf{C}$  is a matrix of arbitrary constants, against the alternate hypothesis

$$\mathbf{H}_A: \mathbf{C}\beta \neq \mathbf{0}.$$

The test statistic for the null

$$\mathbf{B}'\mathbf{C}'[\mathbf{C}(\mathbf{X}'\mathbf{S}^{-1}\mathbf{X})^{-1}\mathbf{C}']^{-1}\mathbf{C}\mathbf{b} \quad 4$$

follows an asymptotically  $\chi^2$  distribution if  $H_0$  is true. Although the maximum likelihood estimation method of CDAM has a smaller variance, WLS regression CDAM is less complex and the difference in variance is not significant (Grizzle, Starmer and Koch, 1969). We experimented with both and found no significant differences.

The implementation of CDAM is facilitated by the assignment of the sample's observations into classes based on some explanatory variable characteristic. The table developed from this classification process provides a concise summary of the data. The technique then uses a series of dummy variables representing the explanatory variable classes and tests the model using WLS estimation techniques.

## B. Data

The data are the set of empirical studies performed to support or reject the theoretical models discussed in the preceding section. Table 1 displays the framework used in the assignment of the individual studies to CDAM populations. Table 2 is the list of these studies by theoretical categories.

[ **Table 1 about here** ]

[ **Table 2 about here** ]

Three attributes of each study are the variables of the tests. These variables, in order, are:

1. The method of analysis used, classified either as methods analyzing changes in price or average return (event study or price change methods of analyses), or as using regression analyses (least square analysis, logit analysis, etc.) or other methods;<sup>5</sup>
2. The data type, classified as either daily data or less frequent data (weekly, monthly, etc.); and
3. the sample period, where, based on the mid-point of the sample period, the study is classified as either pre-1976 or post-1976.<sup>6</sup>

### C. Results

A population profile succinctly summarizes the assignment of individual empirical studies to groups based on explanatory variable combinations. The sample size of each population is the frequency that each combination of categorical variables appears in the overall sample. The CDAM hypothesis tested is that any of the three explanatory variables (individually or in combination with the others) is significant in its ability to predict the outcome of the study. The CDAM tests are presented in Table 3 in two panels. Panel A is for all studies and Panel B for studies dealing with the information content of dividends only.

[ **Table 3 about here** ]

As shown in Table 3, the WLS estimates of method of analysis, data type, and sample period coefficients do not differ significantly from zero and therefore do not influence the outcome of the analyses. The estimates of each explanatory variable are extremely small, and the reported p-values range from 0.152 to 0.976. The intercept term representing the mean of the dependent variable is highly significant with a p-value of  $< 0.001$ . These conclusions hold for both the total population and the information content population. Because the term represents all variables not included, factors absent from the model can cause the diverse results of the empirical tests.

Additional CDAM is performed using finer divisions of the explanatory variables. The "method of analysis" variable is divided into four groups—abnormal returns, price change, regression and other methods of analysis. The variable representing data type is divided into studies using annual, quarterly, monthly and daily samples. The results of these refined tests are shown in Table 4, Panels A-C, respectively.

[ **Table 4 about here** ]

As can be gleaned from the table, finer categorizations do not alter the results of our previous findings: none of the independent variables show any significant explanatory power. Consequently, in contrast to commonly held beliefs, the choice of method of analysis, data type and sample period does not significantly affect the results of the study.

Though the outcomes of the experiments presented here are quite robust, a caveat is in order. It should be recognized that the length of the sample period and/or the total number of

observations used in the analysis might be significant. Studies using data drawn from a narrower time horizon can be subject to anomalies that are washed out over longer sample periods. This is not an encouraging state of affairs, because such washouts do not contribute to growth in scientific knowledge, and perhaps obscure important factors. Model specification, variable definition and proxy choice can also affect findings.

#### **IV. SUMMARY AND CONCLUDING REMARKS**

Feldstein and Green (1983), following Black (1976), remark: "The nearly universal policy of paying substantial dividends is the primary puzzle in the economics of corporate finance." A number of conflicting theoretical models, all lacking strong empirical support, define current attempts by research in finance to explain the dividend phenomenon. Nor can corporate dividend policy be ascribed to existing regulatory constraints. The incomplete nature of current theories and the sensitivity of data to changes in specifications preclude any dogmatism (Brealey and Myers, 1991).

It has been argued that dividend policy is "sticky"--managers decrease dividends only when absolutely necessary--in the event of poor earnings with reserves insufficient to fund the dividend (Myers, 1984; and DeAngelo, DeAngelo, and Skinner, 1992). Furthermore, individual market imperfections do little to explain the underlying reasons for dividend payments (Black, 1976). The systematic time series behavior of corporate dividend policy implies that firm-specific, theoretical explanations of dividend policy--signaling and agency theories--cannot explain the practice (Marsh and Merton, 1987).

The majority of shareholders must pay taxes on dividend income. The majority of empirical works support the hypothesis that the returns on dividend-paying stocks are increased to offset the tax liability of dividend payments. The absence of a pronounced difference in the portfolios of high-tax-bracket and low-tax-bracket individuals casts doubts, however, as to the significance of taxes in the determination of corporate dividend policy. Kalay and Michaely (2000) find no empirical evidence for the tax effect although they suggest that perhaps more complex models will find such a connection. The opinion of the present authors is that ratcheting up complexity would only add confusion without any positive benefit of tying tax effect to dividend policy.

Dividends can relay information, but the use of dividends for this purpose fails to explain why firms pay dividends. Signaling's impact on the investor's preference for dividends is even less certain because of the ambiguity associated with signals. Further, if dividends are changed only to signal firm-specific information, aggregate dividend changes should be small and random rather than have a systematic time series pattern and a demonstrated positive trend (Marsh and Merton, 1987).

No single economic rationale can explain the dividend phenomenon. The preference of shareholders for dividends (Crockett and Friend, 1988) can instead be partially explained by a combination of factors: risk averse shareholders who have invested in capital-constrained firms, the costs associated with systematic liquidation of holdings, agency costs and information transmission. The incompleteness of all theoretical models is largely due to a misconception of

the nature of dividend payments. The continuance of dividends is based in the main on long-standing corporate traditions (Brealey and Myers, 1991).

The corporate tradition of paying dividends is the sum total of more than three hundred years of *evolution* of the practice of dividend payments. Despite individual differences in policy, consistent, identifiable patterns of dividend payment recur through corporations. Managers are reluctant to reduce dividend payments, even in periods of financial distress. Moreover, dividends are increased only if a corporation's management is confident that the higher levels can be maintained. Executives believe that shareholders expect significant dividends to be paid, and shareholders believe that they deserve these dividends. Finally, shareholders prefer dividend payments despite the tax liability. Myers (1990) surmises that dividend payments are in reality an unwritten contract between shareholders and corporate management.

Current models of corporate dividend policy by and large ignore behavioral and socioeconomic influences on managerial and shareholder activities. Unless these influences are incorporated into future models, dividend preference is difficult to explain, other than as an irrational desire by investors for dividends (Shiller, 1984). The exclusion of these motivations from financial models severely limits their application to corporate activities and policy determination. Dividend policy is influenced by the same fads and fashions that affect stock prices because the managers who determine dividend policy are motivated by behavioral and socioeconomic influences (Shiller, 1990). As Shiller (1986) argues, a model incorporating a combination of modern financial theories and behavioral and psychological influences might best

explain corporate dividend policy. Until such model is developed, tests of dividend policy theories will remain both inconclusive and inconsistent.

## REFERENCES

- Aharony, Joseph and Itzhak Swary, 1980, Quarterly Dividend and Earnings Announcements and Stockholders' Returns: An Empirical Analysis, *The Journal of Finance*, 35, 1-12.
- Akerlof, George, 1970, The Market for 'Lemons': Quality Uncertainty and the Market Mechanism, *The Quarterly Journal of Economics*, 84, 488-500.
- Akhigbe, Aigbe and Jeff Madura. 1996. "Dividend Policy and Corporate Performance." *Journal of Business Finance & Accounting* 23:1267-0287.
- Ambarish, Ramasastry, Kose John and Joseph Williams, 1987, Efficient Signalling with Dividends and Investments, *The Journal of Finance*, 42, 321-343.
- Amihud, Yakov and Haim Mendelson, 1987, Trading Mechanisms and Stock Returns: An Empirical Investigation, *The Journal of Finance*, 42, 533-555.
- Amihud, Yakov and Maurizio Murgia. 1997. "Dividends, Taxes, and Signaling: Evidence from Germany." *The Journal of Finance* 52:397-408.
- Amoako-Adu, Ben, 1983, The Canadian Tax Reform and Its Effect on Stock Prices: A Note, *The Journal of Finance*, 38, 1669-1675.
- Anderson, G. J., 1983, The Internal Financing Decisions of the Industrial and Commercial Sector: A Reappraisal of the Lintner Model of Dividend Disbursements, *Economica*, 50, 235-248.
- Ang, James S., 1975, Dividend Policy: Informational Content or Partial Adjustment, *The Review of Economics and Statistics*, 57, 65-70.
- Ang, James S., David W. Blackwell and William L. Megginson, 1991, The Effect of Taxes on the Relative Valuation of Dividends and Capital Gains: Evidence from Dual-Class British Investment Trusts, *The Journal of Finance*, 46, 383-399.
- Ang, James S. and David R. Peterson, 1985, Return, Risk, and Yield: Evidence from Ex Ante Data, *The Journal of Finance*, 40, 537-548.
- Arbel, Avner, Steven Carvell and Erik Postnieks, 1988, The Smart Crash of October 19th, *Harvard Business Review*, 66, May-June, 124-136.

- Asquith, Paul and David W. Mullins, Jr., 1983, The Impact of Initiating Dividend Payments on Shareholders' Wealth, *The Journal of Business*, 56, 77-96.
- \_\_\_\_\_, 1986, Signalling with Dividends, Stock Repurchases, and Equity Issues, *Financial Management*, 15, Autumn, 27-44.
- Auerbach, Alan J., 1979a, Share Valuation and Corporate Equity Policy, *Journal of Public Economics*, 11, 291-305.
- \_\_\_\_\_, 1979b, Wealth Maximization and the Cost of Capital, *The Quarterly Journal of Economics*, 93, 433-446.
- \_\_\_\_\_, 1983, Stockholder Tax Rates and Firm Attributes, *Journal of Public Economics*, 21, 107-127.
- Bailey, Warren, 1988, Canada's Dual Class Shares: Further Evidence on the Market Value of Cash Dividends, *The Journal of Finance*, 43, 1143-1160.
- Bajaj, Mukesh and Anand M. Vijh, 1990, Dividend Clienteles and the Information Content of Dividend Changes, *Journal of Financial Economics*, 26, 193-219.
- \_\_\_\_\_. 1995. "Trading Behavior and the Unbiasedness of the Market Reaction to Dividend Announcements." *The Journal of Finance* 50:255-279.
- Baker, H. Kent and Gail E. Farrelly, 1988, Dividend Achievers: A Behavioral Perspective, *Akron Business and Economic Review*, 19, 79-92.
- Baker, H. Kent, Gail E. Farrelly and Richard B. Edelman, 1985, A Survey of Management Views on Dividend Policy, *Financial Management*, 14, Autumn, 78-84.
- Bar-Yosef, Sasson and Richard Kolodny, 1976, Dividend Policy and Capital Market Theory, *The Review of Economics and Statistics*, 58, 181-190.
- Bar-Yosef, Sasson and Lucy Huffman, 1986, The Information Content of Dividends: A Signalling Approach, *Journal of Financial and Quantitative Analysis*, 21, 47-58.
- Barber, Brad M. and Richard C. Castanias, 1992, Why do Firms Initiate Dividends? Unpublished working paper.
- Barclay, Michael J., 1987, Dividends, Taxes, and Common Stock Prices, *Journal of Financial Economics*, 19, 31-44.

- Barnea, Amir, Robert A. Haugen and Lemma W. Senbet, 1981, Market Imperfections, Agency Problems, and Capital Structure: A Review, *Financial Management*, 10, Summer, 7-22.
- Benartzi, Shlomo, Michaely, Roni and Richard Thaler. 1997. "Do Changes in Dividends Signal the Future or the Past?" *The Journal of Finance* 52:1007-1034.
- Benesh, Gary A., Arthur J. Keown and John M. Pinkerton, 1984, An Examination of Market Reaction to Substantial Shifts in Dividend Policy, *The Journal of Financial Research*, 7, 131-142.
- Berle, Adolf A. and Gardiner C. Means, 1932, *The Modern Corporation and Private Property*, New York: The MacMillan Company.
- Bernheim, B. Douglas and Adam Wantz. 1995. "A Tax-Based Test of the Dividend Signaling Hypothesis." *The American Economic Review* 85:532-551.
- Bhattacharya, Sudipto, 1979, Imperfect Information, Dividend Policy, and "the Bird in the Hand" Fallacy, *Bell Journal of Economics*, 10, 259-270.
- \_\_\_\_\_, 1980, Nondissipative Signaling Structures and Dividend Policy, *The Quarterly Journal of Economics*, 95, 1-24.
- Black, Fisher, 1976, The Dividend Puzzle, *The Journal of Portfolio Management*, 2, 5-8.
- Black, Fisher and Myron Scholes, 1974, The Effects of Dividend Yield and Dividend Policy on Common Stock Prices and Returns, *Journal of Financial Economics*, 1, 1-22.
- Blume, Marshall E., 1980, Stock Returns and Dividend Yields: Some More Evidence, *The Review of Economics and Statistics*, 62, 567-577.
- Bond, Stephen R., Lucy Chennells, and Michael P. Devereux. 1996. "Taxes and Company Dividends: A Microeconomic Investigation Exploiting Cross-Section Variation in Taxes." *The Economic Journal* 106:320-333.
- Booth, L. D. and D. J. Johnston, 1984, The Ex-Dividend Day Behavior of Canadian Stock Prices: Tax Changes and Clientele Effects, *The Journal of Finance*, 39, 457-476.
- Born, Jeffery A., James T. Moser and Dennis T. Officer, 1988, Changes in Dividend Policy and Subsequent Earnings, *The Journal of Portfolio Management*, 14, Summer, 56-62.

- Brealey, Richard and Stewart Myers. 1991. Principles of Corporate Finance, 4th ed., New York: McGraw Hill Book Company.
- Brennan, Michael J., 1970, Taxes, Market Valuation, and Corporation Financial Policy, National Tax Journal, 23, 417-427.
- Brickley, James A., 1983, Shareholder Wealth, Information Signaling and the Specially Designated Dividend, Journal of Financial Economics, 12, 187-209.
- Brigham, Eugene F. and Myron J. Gordon, 1968, Leverage, Dividend Policy, and the Cost of Capital, The Journal of Finance, 23, 85-103.
- Brook, Yaron, William T. Charlton, Jr. and Robert J. Hendershott. 1998. "Do Firms Use Dividends to Signal Large Future Cash Flow Increases?" Financial Management 27 (3):46-57.
- Carlos, Ann M., 1992, Principal-Agent Problems in Early Trading Companies: A Tale of Two Firms, The American Economic Review, 82, 140-145.
- Charest, Guy, 1978, Dividend Information, Stock Returns, and Market Efficiency--II, Journal of Financial Economics, 6, 297-330.
- Christie, William G., 1990, Dividend Yield and Expected Returns, Journal of Financial Economics, 28, 95-125.
- Collins, M. Cary, Atul K. Saxena and James T. Wansley, 1992, Delegated Monitoring and Dividend Policy: A Comparison of Regulated and Unregulated Firms, Unpublished working paper.
- Crockett, Jean and Irwin Friend, 1988, Dividend Policy in Perspective: Can Theory Explain Behavior?, The Review of Economics and Statistics, 70, 603-613.
- Crutchley, Claire E. and Robert S. Hansen, 1989, A Test of the Agency Theory of Managerial Ownership, Corporate Leverage, and Corporate Dividends, Financial Management, 18, Winter, 36-46.
- Damodaran, Aswath, 1989, The Weekend Effect in Information Releases: A Study of Earnings and Dividend Announcements, Review of Financial Studies, 2, 607-623.
- Darling, Paul G., 1957, The Influence of Expectations and Liquidity on Dividend Policy, Journal of Political Economy, 65, 209-224.

- DeAngelo, Harry and Linda DeAngelo, 1990, Dividend Policy and Financial Distress: An Empirical Investigation of Troubled NYSE Firms, *The Journal of Finance*, 55, 1415-1431.
- DeAngelo, Harry, Linda DeAngelo and Douglas J. Skinner, 1992, Dividends and Losses, *The Journal of Finance*, 57, 1837-1863.
- \_\_\_\_\_. 1996. "Reversal of Fortune: Dividend Signaling and the Disappearance of Sustained Earnings Growth." *Journal of Financial Economics* 40:341-371.
- \_\_\_\_\_. 2000. "Special Dividends and the Evolution of Dividend Signaling." *Journal of Financial Economics* 57:309-354.
- DeAngelo, Harry and Ronald W. Masulis, 1980. "Leverage and Dividend Irrelevancy Under Corporate and Personal Taxation." *The Journal of Finance* 35: 453-464.
- Dempsey, Stephen J. and Gene Laber, 1992, Effects of Agency and Transaction Costs on Dividend Payout Ratios: Further Evidence of the Agency-Transaction Cost Hypothesis, *The Journal of Financial Research*, 15, 317-321.
- Denis, David J., Diane K. Denis and Atulya Sarin, 1992, The Information Content of Dividend Changes: Cash Flow Signaling, Overinvestment, and Dividend Clienteles, Unpublished working paper.
- Desai, Hemang and Prem C. Jain. 1997. "Long-Run Common Stock Returns Following Stock Splits and Reverse Splits." *Journal of Business* 70:409-433.
- Dhrymes, Phoebus J. and Mordecai Kurz, 1964, On the Dividend Policy of Electric Utilities, *The Review of Economics and Statistics*, 46, 76-81.
- \_\_\_\_\_, 1967, Investment, Dividend, and External Finance Behavior of Firms, in *Determinants of Investment Behavior: A Conference of the Universities-National Bureau Committee for Economic Research*, Robert Ferber, ed., New York: National Bureau of Economic Research.
- Dielman, Terry E. and Henry R. Oppenheimer, 1984, An Examination of Investor Behavior During Periods of Large Dividend Changes, *Journal of Financial and Quantitative Analysis*, 19, 197-216.
- Divecha, Arjun and Dale Morse, 1983, Market Responses to Dividend Increases and Changes in Payout Ratios, *Journal of Financial and Quantitative Analysis*, 18, 163-173.

- Dubofsky, David A. 1992. "A Market Microstructure Explanation of Ex-Day Abnormal Returns." *Financial Management* 21:32-43.
- Dyl, Edward A. and Ronald Hoffmeister. 1986. "A Note on Dividend Policy and Beta" *Journal of Business Finance & Accounting*. 13:107-115.
- Dyl, Edward A. and Robert A. Weigand. 1998. "The Informational Content of Dividend Initiations: Additional Evidence." *Financial Management* 27 (2):27-35.
- Eades, Kenneth M., 1982, Empirical Evidence on Dividends as a Signal of Firm Value, *Journal of Financial and Quantitative Analysis*, 17, 471-500.
- Eades, Kenneth M., Patrick J. Hess and E. Han Kim. 1984. "On Interpreting Security Returns During the Ex-Dividend Period." *Journal of Financial Economics* 13: 3-34.
- \_\_\_\_\_, 1985, Market Rationality and Dividend Announcements, *Journal of Financial Economics*, 14, 581-604.
- Easterbrook, Frank H., 1984, Two Agency-Cost Explanations of Dividends, *The American Economic Review*, 74, 650-659.
- Easton, Stephen, 1991, Earnings and Dividends: Is There an Interaction Effect, *Journal of Business Finance & Accounting*, 18, 255-266.
- Eddy, Albert and Bruce Seifert, 1988, Firm Size and Dividend Announcements, *The Journal of Financial Research*, 11, 295-302.
- \_\_\_\_\_, 1992, Stock Price Reactions to Dividends and Earnings Announcements: Contemporaneous Versus Non-Contemporaneous Announcements, *The Journal of Financial Research*, 15, 207-217.
- Elton, Edward J. and Martin J. Gruber, 1970, Marginal Stockholder Tax Rates and the Clientele Effect, *The Review of Economics and Statistics*, 52, 68-74.
- Elton, Edward J., Martin J. Gruber and Joel Rentzler, 1983, A Simple Examination of the Empirical Relationship Between Dividend Yields and Deviations from the CAPM, *Journal of Banking & Finance*, 7, 135-146.
- Ezell, John R., 1974, The Informational Content of Dividends Hypothesis: Some Empirical Evidence, *The Journal of Business Research*, 2, 99-103.

- Fama, Eugene F., 1974, The Empirical Relationships Between the Dividend and Investment Decisions of Firms, *The American Economic Review*, 64, 304-318.
- Fama, Eugene F. and Harvey Babiak, 1968, Dividend Policy: An Empirical Analysis, *Journal of American Statistical Association*, 63, 1132-1161.
- Fama, Eugene F., Lawrence Fisher, Michael C. Jensen and Richard Roll, 1969, The Adjustment of Stock Prices to New Information, *International Economic Review*, 10, 1-21.
- Fama, Eugene F. and Michael C. Jensen, 1983a, Separation of Ownership and Control, *Journal of Law & Economics*, 26, 301-325.
- \_\_\_\_\_, 1983b, Agency Problems and Residual Claims, *Journal of Law & Economics*, 26, 327-349.
- Farrar, Donald E. and Lee L. Selwyn, 1967, Taxes, Corporate Financial Policy and Return to Investors, *National Tax Journal*, 20, 444-462.
- Fehrs, Donald H., Gary A. Benesh and David R. Peterson, 1988, Evidence of a Relation Between Stock Price Reactions Around Cash Dividend Changes and Yields, *The Journal of Financial Research*, 11, 111-123.
- Feldstein, Martin S., 1970, Corporate Taxation and Dividend Behavior, *Review of Economic Studies*, 37, 57-72.
- Feldstein, Martin S. and Jerry Green, 1983, Why Do Companies Pay Dividends?, *The American Economic Review*, 73, 17-30.
- Fienberg, Stephen E. 1980, *The Analysis of Cross-Classified Categorical Data*, 2nd Ed., Cambridge, Massachusetts: The MIT Press.
- Finnerty, John D., 1981, The Behavior of Electric Utility Common Stock Prices Near the Ex-Dividend Date, *Financial Management*, 10, Winter, 59-69.
- Firth, Michael. 1996. "Dividend Changes, Abnormal Returns, and Intra-Industry Firm Valuations." *Journal of Financial and Quantitative Analysis* 31:189-211.
- Frankfurter, George M. and Jaisik Gong, 1992, Empirical Tests of a Dividend Signaling Equilibrium Model, Unpublished working paper.

- \_\_\_\_\_, 1993, Time-Series Cross-Sectional Tests of Dividend Policy Determinants, Unpublished working paper.
- Frankfurter, George M. and William R. Lane, 1992, The Rationality of Dividends, *International Review of Financial Analysis*, 1, 115-129.
- Fung, William K. H. and Michael F. Theobald, 1984, Dividends and Debt Under Alternative Tax Systems, *Journal of Financial and Quantitative Analysis*, 19, 59-72.
- Garrett, Ian and Richard Priestley. 2000. "Dividend Behavior and Dividend Signaling." *Journal of Financial and Quantitative Analysis* 35:173-189.
- Ghosh, Chinmoy and J. Randall Woolridge, 1991, Dividend Omissions and Stock Market Rationality, *Journal of Business Finance & Accounting*, 18, 315-330.
- Givoly, Dan, Carla Hayn, Aharon R. Ofer and Oded Sarig, 1992, Taxes and Capital Structure: Evidence from Firms' Response to the Tax Reform Act of 1986, *The Review of Financial Studies*, 5, 331-355.
- Gonedes, Nicholas J., 1978, Corporate Signaling, External Accounting, and Capital Market Equilibrium: Evidence on Dividends, Income, and Extraordinary Items, *Journal of Accounting Research*, 16, 26-79.
- Gordon, Roger H. and David F. Bradford, 1980, Taxation and the Stock Market Valuation of Capital Gains and Dividends, *Journal of Public Economics*, 14, 109-136.
- Grammatikos, Theoharry, 1989, Dividend Stripping, Risk Exposure, and the Effect of the 1984 TRA on the Ex-Dividend Day Behavior, *The Journal of Business*, 62, 157-173.
- Green, Jerry, 1980, Taxation and the Ex-Dividend Day Behavior of Common Stock Prices, NBER working paper.
- Griffen, Paul A., 1976, Competitive Information in the Stock Market: An Empirical Study of Earnings, Dividends, and Analysts' Forecasts, *The Journal of Finance*, 31, 631-650.
- Grizzle, James E., C. Frank Starmer and Gary G. Koch, 1969, Analysis of Categorical Data by Linear Models, *Biometrics*, 25, 489-504.
- Gu, Zheng and Ronnie Clayton, 1993, Dividend Signaling and Cash Flow: An Empirical Examination, Unpublished working paper.

- Guay, Wayne and Jarrad Harford. 2000. "The Cash-Flow Permanence and Information Content of Dividend Increases Versus Repurchases." *Journal of Financial Economics* 57:385-415.
- Hakansson, Nils H. 1982. "To Pay or Not to Pay Dividend." *The Journal of Finance* 37:415-428.
- Handjinicolaou, George and Avner Kalay, 1984, Wealth Redistributions or Changes in Firm Value: An Analysis of Returns to Bondholders and Stockholders Around Dividend Announcements, *Journal of Financial Economics*, 13, 35-63.
- Harkins, Edwin P. and Francis J. Walsh, Jr., 1971, *Dividend Policies and Practices*, New York: The Conference Board, Inc.
- Healy, Paul M. and Krishna G. Palepu, 1988, Earnings Information Conveyed by Dividend Initiations and Omissions, *Journal of Financial Economics*, 21, 149-175.
- Hearth, Douglas and James H. Rimbey, 1992, *The Dividend-Clientele Controversy and the Tax Reform Act of 1986*, Unpublished working paper.
- Hess, Patrick, 1982, The Ex-Dividend Day Behavior of Stock Returns: Further Evidence on Tax Effects, *The Journal of Finance*, 37, 445-456.
- \_\_\_\_\_, 1983a, The Dividend Debate: 20 Years of Discussion, in *Issues in Corporate Finance*, New York: Stern Stewart and Co.
- \_\_\_\_\_, 1983b, Test for Tax Effects in the Pricing of Financial Assets, *Journal of Business*, 56, 537-554.
- Higgins, Robert C., 1972, The Corporate Dividend-Saving Decision, *Journal of Financial and Quantitative Analysis*, 7, 1527-1541.
- Ho, Kwok and Chris Robinson, 1992, *Dividend Policy Is Relevant in Perfect Markets*, Unpublished working paper.
- Howe, John S. and Yang-pin Shen. 1998. "Information Associated with Dividend Initiations: Firm-Specific or Industry-Wide?" *Financial Management* 27 (3):17-26.
- Jagannathan, Murali, Stephens, Clifford P. and Michael S. Weisbach. 2000. "Financial Flexibility and the Choice between Dividends and Stock Repurchases." *Journal of Financial Economics* 57:355-384.

- Jensen, Gerald R., Donald P. Solberg and Thomas S. Zorn, 1992, Simultaneous Determination of Insider Ownership, Debt, and Dividend Policies, *Journal of Financial and Quantitative Analysis*, 27, 247-263.
- Jensen, Michael C., 1986, Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, *The American Economic Review*, 76, 323-329.
- Jensen, Michael C. and William H. Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics*, 3, 305-360.
- John, Kose and Avner Kalay, 1982, Costly Contracting and Optimal Payout Constraints, *The Journal of Finance*, 37, 457-470.
- John, Kose and Joseph Williams, 1985, Dividends, Dilution, and Taxes: A Signalling Equilibrium, *The Journal of Finance*, 40, 1053-1070.
- Kahneman, Daniel and Amos Tversky, 1982, The Psychology of Preferences, *Scientific American*, 246, 167-173.
- Kalay, Avner, 1980, Signaling, Information Content, and the Reluctance to Cut Dividends, *Journal of Financial and Quantitative Analysis*, 15, 855-869.
- \_\_\_\_\_, 1982a, The Ex-Dividend Day Behavior of Stock Prices, *The Journal of Finance*, 37, 1059-1070.
- \_\_\_\_\_, 1982b, Stockholder-Bondholder Conflict and Dividend Constraints, *Journal of Financial Economics*, 10, 211-233.
- \_\_\_\_\_, 1984, The Ex-Dividend Day Behavior of Stock Prices; A Re-Examination of the Clientele Effect: A Reply, *The Journal of Finance*, 37, 557-561.
- Kalay, Avner and Uri Loewenstein, 1985, Predictable Events and Excess Returns: The Case of Dividend Announcements, *Journal of Financial Economics*, 14, 423-449.
- \_\_\_\_\_, 1986, The Informational Content of the Timing of Dividend Announcements, *Journal of Financial Economics*, 16, 373-388.
- Kalay, Avner and Roni Michaely. 2000. "Dividend and Taxes: A re-examination." *Financial Management* 29:55-75.

- Kale, Jayant R. and Thomas H. Noe. 1990. "Dividends, Uncertainty, and Underwriting Costs Under Asymmetric Information." *The Journal of Finance*, 13, 265-277.
- Kane, Alex, Young Ki Lee and Alan Marcus, 1984, Earnings and Dividend Announcements: Is There a Corroboration Effect?, *The Journal of Finance*, 39, 1091-1099.
- Kao, Chinwa, Chunchi Wu and Yuah-Chiao Lin, 1992, Corporate Dividend Dynamics and Information Signaling, Unpublished working paper.
- Kaplanis, Costas P., 1986, Options, Taxes, and Ex-Dividend Day Behavior, *The Journal of Finance*, 41, 411-424.
- Karpoff, Jonathan M. and Ralph A. Walkling, 1988, Short-Term Trading Around Ex-Dividend Days, *Journal of Financial Economics*, 21, 291-298.
- \_\_\_\_\_, 1990, Dividend Capture in NASDAQ Stocks, *Journal of Financial Economics*, 28, 39-65.
- Khoury, N.T. and K. V. Smith, 1977, Dividend Policy and the Capital Gains Tax in Canada, *Journal of Business Administration*, 8, Spring, 19-37.
- Kim, Yu Kyung and P. V. Viswanath, 1992, Financing Slack, Investment Opportunities and Market Reaction to Dividend Changes, Unpublished working paper.
- Kindleberger, Charles P., 1984, *A Financial History of Western Europe*, London: George Allen & Unwin.
- Knight, Frank H., 1964, *Uncertainty and Profit*, London: Augustus M. Kelley, Bookseller.
- Kosedag, Arman and David Michayluk. 2000. "Dividend Initiations in reverse-LBO firms." *Review of Financial Economics* 9:55-63.
- Kumar, Praveen, 1988, Shareholder-Manager Conflict and the Information Content of Dividends, *The Review of Financial Studies*, 1, 111-136.
- Kwan, Clarence C. Y., 1981, Efficient Market Tests of the Informational Content of Dividend Announcements: Critique and Extension, *Journal of Financial and Quantitative Analysis*, 16, 193-206.
- Lakonishok, Josef and Theo Vermaelen, 1983, Tax Reform and Ex-Dividend Day Behavior, *The Journal of Finance*, 38, 1157-1179.

- \_\_\_\_\_, 1986, Tax-Induced Trading Around Ex-Dividend Days, *Journal of Financial Economics*, 16, 287-319.
- Lang, Larry H. P. and Robert H. Litzenberger, 1989, Dividend Announcements: Cash Flow Signalling vs. Free Cash Flow Hypothesis?, *Journal of Financial Economics*, 24, 181-191.
- Laub, P. Michael, 1976, On the Informational Content of Dividends, *The Journal of Business*, 49, 73-80.
- Lee, Hei-Wei and Patricia A. Robert-Grandoff, 1992, The Role of Growth Opportunities in Dividend Initiations and Omissions: Dividend Signaling Hypothesis or Free Cash Flow Hypothesis, Unpublished Working Paper.
- Lintner, John, 1956, Optimal Dividends and Corporate Growth Under Uncertainty, *The Quarterly Journal of Economics*, 78, 49-95.
- Lippert, Robert L., Nixon, Terry D. and Eugene A. Pilotte. 2000. "Incentive Compensation and the Stock Price Response to Dividend Increase Announcements." *The Financial Review* 35:69-94.
- Lipson, Marc L., Maquieira, Carlos P. and Megginson, William. 1998. "Dividend Initiations and Earnings Surprises." *Financial Management* 27 (3):36-45.
- Litzenberger, Robert H. and Krishna Ramaswamy, 1979, The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence, *Journal of Financial Economics*, 7, 163-195.
- \_\_\_\_\_, 1980, Dividends, Short Selling Restrictions, Tax-Induced Investor Clienteles and Market Equilibrium, *The Journal of Finance*, 35, 469-485.
- \_\_\_\_\_, 1982, The Effects of Dividends on Common Stock Prices Tax Effects or Information Effects, *The Journal of Finance*, 37, 429-443.
- Long, John B., Jr., 1978, The Market Valuation of Cash Dividends: A Case To Consider, *Journal of Financial Economics*, 6, 235-264.
- Makhija, Anil K. and Howard E. Thompson, 1986, Some Aspects of Equilibrium for a Cross-Section of Firms Signaling Profitability with Dividends: A Note, *The Journal of Finance*, 41, 249-253.

- Manakyan, Herman and Carolyn Carroll, 1990, An Empirical Examination of the Existence of a Signaling Value Function for Dividends, *The Journal of Financial Research*, 13, 201-209.
- Maquieira, Carlos P. and William L. Megginson, 1992, Why Do Public Companies Begin Paying Dividends?, Unpublished working paper.
- Marsh, Terry A. and Robert C. Merton, 1986, Dividend Variability and Variance Bounds Tests for the Rationality of Stock Market Prices, *The American Economic Review*, 76, 483-498.
- \_\_\_\_\_, 1987, Dividend Behavior for the Aggregate Stock Market, *The Journal of Business*, 60, 1-40.
- Masulis, Ronald W. and Brett Trueman, 1988, Corporate Investment and Dividend Decisions Under Differential Personal Taxation, *Journal of Financial and Quantitative Analysis*, 23, 369-386.
- McCabe, George M., 1979, The Empirical Relationship Between Investment and Financing: A New Look, *Journal of Financial and Quantitative Analysis*, 14, 119-135.
- McCann, P. Douglas and Gwendolyn P. Webb, 1992, The Information Content of the Initial Dividend, Unpublished working paper.
- McDonald, John G., Bertrand Jacquillat and Maurice Nussenbaum, 1975, Dividend, Investment and Financing Decisions: Empirical Evidence on French Firms, *Journal of Financial and Quantitative Analysis*, 10, 741-755.
- McKenzie, Kenneth J. and Aileen J. Thompson. 1995. "Dividend Taxation and Equity Value: the Canadian Tax Changes of 1986." *Canadian Journal of Economics* 28:463-472.
- Michaely, Roni, 1991, Ex-Dividend Day Stock Price Behavior: The Case of the 1986 Tax Reform Act, *The Journal of Finance*, 46, 845-859.
- Michaely, Roni, Richard Thaler and K. Womack. 1995. "Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?" *The Journal of Finance* 50:573-608.
- Michel, Allen J., 1979, Industry Influence on Dividend Policy, *Financial Management*, 8, Fall, 22-26.
- Miller, Merton H., 1977, Debt and Taxes, *The Journal of Finance*, 32, 261-275.

- \_\_\_\_\_, 1986, Behavior Rationality in Finance: The Case of Dividends, *The Journal of Business*, 59, S451-S468.
- Miller, Merton H. and Franco Modigliani, 1961, Dividend Policy, Growth, and the Valuation of Shares, *The Journal of Business*, 34, 411-433.
- Miller, Merton H. and Kevin Rock, 1985, Dividend Policy under Asymmetric Information, *The Journal of Finance*, 40, 1031-1051.
- Miller, Merton H. and Myron S. Scholes, 1978, Dividends and Taxes, *Journal of Financial Economics*, 6, 333-364.
- \_\_\_\_\_, 1982, Dividends and Taxes: Some Empirical Evidence, *Journal of Political Economy*, 90, 1118-1141.
- Modigliani, Franco, 1982, Debt, Dividend Policy, Inflation and Market Valuation, *The Journal of Finance*, 37, 255-273.
- Moh'd Mahmoud A., Perry, Larry G., and James N. Rimbey. 1995. "An Investigation of the Dynamic Relationship between Agency Theory and Dividend Policy." *The Financial Review* 30:367-385.
- Morgan, I. G., 1980, Dividend and Stock Price Behavior in Canada, *Journal of Business Administration*, 12, 91-107.
- \_\_\_\_\_, 1982, Dividends and Capital Asset Prices, *The Journal of Finance*, 37, 1071-1086.
- Myers, Stewart C., 1984, The Capital Structure Puzzle, *The Journal of Finance*, 39, 575-592.
- \_\_\_\_\_, 1987, Comments on "The Informational Content of Dividends, in *Macroeconomics: Essays in Honor of Franco Modigliani*, John Bosons, Rudiger Dornbusch, and Stanley Fischer, eds., Cambridge, Massachusetts: MIT Press.
- \_\_\_\_\_, 1990, Still Searching for Capital Structure, Keynote address delivered at HEC International Conference.
- Naranjo, Andy, M. Nimalendran, and Mike Ryngaert.. 1998. "Stock Returns, Dividend Yields, and Taxes." *The Journal of Finance* 53:2029-2057.

- Ofer, Aharon R. and Daniel R. Siegel, 1987, Corporate Financial Policy, Information, and Market Expectations: An Empirical Investigation of Dividends, *The Journal of Finance*, 42, 889-911.
- Ofer, Aharon R. and Anjan V. Thakor, 1987, A Theory of Stock Price Responses to Alternative Corporate Cash Disbursement Methods: Stock Repurchases and Dividends, *The Journal of Finance*, 42, 365-394
- Pan, Ming-Shiun. 2001. "Aggregate Dividend Behavior and Permanent Earnings Hypothesis." *The Financial Review* 36:23-38.
- Penman, Stephen H., 1983, The Predictive Content of Earnings Forecasts and Dividends, *The Journal of Finance*, 38, 1181-1199.
- Peterson, Pamela P. and Gary A. Benesh. 1983. "A Re-Examination of the Empirical Relationship Between Investment and Financing Decisions. *Journal of Financial and Quantitative Analysis* 18:439-453.
- Pettit, R. Richardson. 1972. "Dividend Announcements, Security Performance, and Capital Market Efficiency." *The Journal of Finance* 27:993-1007.
- \_\_\_\_\_. 1976. "The Impact of Dividend and Earnings Announcements: A Reconciliation." *The Journal of Business* 49:86-96.
- Poterba, James M. 1986. "The Market Valuation of Cash Dividends." *Journal of Financial Economics* 15:395-405.
- Poterba, James M. and Lawrence H. Summers. 1984, New Evidence That Taxes Affect the Valuation of Dividends, *The Journal of Finance*, 39, 1397-1415.
- Richardson, Gordon, Stephan E. Sefcik and Rex Thompson, 1986, A Test of Dividend Irrelevance Using Volume Reactions to a Change in Dividend Policy, *Journal of Financial Economics*, 17, 313-333.
- Riding, Allan L., 1984, The Information Content of Dividends: An Other Test, *Journal of Business Finance & Accounting*, 11, 163-176.
- Robin, Ashok J., 1991, The Impact of the 1986 Tax Reform Act on Ex-Dividend Day Returns, *Financial Management*, 20, Spring, 60-70.

- Rodriguez, Ricardo J., 1992, Quality Dispersion and the Feasibility of Dividends as Signals, *The Journal of Financial Research*, 15, 307-315.
- Roll, Richard, 1977, A Critique of the Asset Price Theory's Test; Part I: On Past and Potential Testability of Theory, *Journal of Financial Economics*, 4, 129-176.
- Rosenberg, Barr and V. Marathe, 1979, Tests of Capital Asset Pricing Hypothesis, *Research in Finance*, 1, 115-223.
- Rozeff, Michael S., 1982, Growth, Beta and Agency Costs as Determinants of Dividend Payout Ratios, *The Journal of Financial Research*, 5, 249-259.
- Schatzberg, John D. and Prabir Datta, 1992, The Weekend Effect and Corporate Dividend Announcements, *The Journal of Financial Research*, 15, 69-76.
- Scott, William Robert, 1912, *The Constitution and Finance of English, Scottish, and Irish Joint Stock Companies to 1720*, Cambridge: Cambridge University Press.
- Shefrin, Hersh M. and Meir Statman, 1984, Explaining Investor Preference for Cash Dividends, *Journal of Financial Economics*, 13, 253-282.
- Shiller, Robert J., 1984, Stock Prices and Social Dynamics, *Brookings Papers on Economic Activity*, 457-510.
- \_\_\_\_\_, 1986, The Marsh-Merton Model of Managers' Smoothing of Dividends, *The American Economic Review*, 76, 499-503.
- \_\_\_\_\_, 1989, Fashions, Fads, and Bubbles in Financial Markets, in *Market Volatility*, Cambridge, Massachusetts: MIT Press.
- \_\_\_\_\_, 1990, Market Volatility and Investor Behavior, *The American Economic Review*, 80, 2, 58-62.
- Shleifer, Andrei and Robert W. Vishney, 1986, Large Shareholders and Corporate Control, *Journal of Political Economy*, 94, 461-488.
- Shrader, Mark J. and Martin Milkman, 1991, The Effects of Growth Opportunities on Dividend Signaling, Unpublished working paper.
- Skinner, David L. and John E. Gilster, Jr., 1990, Dividend Clienteles, the Tax-Clientele Hypothesis, and Utilities, *The Financial Review*, 25, 287-296.

- Smirlock, Michael and William Marshall, 1983, An Examination of the Empirical Relationship Between the Dividend and Investment Decisions: A Note, *The Journal of Finance*, 38, 1659-1667.
- Smith, Adam, 1937, *The Wealth of Nations*, New York: Random House, Inc.
- Spence, Michael, 1973, Job Market Signaling, *The Quarterly Journal of Economics*, 87, 355-374.
- \_\_\_\_\_, 1974, Competitive and Optimal Responses to Signals: An Analysis of Efficiency and Distribution, *Journal of Economic Theory*, 7, 296-332.
- Sterk, William E. and Pieter A. Vanderberg, 1990, The Market Valuation of Cash Dividends and the Tax Differential Theory of Dividend Policy: A Case Revisited, *The Financial Review*, 25, 441-455.
- Stickel, Scott E., 1991, The Ex-Dividend Behavior on Nonconvertible Preferred Stock Returns and Trading Volume, *Journal of Financial and Quantitative Analysis*, 26, 45-61.
- Sun, Y. Elizabeth, 1992, Corporate Dividend Policy in an Agency Costs Framework, Unpublished working paper.
- Talmor, Eli, 1981, Asymmetric Information, Signaling, and Optimal Corporate Financial Decisions, *Journal of Financial and Quantitative Analysis*, 16, 413-435.
- Thaler, Richard H., 1980, Toward a Positive Theory of Consumer Choice, *Journal of Economic Behavior and Organization*, 1, 39-60.
- Thaler, Richard H. and Hersh M. Shefrin, 1981, An Economic Theory of Self Control, *Journal of Political Economy*, 89, 392-410.
- Turnovsky, Stephen J., 1967, The Allocation of Corporate Profits Between Dividends and Retained Earnings, *The Review of Economics and Statistics*, 49, 583-589.
- Venkatesh, P.C., 1989, The Impact of Dividend Initiation on the Information Content of Earnings Announcements and Returns Volatility, *The Journal of Business*, 62, 175-198.
- \_\_\_\_\_, 1991, Trading Costs and Ex-Day Behavior: An Examination of Primes and Stocks, *Financial Management*, 20, Autumn, 84-95.

- Wald, A., 1943, Tests of Statistical Hypotheses Concerning General Parameters When the Number of Observations Is Large, Transactions of the American Mathematical Society, 54, 426-482.
- Wansley, James W., C. F. Sirmans, James D. Shilling and Young-jin Lee, 1991, Dividend Change Announcement Effects and Earnings Volatility and Timing, The Journal of Financial Research, 14, 37-49.
- Watts, Ross, 1973, The Information Content of Dividends, The Journal of Business, 46, 191-211.
- \_\_\_\_\_, 1976a, Comments on "The Informational Content of Dividends," The Journal of Business, 49, 81-85.
- \_\_\_\_\_, 1976b, Comments on "The Impact of Dividend and Earnings Announcements: A Reconciliation," The Journal of Business, 49, 97-106.
- Woolridge, J. Randall, 1982, The Information Content of Dividend Changes, The Journal of Financial Research, 5, 237-247.
- \_\_\_\_\_, 1983, Dividend Changes and Security Prices, The Journal of Finance, 38, 1607-1615.
- Wong, Thian S. and C. Sloan Swindle, 1992, Dividends as an Information Transmission Mechanism, Unpublished working paper.
- Wu, Chunchi and Junming Hsu, 1992, The Impact of the 1986 Tax Reform on Ex-Dividend Day Volume and Price Behavior, Unpublished working paper.

## ENDNOTES

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1. In this section we discuss the logic of the dividend classes, the reference to papers is purposefully minimal, and it is done solely for the reason of typifying the papers that belong to a particular class. A much more comprehensive, albeit not total, reference is in the tables that deal with the statistical tests.
  2. This is, of course, the same circular argument as the contention of the early architects of the Capital Asset Pricing Model that at equilibrium all assets would be held in proportion to their market value, because otherwise it would not be equilibrium. In not one of the signaling studies is there any evidence regarding the costs of alternative methods.
  3. That this argument is largely ad hoc is accentuated by the more plausible argument that payment of large dividends to shareholders can result in the rejection of positive, net present value projects, misuse of low-cost capital and the consequent suboptimization of shareholders' wealth (Myers, 1977).
  4. Taking Roll's statement at face value and applying strict Popperian criteria to determine the scientific value of empirically untestable theories would be tantamount to their instantaneous disqualification.
  5. See Appendix A for the assignment of methods of analysis to classes.
  6. The choice of 1976 as the dividing point is based on the publication of Jensen and Meckling's (1976) Agency Theory, which gave rise to intense examination of the costs of asymmetric information. Also, the approximate mid-point of the "modern" financial era (beginning with Modigliani and Miller's seminal paper of 1958) is 1976. In addition, this choice divides the studies in our sample into two approximately equal groups. We wish to emphasize, however, that our results are quite robust to the selection of the time period. Classifying the sample period using several other criteria did not alter results presented in this paper.

**TABLE 1**  
**THE CDAM CLASSIFICATION FRAMEWORK**

Method of Analysis	Data Type	Sample Period
Abnormal Returns <sup>†</sup>	Daily	Pre 1976 Post 1976
	Other <sup>‡</sup>	Pre 1976 Post 1976
Other <sup>¥</sup>	Daily	Pre 1976 Post 1976
	Other	Pre 1976 Post 1976
Abnormal Returns	Daily	Pre 1976 Post 1976
	Other	Pre 1976 Post 1976
Other	Daily	Pre 1976 Post 1976
	Other	Pre 1976 Post 1976

<sup>†</sup>Abnormal returns methods of analysis include event study and abnormal returns. A listing of method of analysis classifications is found in the Appendix.

<sup>‡</sup>Other data includes weekly, monthly, quarterly, semi-annual and annual observations.

<sup>¥</sup>Other methods of analysis include regression analyses and other methods (see Appendix).

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## APPENDIX A

### METHOD OF ANALYSIS ABBREVIATIONS

#### A. Abnormal Return Methods of Analysis

ARA	Abnormal Returns Analysis
ES	Event Study Method of Analysis

#### B. Price Change Methods of Analysis

$C_A/C_B$	Price ratio between two classes of common stock
DCA	Dividend Change Analysis
EG	Elton and Gruber
EPS/DPS	Earnings per Share/Dividends per Share
MEG	Modified Elton and Gruber
OP	Changes in Option Prices
$P_A/P_B$	Price ratio between two issues

#### C. Regression Analysis Methods of Analysis

ALS	Augmented Least Squares Regression
Bootstrap	Bootstrap
IV	Instrumental Variables
LOGIT	Logit
MRA	Multiple Regression
OLS	Ordinary Least Squares Regression
	RCRA Random Coefficient Regression
RRA	Recursive Regression
	SUR Seemingly Unrelated Regressions
TSRA	Time Series Regression
2SLS	Two Stage Least Squares
	3SLS Three Stage Least Squares
TOBIT	Tobit
	XSRA Cross Sectional Regression

#### D. Other Methods of Analysis

ANOVA RBD	Analysis of Variance Randomized Block Design
BJM	Box Jenkins Method
CCA	Canonical Correlation Analysis
CSA	Cross Spectral Analysis
DA	Aggregate Data Analysis
ECM	Error Correction Model

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GC Granger Causality Test  
Means Means Test  
NP Non-Parametric Tests  
VAR Vector Auto-Regression