INVESTMENT EARNINGS AND THE INITIAL DIVIDEND DECISION

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Comments Welcome

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1 Introduction

Various models of dividend behavior have been suggested which imply different determinants of a firm's dividend policy. This paper examines firms' initial dividend decision in light of their earnings and growth to determine if the initial dividend can be explained in terms of any of these models. Empirical results suggest the initial dividend decision is not adequately modelled by these theories.

The importance of dividends to investors has long been a question of importance in finance. Specifically, do shareholders benefit more from reinvestment of earnings or from a dividend? Early thought was emphatically on the side of the dividend. Graham and Dodd[10] state unequivocally a dollar in dividends is worth more than a dollar "carried to surplus." However, Modigliani and Miller [20] argued that dividend policy was irrelevant to the shareholder, given the investment decision. M&M [18] model the value of the firm in a certainty case in which investors know the future earnings of the firm and its investments. The model assumes that dividends and capital gains are taxed identically. The introduction of differential taxation between dividends, taxed at a higher rate, and capital gains, taxed at a lower rate, along with the assumption of a fixed investment plan leads to the strong conclusion that firms should not pay dividends. In this case investors would prefer the firm purchase treasury stock with any funds that are available, rather than pay out dividends. Further analysis with a fixed investment plan does not alter this conclusion. So long as dividends are taxed at a higher rate than capital gains, and neither the investment plans

of the firm nor the investor's expectations change, shareholders will not want dividends.

1.1 Residual Model

If firms are constrained to use funds only for some combination of investment or dividends, an optimum payout can be found. It occurs when the marginal return to investment is equal to the cost of retained earnings. Stated in a normative fashion, firms would maximize shareholder wealth by investing earnings until the marginal return is equal to the cost of retained earnings. The remaining funds should be paid out as dividends. This model is known as the residual theory of dividend payments.

In the context of this study of firms that have paid no dividends, the theory implies that these firms had more investment opportunities with returns greater than the cost of capital than earnings to invest. When they begin to pay dividends they have found a point at which further investment would no longer benefit the shareholder. The dividend is thus the residual earnings after the firm undertakes an optimal investment program.

The residual model as specified here does not seem to explain the positive returns that follow a dividend increase or an announcement of an initial dividend (Asquith and Mullins [1], Dielman and Oppenheimer[7], Richardson, Sefcik and Thompson [22]). A dividend increase would suggest a decrease in profitable investment opportunities. Shareholders would either be disappointed in the absence of high return investment opportunities if the dividend increase was

not anticipated or they would be indifferent to the dividend if the increase had been anticipated.

1.2 Signalling Models

This model of dividend paying behavior has been challenged in the context of a world in which investors have imperfect information. Following Spence [25][26] and Ross [23], Bhattacharya [3] develops a model where managers are prevented from communicating the value of their firms because of moral hazard. Spence [25] develops conditions under which a signaling equilibrium can exist. These conditions can be met by dividends as a signal, given the appropriate incentives for managers to tell the truth. In the signaling model, strong firms indicate their earning power by announcing and paying dividends which are taken by the market as a credible signal.

Bhattacharya, following Ross, takes a situation in which investors are unable to differentiate among a cross–section of firms. Insiders are prevented from communicating their information to the market because of the same moral hazard problems indicated by Ross. Shareholders are impatient in the sense they want to realize a liquidation value for their shares and thus want to have outsiders informed about the quality of their firm. Managers' incentives are such that they attempt to maximize the after–tax objective function of the shareholders.

In this model managers will pay dividends to communicate information about cash flows expected at time 1. Dividends are a costly signal to the firm because of the tax on dividend income and because the firm becomes less liquid:

this increases the probability of a cash shortfall. The cash shortfall would result in the firm incurring costs for maintaining liquidity. At the end of the period when the firm's earnings are realized, the value of the share will depend on the random income realized. In states of the world where income, Y, is greater than the dividend, D, the price of the share will increase by $Y - D$, as surplus cash is invested in acceptable projects.

It should be noted that in contrast to the residual theory, the firm is assumed to have investment opportunities available. The money paid out in dividends could be invested and earn a non-negative return. The investor solves the multiperiod model as if it were a two period model: the value of the share is the present value of the expected dividend and the end of period price. The investor perceives the dividend and it discloses information about the future earnings of the firm. The valuation of expected post period one cash flows is conditioned upon the information provided by the dividend, and it is incorporated in the end of period price. The realization of share value motivates the costly signal. As in the residual model, the payment of the dividend reduces the period 2 value of the firm because it reduces future investment. In a signaling model, the dividend payment has another cost: it increases the likelihood of a cash shortfall. For a fixed dividend the expected cost for a signal is decreasing for firms with better earnings.

The end of period value can be modeled by assuming the firm's earnings follow a random walk. The initial dividend would indicate the expected future

inflows, and the change in value of the share would be equal to the capitalized value of the perpetual stream of current earnings, net of taxes due to dividends and the expected cost of financing cash shortfalls.

Of the more recent work in dividend signalling, John and Williams [13] most closely parallels Bhattacharya. John and Williams model dividend policy as a response to the firm's and the investors' liquidity requirements. Managers are willing to pay a dividend and incur a dissipative cost in order to signal the true value of their firm. This will increase share price and consequently minimize the dilution of ownership resulting from selling shares to satisfy liquidity needs. In the Miller and Rock [19] presentation, dividends reveal current earnings. Under their assumptions future earnings are extrapolated from current earnings based on the degree of persistence in the earnings disturbance revealed by the dividend announcement.

In all of these models the predicted market response to an initial dividend is positive. While the extension of the Miller and Rock and John and Williams to a many-period model firm is incomplete, it is clear the positive response to a dividend announcement is the result of favorable earnings information. This would suggest that managers are expecting improved earnings and this should be reflected in a higher growth rate in the firms earnings following an initial dividend.

1.3 Agency Cost Models

Another possible explanation for the favorable market response emerges from the management control literature. Shareholders do not have perfect control over managers, and thus, they are concerned about management's behavior. Expected deviation from value maximization creates agency costs. Shareholders would react favorably to reductions in these agency costs. The dividend payment is a possible mechanism to reduce these costs.

In this analysis the agency problem centers around the relationship between shareholders and management. Jensen and Meckling [11] show that agency costs exist when an owner/manager sells part of his holdings to an outsider. Managers actively seek ways of reducing the agency cost and impose bonding expenses upon themselves to do so. Rozeff [24] argued that the tax consequences and associated floatation costs associated with a dividend payment constitute bonding expenses by management. The increased demand by the firm for external funds would necessitate contracting with a third party. The supplier of funds would undertake an analysis of the firm's operations and management and this would certify management's behavior to the original investor.

In a more institutional context, as has been argued by Easterbrook [9], it could be argued that managers have found the lowest cost solution to the monitoring costs involved with investment. Earnings are paid out so that new investment funds must be obtained through investment bankers' efforts. Assuming investment bankers are required to investigate the quality of investments or that

they have a heavy investment in their reputation, the payment of a dividend might be the lowest cost way for shareholders to monitor managers' investment behavior.

Jensen [12] develops the agency cost model in the context of free cash flow. Free cash flow is cash flow in excess of that required to fund all projects with positive net present value. Free cash flow will be high for firms that have profitable investments in place but shrinking investment opportunities. Jensen argues that significant agency problems arise because shareholders need mechanisms to insure managers will pay out these cash flows. Jensen explicitly considers debt issuance and dividend payments as mechanisms to help alleviate these problems.

Jensen suggest that the announcement of a permanent increase in dividends or the exchange of debt for equity reduces managers' discretion over the disposition of the firm's cash flows. He asserts that dividend announcements are "weak" promises and debt for equity swaps are a stronger form of control because of the contractual nature of the promise to pay out cash.

The managerial control hypothesis contends the favorable stock market reaction observed following initial dividend announcements is a function of shareholders perceiving a new, reduced level of costs for managerial control. Specifically, paying a dividend will reduce managements' discretionary use of funds, and it will increase the need for external funds. External funds will come from investment bankers and commercial bankers who will investigate a firm's prospects (the former in order to maintain credibility and the latter in order to protect

depositors and shareholders) and fund the firm only if managements behavior is acceptable. It is argued that shareholders are responding favorably to a more efficient monitoring scheme.

1.4 Segmentented Market Model

The models examined thus far were developed in an attempt to explain the overall dividend behavior of firms. The empirical results of this paper suggest the initial dividend may have unique determinants. The segmented market model (McCann[17])suggests a possible explanation of the data observed.

Related to the agency cost model is a segmented market model in which certain investors are unable to hold shares of non-dividend paying firms. These shares would have to be held in disproportionate amounts by non-restricted investors.

While the agency cost models of firm's dividend policy suggest individuals will evaluate agency costs when pricing securities, agency–type consideration might effect security pricing indirectly. A model of segmented markets posits a group of fiduciary investors who do not hold shares in firms that do not pay dividends. This could be due to either traditional policy or explicit restriction. This would suggest that the other market participants would be forced to hold disproportionate amounts of these ineligible securities relative to the market portfolio. To induce investors to hold this amount of these securities, prices of these shares would have to fall to compensate them for this increase in unsystematic risk. Initiating dividends would increase the value of these shares and

reduce the firms' cost of capital.

1.5 Summary

This paper proposes to survey these models of a firm's initial dividend decision. The firms' financial statements and security returns will be examined to determine which model (models) seem to be consistent with these data.The models will be briefly reviewed, and their empirical implications will be identified.

1.5.1 Residual Model

In the residual model the firm pays a dividend when the marginal return on new investment is below a hurdle rate. In a perfect market this hurdle rate is the firm's cost of capital. The model would suggest a lower growth rate in earnings would be observed following an initial dividend.

This model would also suggest a decrease in investment for the firm as the reinvestment rate decreased. As suggested previously, this would not explain the favorable market response observed following the dividend announcement.

1.5.2 Agency Cost

In his analysis of the agency costs associated with free cash flow, Jensen [12] extends the residual model to suggest the favorable market response is due to the commitment to pay out funds rather than to invest them in projects with a negative net present value. Here the dividend serves to indicate managers are controlled. In terms of the original Jensen and Meckling paper [11], they are

not consuming perquisites.

The same earnings and investment policy arguments would hold here as in the residual case: earnings growth should decrease and investment should decrease.

1.5.3 Signalling Models

The empirical implications of the signalling models must follow from the assertion that the dividend announcement is a signal of higher earnings. If it is assumed that firms' investments are characterised by a stable investment opportunity schedule, the dividend would signal a new, higher, level of return on investment and an increase in the growth rate of total earnings. A more conservative assumption would be that the dividend signalled a single good investment opportunity rather that a shift in the investment opportunity set. This would suggest growth in the total cash flow of the firm would continue at the same rate as before the initial dividend. The growth in cash flow per share could conceivably be lower as the payout would reduce reinvestment. In particular, the model would predict a smaller decline than would the residual model.

In a less formal context it could be argued that the signalling model is important only in so far as it suggests an increase in profitability of the firm's investment opportunities. As a heuristic model it would seem to suggest total earnings growth should increase.

1.5.4 Segmented Market

The segmented market model suggests the firms' dividend decision results in a lower cost of capital. The reduction in the cost of capital would increase the firm's level of investment following the initial dividend as more projects would have a positive net present value.

The effect on earnings growth needs to be analyzed separately between total earnings and on earnings per share. The fact that the firm has decided to pay the initial dividend would imply a firm's investment opportunities are less profitable since the decision to pay a dividend is justified. This, combined with the reduction in the reinvestment rate would suggest that the earnings growth would decline on a per share basis. The effect on the total earnings growth is less clear as new external funds would increase the firm's asset base. Thus the model would only suggest the growth in earning per share would decrease, The change in total earnings growth is indeterminate. If there is a decrease it would be less pronounced than that found on a per share basis.

1.5.5 Empirical Implications

A tabular presentation of the empirical predictions of each of the models is presented below. The expected change in the growth rates of cash flow per share, total cash flow and total assets is indicated.

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Table 1: Summary of Predictions

Model	*Predicted Change in Growth*		
	Cash Flow		*Total*
	total	*per share*	*Assets*
Residual Theory	Decrease	Decrease	Decrease
Signalling Theory	No Decrease	$g_S > g_R$[a]	?
Free Cash Flow Theory	Decrease	Decrease	Decrease
Segmented Market Theory	?	Decrease	Increase

[a]Any decrease in the per share cash flow would be smaller under the signalling model than the residual model

2 Testing the models

In order to examine the models of the market's response to an initial dividend, a sample of dividend initiating firms was collected. The procedure for selecting the sample was to search the 1985 Compustat database for firms paying a cash dividend following at least ten years of no cash dividend payment. The firms were selected from the Primary, Secondary, Tertiary and Research files. These files provided a universe of 3,731 firms. The sample selection criterion yielded 194 firms from this group. This represented 5.2% of the total number of firms.

2.1 Sample Description

The database contained information on firms from 1966 to 1985. This restricted the sample to firms initiating dividend in the period 1976 to 1985.

In terms of size, the companies in the sample were smaller than the Compustat population. Sample firms varied from annual sales of six hundred thousand dollars to sales of 8.8 billion dollars during the year of their initial dividend payment. Mean sales were $298 million, with median sales of $85 million. The population mean sales estimated on a weighted average basis were $838 million with a median of $161 million. As these statistics indicate the distribution of sales in both the sample and the population was positively skewed. The interquartile range was from $33 million to $184 million within the sample versus $53 to $543 in the population.

2.2 Analysis of the Market Reaction

In order to estimate the markets response to the initial dividend announcement, an abnormal performance measure was estimated for the period around the initial dividend announcement. The dividend announcement date was defined as the date of the announcement of the amount of the dividend, the ex-dividend date, and the date payable of the dividend in the *Wall Street Journal.*

The excess return measure was estimated using an expected return predicted by the conditional expectation suggested by the market model,

$$E(R_{it} \mid R_{mt}) = \alpha_i + \beta_i R_{mt}, \tag{1}$$

where

$E(R_{it} \mid R_{mt})$ is the expected return for the ith firm on the tth day conditional upon the market return R_{mt},

R_{mt} is the observed market return on the tth day,

α_i, β_i are the regression parameters for the ith firm.

The regression coefficients, α and β, were estimated using ordinary least squares to calculate the regression of the security returns on the market index return. The estimation was based on a sample of daily observations obtained from the 1985 CRSP Stock Return File and an equally weighted market portfolio of New York Stock Exchange issues from the 1985 CRSP Stock Index File. The estimation period began ninety trading days prior to the initial dividend

announcement, and all available observations for the next sixty trading days were used. An abnormal return was estimated by,

$$EX_{it} = R_{it} - ER_{it}, \tag{2}$$

where

EX_{it} is the excess return associated with security i on day t,

R_{it} is the observed return for security i on day t,

ER_{it} is calculated from (1) using the estimates of α_i and β_i and the value of the market index at time t.

The abnormal returns were analyzed from $t = -5$ to $+5$ days relative to the initial dividend announcement. These residuals were averaged across firms to get an overall average residual for each of the eleven days around the announcement. Under the assumption of a bivariate normal distribution for the regression model, the quantity EX_{it}/s_{it} will have a t–distribution with $N - 2$ degrees of freedom, with,

$$s_{it}^2 = s_{y.x}^2 \left(1 + \frac{1}{N} + \frac{(R_{it} - \overline{R_i})^2}{\sum_t (R_{it} - \overline{R_i})^2}\right),$$

where,

$s_{y.x}^2$ is the residual variance estimated in the OLS procedure (1),

N is the number of observations used in the estimation of (1),

$\overline{R_i}$ is the sample mean of R_i in the estimation sample

Table 2: Excess returns around date of initial dividend announcement t–statistics are presented for the unweighted average residual.

Day	A.R.	t	N	Wt. A. R.
-5	-0.10%	-0.43	179	-0.02%
-4	0.05%	0.22	180	0.09%
-3	0.27%	1.15	180	0.57%
-2	0.66%	2.78†	180	0.17%
-1	1.60%	6.75‡	180	1.15%
0	1.43%	6.01‡	180	0.94%
1	0.15%	0.62	179	0.37%
2	0.09%	0.39	180	0.11%
3	0.40%	1.67	180	0.35%
4	-0.11%	-0.44	180	0.19%
5	0.44%	1.86	179	0.18%

†significant at the $\alpha = 0.05$ level
‡significant at the $\alpha = 0.01$ level

$\sum(R_i - \overline{R_i})^2$ is the sample sum of squares for R_i.

This estimate allows us to calculate t-statistics for the average residuals and to use the inverse of s_{it}^2 as a weight for a minimum variance estimate of the average residuals. These results are presented in Table 2.

From an analysis of the average excess returns it seemed that the announcement effect was occurring on the day of the announcement and the preceding two day period. Since many of the *Wall Street Journal* announcements followed the actual announcement by a day, the two day period [-1,0] is not surprising. The effect on day -2 is more surprising. It is probably due to unofficial news sources. To control for timing differences in the coverage of the announcement, a two day cumulative return was calculated for this analysis,

$$TWODAY_i = EX_{i,-1} + EX_{i,0},$$

where

$TWODAY_i$ is the excess return associated with the dividend announcement for firm i.

In this sample the average, unweighted, two day residual was 3.05%. This is approximately 0.5% below that reported by Asquith and Mullins [1] and Dielman and Oppenheimer [7]. The estimated cumulative return for the five day period through dat 3 is 3.71% and is comparable to the results reported by Richardson, Sefcik and Thompson [22]. When the sample is restricted to current COMPUSTAT firms the two day residual is estimated at 3.2%, while the Research file firms show a cumulative residual of 2.7%

The release of information such as a dividend announcement could effect the conditional distribution of the security returns around the date of the announcement. In order to control for the possibility that the returns were heteroscedastic relative to their estimation period, a cross-sectional estimate of the return variance was estimated. This cross-sectional estimate allowed for a t–test that would reflect the variance of the securities returns around the date of the initial dividend. The estimated standard deviation of the abnormal return was 7.5% and for a sample of this size the t–statistic was 5.45, significant at the 0.01 level.

2.2.1 Changes in Risk

An analysis of the returns for the sample firms was conducted to see if there was a change in the riskiness of their security returns. This analysis was performed

by looking at the total monthly returns for the firms and regressing them upon the returns of an equally weighted index of all New York and American exchange issues.

The results suggest that there was a decrease in the firms' betas after the initial dividend. Calculating a weighted average using the inverse of the estimated errors of the estimates to weight the observations the average beta before the initial dividend was 1.50, after the initial dividend it was 1.32. The average change was also calculated using weighted differences and found to be equal to -0.13. This value had a t-statistic of -46.04 and was highly significant.

The residual variances of the security returns were also examined. The ratio of individual estimates before and after the initial dividend were examined. These ratios were used to construct a test of $H_0 : \sigma_A^2 = \sigma_B^2$ against the one–sided alternative $H_1 : \sigma_A^2 \leq \sigma_B^2$. The Bonferroni inequality allowed for a joint test of size α. All of the calculated ratios were compared to the critical value specified by $F_{\alpha/N}$. These F-ratio tests allowed for the rejection of H_0 for any standard level of α.

2.3 Earnings

If we accept the 'reluctance to change assertion,' that management does not change dividends casually, the change from a no payout policy should represent a fairly stable relationship to earnings which could be modelled by a dividend effect in a repeated measurement of firms' growth rates before and after an initial dividend. The residual model suggests growth rates would be lower;

higher growth would be consistent with the signalling model.

To estimate the growth rates, a dividend payment period, T, was identified for each firm as the Compustat year index for the year their initial dividend was paid. The indices thus ran from 11 to 20. Annual growth rates in cash flow per share were estimated for the period before T and the period after T. The estimation was based on a continuous growth model:

$$CFPS_t = CFPS_0 \epsilon_t e^{gt},$$

where,

$CFPS_t$ is the cash flow per share in period t

g is the firm's growth rate.

ϵ_t is a multiplicative error term with an expected value of 1.

Pairs of growth rates, G_B and G_A, were estimated for the firms in the sample of dividend initiating firms. The estimates were made by using ordinary least squares to estimate g in:

$$\log CFPS_t = a + gt + e_t \tag{3}$$

where,

$\log CFPS_t$ is the natural logarithm of the firm's cash flow per share during period t,

g is the estimate of the firm's continuously compounded growth rate,

e_t is the transformed disturbance term ϵ_t.

Various estimation periods were used for the calculation of the growth rates before and after the initial dividend. Pairs of growth rates G^i were estimated for all firms, where i is the number of years of data in the estimate, values of i range from three to seven years. G_B^i was estimated from cash flow data observed in the i periods prior to T, and G_A^i was estimated from data reported for period T and the $i-1$ periods following T. An estimate was made if the firm had sufficient cash flow data available to make the estimate and the data were available for initial year of the pre-dividend estimation period $(T-(i-1))$ and the final year of the post- -dividend estimation period $(T+(i-1))$. An estimate was also made using all available cash flow data. Thus, this estimate of G_B employed data for $CFPS_t$, $1 \leq t < T$, and the estimate of G_A with data indexed by t, $T \leq t \leq 20$. A difference measure D^i was also estimated indicating the change in the estimates of the firms' growth rates, $G_A - G_B$. The results of this study are presented in Table 3. While these estimates are subject to certain econometric problems discussed below, they certainly suggest a decrease in the firms' growth in cash flow per share. The mean and median changes in the growth rate are negative for all of the symmetrical subperiods tested as well as for the estimate using all available data. A one–sided t–test indicated all changes were significant at the 0.01 level.

These studies of the change in the growth rate are subject to certain econometric problems. Specifically the majority of firms paid their initial cash div-

Table 3: Growth in cash flow per share before and after the initial dividend. The $\overline{G}$ present sample means, before and after for each subperiod. The D^i data are based on paired differences between the before and after growth rates. The t– statistics for mean difference were all significant at the 0.01 level.

	N of	G_B^i		G_A^i		D^i		
i	firms	$\overline{G}_B^i$	Median	$\overline{G}_A^i$	Median	$\overline{D}^i$	Median	t
3	120	24.3	16.6	11.0	16.2	-13.3	-3.2	-3.07
4	116	18.0	12.1	8.4	10.0	-9.6	-5.3	-2.76
5	111	14.9	12.4	6.8	10.6	-8.1	-5.3	-2.96
6	71	11.3	10.0	3.6	6.0	-7.8	-5.2	-2.54
7	23	17.4	15.3	3.9	6.3	-13.6	-10.4	-3.88
All	135	14.4	11.9	5.1	6.3	-9.2	-6.4	-2.55

idends within a three year period (1976–1978). It is possible that the overall economic climate was such that these firms' industries generally had low earnings growth following this period.

In order to adjust for the possible industry effect, a series of industry average growth rates was estimated for each of the firms in the sample. For each sample observation reported, a pair of corresponding growth rates in the industry was calculated. Thus for the jth firm, I_{ji} represented the pair of industry average growth rates in cash flow per share for the i period estimation used to estimate the sample firm's growth. These estimates were created by grouping the Compustat firms by current two digit SIC codes. The growth rates in I_{ji} were estimated by estimating (3) for all firms in sample firm j's industry group but j. A minimum variance estimate was formed by:

$$I_{ji} = \frac{\sum_k g_{ki} wt_{ki}}{\sum_k wt_{ki}},$$

where the summation is over all firms in the industry group except firm j. The

weights were formed by using the inverse of the variance of the estimate of g.

A dummy variable regression model was specified:

$$g_j = \beta_0 + \beta_1 I_j + \beta_2 DP_j,$$

where,

DP_j is a dummy variable representing the dividend policy of firm j.

$$DP_j = \begin{cases} 0 & \text{growth estimated prior to the initial dividend} \\ 1 & \text{growth estimated after the initial dividend} \end{cases}$$

The relationship was estimated for all the sample firms for periods of three to seven years where data were available, as well as an estimate using all available data. The results of these regressions are summarised in Table 4. These results

Table 4: Analysis of Growth in Cash–Flow per Share. Estimates and associated t-statistics are from $g_j = \beta_0 + \beta_1 I_j + \beta_2 DP_j$. The β_2 represents the change in growth following an initial dividend, corrected for any industry effect.

i	β_0	β_1		β_2	
	Est.	Est.	t	Est.	t
3	20.6%	.24	1.25	-13.8%	-3.39*
4	16.4%	.11	.83	-9.9%	-2.94‡
5	15.3%	-.03	-.32	-8.2%	-2.84‡
6	10.7%	.05	.40	-7.6%	-2.29†
7	8.6%	.64	1.48	-11.6%	-2.23†
All	11.8%	.19	1.56	-8.4%	-3.30*

†significant at the 0.05 level
‡significant at the 0.01 level
* significant at the 0.001 level

do not differ from those found when the industry effect was omitted: there is a decrease in the growth in firms' cash flow per share following an initial dividend.

Table 5: Analysis of Growth in Total Cash-Flow. $\overline{D}_i$ is the sample mean difference in univariate growth rates. Estimates and associated t- statistics are from $g_j = \beta_0 + \beta_1 I_j + \beta_2 DP_j$. The β_2 represents the change in growth following an initial dividend, corrected for any industry effect.

i	$\overline{D}_i$	β_0	β_1		β_2	
	Est.	Est.	Est.	t	Est.	t
3	-11.5%	21.0%	.35	2.15†	- 13.5%	-3.24‡
4	-7.4%	14.3%	.28	1.80	- 7.3%	-2.22†
5	-3.2%	11.7%	.17	1.42	-3.3%	-1.10
6	-3.4%	8.0%	.17	1.18	-3.2%	-0.93
7	-7.3%	0.0%	1.07	2.68†	- 6.0%	-1.27
All	-6.8%	11.6%	.21	1.78	-6.2%	-2.51†

†significant at the 0.05 level
‡significant at the 0.01 level

These results clearly show the initial dividend is not a signal of high earnings growth. An analysis of the change in the growth in total cash flow is presented in Table 5.

These results indicate a significant decrease in the growth in the total cash flow for the three and four year periods before and after the initial dividend. A similar analyses was performed using two other measure of the firms cash flow:the funds provided by operation plus interest expense and earnings before interest and taxes. In both of these studies the results were as indicated above. With both measures of total cash flow the firm displayed significant decreases in growth for three, four and five year periods around the initial dividend.

Thus far, the results found, i.e. , a positive market response to the dividend announcement and lower growth in earnings are consistent with either the free cash flow model or the segmented market model. The lower growth in earnings

is not consistent with the usual signalling model. To determine which of these models best describes the situation, the growth in the firms' assets will be analyzed.

2.4 Investment Growth

The free cash flow model suggests firms have exhausted their good investment opportunities and will pay out funds to investors. The segmented market model suggests firms' cost of capital has decreased and more investment opportunities will be available. Table 6 indicates the results of a study of the growth in assets for the dividend initiating sample. The results show the change in the growth rate: median change is reported along with the mean's change both on an uncorrected and a corrected basis, using an industry average as a co–variate in the corrected estimate.

These results indicate the firms had an increase in investment following their initial dividend. The results are particularly clear for the sub–periods right around the initial dividend. This study was also done using assets per share as the investment measure. The results indicated in Table 7 confirm the increase in assets for the shareholders was significant on a per share basis as well as in terms of total assets. The generally lower estimates of the change on a per share basis is consistent with the segmented market model suggesting the investment was funded by both debt and equity.

Table 6: Growth in Total Assets. Median and $\overline{D_i}$ are univariate sample mean and median of difference in estimated growth. The *adjusted* estimates are from the coefficient on the dividend policy dummy variable estimated with correction for the industry effect.

i	Median	$\overline{D_i}$		*adjusted*	
		Est.	t	Est.	t
3	6.6%	5.8%	3.09‡	4.6%	2.49†
4	5.6%	5.1%	2.80‡	4.4%	2.46†
5	5.8%	6.0%	3.55*	5.0%	3.01‡
6	5.0%	4.4%	2.46†	3.4%	1.95
7	4.8%	3.9%	2.18†	3.3%	1.83
8	2.7%	2.1%	1.03	2.0%	0.99
All	-1.9%	-2.7%	-1.84	-2.3%	-1.60

†significant at the 0.05 level
‡significant at the 0.01 level
* significant at the 0.001 level

Table 7: Growth in Assets per Share. Median and $\overline{D_i}$ are univariate sample mean and median of difference in estimated growth. The *adjusted* estimates are from the coefficient on the dividend policy dummy variable estimated with correction for the industry effect.

i	Median	$\overline{D_i}$		*adjusted*	
		Est.	t	Est.	t
3	5.1%	4.5%	2.67‡	3.6%	2.09†
4	3.8%	3.2%	1.97	2.7%	1.65
5	4.9%	3.9%	2.68‡	3.79%	2.61‡
6	3.5%	2.7%	1.73	2.6%	1.65
7	4.2%	3.3%	1.99	3.0%	1.80
8	1.2%	2.3%	1.16	2.2%	1.08
All	0.0%	-1.2%	-0.89	-1.1%	-0.79

†significant at the 0.05 level
‡significant at the 0.01 level

2.5 Sources of Investment Funds

In order to examine the firms' investments before and after the initial dividend, investment data for the three years prior to the initial dividend was compared to that of the year of the initial dividend and the two years following. The data collected were the net long term borrowings of the firm, the net sale of equity, the total funds provided by operations, the total dividends paid, and the change in short term borrowing.

The sample yielded 116 firms with complete data for the periods in question. Of these, 100 or 86% showed an increase in total sources of funds after the initial dividend. Sources of funds is calculated from net increase in long-term debt, net sale of equity, and funds provided by operations over the three year period. When these amounts are adjusted by including funds raised from short-term debt and by deducting the dividends paid the percentage that show an increase on a before and after basis is 84%.

In order to scale these numbers relative to the firm's size the adjusted funds figure was divided by the firm's total assets at the end of the year the initial dividend was paid. The results clearly indicate the firms followed an aggressive investment policy after the dividend. The average ratio of funds to the base total asset for the three years prior to the initial dividend was 23% , for the three years following it was 63%.[1]

[1]These percentages do not indicate the growth in total assets for the two periods since they use a common total asset figure. They are provided to give an estimate of the relative magnitude of financing activity before and after the dividend.

In terms of the composition of these funds, most firms increased in all categories on an absolute basis. Funds provided by operations increased for 100 (86%) of the firms. When these funds were adjusted for the dividends paid out, 95 firms (82%) showed an increase in internally generated funds. Use of long term debt increased for 72% of the firms and funds from the sale of equity increased for 64% of the firms.

In order to examine the financing mix of the sample companies certain firms were left out of the analysis. Some of the firms in the sample showed a negative total for the adjusted sum of debt, equity and internal financing. These seemed to be due to large retirements of either long or short term debt. The reduced sample consisted of 104 firms. For this group the majority of investment dollars came from operations, the median percentage of funds from operations to total funds for the pre-dividend period was 95%. This is in contrast to the median percentage after the initial dividend of 68%.

Examining the funds raised by the sale of new equity for the three years prior to the initial dividend, the median porportion of investment supplied was approximately zero. The reason for this surprising result is that thirty of the firms showed a negative amount for the total sale of new equity for the period. These amounts were typically rather small, 27 were under a million dollars and 20 of the were under $250,000. Of the remaining firms, 19 indicated no funds were raised from the sale of equity. Using data for the period after the initial dividend, one finds a median of proportion of approximately 5%. However, one-

third of the firms had a ratio of new equity to total financing of 30% or greater. Looking at the total equity financing there is a reduction following the initial dividend. Using the sum of new equity and funds from operations less dividends paid, the median proportion is approximately 80%, as opposed to 94% before the initial dividend.

The use of debt increased from a median figure of 2% of investment to 26%. In the period prior to the initial dividend 47% of the firms showed either no use of debt or negative net long term borrowing after the initial dividend 21 firms reduced long-term debt and 7 used no long-term debt.

These data suggest certain tentative conclusions. The firm is changing its financing mix towards a greater use of debt. Firms indicate a greater willingness to use the equity market after the initial dividend. A large number of firms may view equity repurchase as an effective way of increasing shareholder wealth.

2.6 Conclusions

This study has attempted to investigate the firm during the period around its initial dividend. The initial dividend is an important event in the history of the firm and one that signifies a transition from a period of relatively high growth and limited access to capital to a period of lower growth and more ready access to the capital market.

Certain observations are consistent with the empirical data examined.

1. The market reacts favorably to an announcement of an initial dividend.

2. Both the systematic and the unsystematic risk of the common stock returns decline.

3. There is a significant decrease in the growth in the cash flow per share available to the original common stockholders.

4. There is an increase in the firms' investments after the initial dividend.

These observations constitute a positve challenge for models of dividend policy. An adequate description must explain why the dividend came after a period of high growth in earnings. It must also explain the firms' increased access to the capital markets which is demonstrated by the increased level of investment growth following the initial dividend. In terms of the models discussed in Section 1, these data seem most consistent with the segmented market model. The firm's dividend payment increases the market for the security which results in a lower cost of capital. With a lower cost of capital more of the firm's investment opportunities have a positive net present value and the firm increases its use of external funding and investment increases significantly. The contribution of this work has been to demonstrate that the firm's initial dividend decision can be associated with an increase in investment. This increase in investment is due to a decrease in the firm's cost of capital, rather than to an increase in profitability.

The assumption behind the segmented markets model is that there is a class of investors who do not invest in non- dividend paying securities. The

genesis of such a group could be due to fiduciary investors interpreting "prudent man" rules on a security by security basis. Such an approach might preclude investment in firms not paying a dividend. This model is also consistent with the previously cited studies [4] [16] indicating a higher expected return for non-dividend paying securities than that predicted by systematic risk in either a before tax or an after tax CAPM model.

The segmented market model treats the dividend payment as an investment that reduces the firm's cost of capital. As such, it would not be undertaken so long as other investments offered a higher return. To this extent the segmented markets model incorporates the residual model. These data could also be consistent with a signalling model in which management is signalling not higher earnings but less risk. Finally, some of the data suggest the firm's risk is decreasing. The study of the common stock betas indicates a significant decrease in systematic risk. The investment study suggests firms use more debt after the initial dividend, all other things constant, this would imply higher equity betas. If, in fact, the debt to value ratio increases after the initial dividend the indicated decrease in betas would be a strong indication the firm's operating risk has decreased.

The results found suggest some areas for future research. An analysis of the relationship between the accounting and market volume data and the security betas should suggest the source of the reduced systematic risk found in this study. While the segmented market model is consistent with the observed data,

a more general model which simply argues these firms are operating with capital rationing prior to the initial dividend should be examined. If the dividend serves to provide access to the capital market the change in the risk of the security return would reflect a change in the market for the share as opposed to its earnings volatility.

Finally, it would be valuable to study the changes observed in the firms' investment to determine more precisely what tactical or strategic goals were served by the frequently observed common stock purchases. Were firms trying to maximize shareholder wealth by converting cash into capital gains for the shareholders?

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