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Stock dividends: Market reactions and motivations

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Stock Dividends: Market Reactions and Motivations

by

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Abstract

STOCK DIVIDENDS: MARKET REACTIONS AND MOTIVATIONS

by

Adelaide Whelan

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This dissertation proposal examines two unresolved questions about stock dividends: 1) What are the determinants of the market reaction to a stock dividend? and 2) What motivates firms to give a stock dividend instead of a cash dividend? These questions will be approached from the perspectives of residual, agency and signalling theories. Residual theory states that investments should be financed from internal capital (financial slack) by restricting cash dividends. This financing decision affects dividend policy.

The first part of the paper deals with the determinants of the market reaction to stock dividends. Market reaction to a stock dividend announcement is affected by the stock dividend change and this relationship is shown to be a function of firm size. Results are consistent with the expectation that the market reaction to a stock dividend change is larger for small firms.

The second part of the paper examines what motivates firms to declare a stock dividend instead of a cash dividend. Results are consistent with hypotheses that stock dividend firms are growing faster, have higher insider ownership and are smaller than cash dividend firms.

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I. INTRODUCTION

Most public firms give investors a steady stream of dividends at regular intervals. Dividends take the form of cash, stock or combinations of both cash and stock. A stock dividend increases the number of shares outstanding but not the shareholder's proportionate ownership.

A stock dividend is accounted for in the following manner under generally accepted accounting principles (GAAP): Retained Earnings is debited for the market value of the stock issued, Contributed Capital is credited for the par value of the stock issued and Contributed Capital in Excess of Par is credited for the difference between the market value and par value of the issued stock [Accounting Research Bulletin No. 43]. Total Shareholders' Equity remains unchanged but its components have changed. The accounting treatment for stock dividends reduces Retained Earnings for stock distributions of 25% or less and thereby creates the penalty for false signals necessary to link stock dividends to signalling theory and agency theory.

Shareholders have a preference for cash dividends [Long, 1978; Shefrin and Statman, 1984] but some companies continue to give only pure stock dividends. A pure stock dividend is defined as a stock dividend issued by a firm that does not give cash dividends. The question arises as to why firms persist in issuing pure stock dividends to the exclusion of cash dividends when investors demonstrate a preference for the latter.
This research attempts to answer the questions of what factors

affect the market reaction to stock dividends and also what motivates firms to issue such dividends instead of cash dividends. These questions are approached from the perspectives of residual theory, agency theory and signalling theory.

The first specific objective of this research is to examine the effect of firm size, stock exchange listing, stock dividend change, and insider ownership as determinants of the market reaction to stock dividends. The dividend change and insider ownership variables are derived from signalling and agency theories.

The second objective of the study is to examine the motivations for stock dividends from the viewpoint of the same three theories. Prior research [Grinblatt, Masulis and Titman, 1984] shows that the positive market reaction to a stock dividend announcement seems to indicate that signalling the market would be the motivation for issuing a stock dividend. This paper will examine additional motivations for stock dividends by showing that the firm may have reasons other than signalling for issuing a stock dividend since the motivations derived from the residual, signalling and agency theories are not mutually exclusive.

These three theories are interrelated because residual theory demonstrates that investments should be financed through internal capital (financial slack) by the restriction of cash dividends before resorting to debt issues. The financing decision affects dividend policy. A decision to give stock dividends instead of cash dividends signals the market of expected cash flows. Market reaction to the signal is affected

by the agency costs of equity and the size of the stock dividend change.

Interrelationships between residual, agency and signalling theories motivate the first and second objectives of this paper. The first objective measures the effects of agency and signalling theory variables on the signal. The second objective seeks to measure the relative effects of the motivations derived from the three theories on the stock dividend choice.

Previous research demonstrates that the market value of the firm increases when a stock dividend is announced [Foster and Vickrey, 1978; Woolridge, 1983b; Grinblatt, Masulis, and Titman, 1984]. This increase in market value is not fully adjusted for on the ex-date of the stock dividend [Woolridge, 1983a; Grinblatt, Masulis and Titman, 1984]. The positive market reaction is evidence that stock dividend announcements contain information of economic relevance to investors in valuing the firm. Financial accounting plays a role since stock dividends reduce Retained Earnings.

"Market reactions to stock dividends are unexplained phenomena. Understanding stock distributions is relevant to financial accounting because these distributions are communicated through the financial process, and understanding market responses to any information released through this process is pertinent to accounting." [Klein, 1989, p. 165] By determining what factors affect the price reaction to a stock dividend announcement, we can better understand how financial accounting plays its informational role in capital markets.

Limitations of previous stock dividend studies, such as the confounding effects of cash dividends and contemporaneous firm events, are controlled in this research design. A limitation of all previous studies of stock dividends is the exclusion of over-the-counter (OTC) firms from the sample. Since stock dividend firms tend to be small, the exclusion of OTC firms biases the samples of earlier studies and thus prevents the generalization of their conclusions to a significant percentage of the population of stock dividend firms. One of the important differences between this study and the previous studies is that OTC firms are included in the sample thereby overcoming a limitation of earlier studies of stock dividends.

Another limitation of previous studies of stock dividends is that they assume that the only perspective from which to examine stock dividends is the signalling model. This study remedies this limitation by examining stock dividends from three perspectives: agency theory, signalling theory, and residual theory. It should be noted that these are not competing explanations for stock dividend motivations. The proposed motivations are complementary because as noted earlier, the theories are not mutually exclusive. By drawing from more than one theory, the motivations for issuing stock dividends may be shown to be more complex than a one-dimensional decision.

One question that can be raised about this approach to studying stock dividends is that there is no meta-theory linking the three theories used in this paper. Morris [1987] shows that agency and signalling theories are consistent, not competing

theories since one set of sufficient conditions of signalling theory is at least consistent with one set of sufficient conditions of agency theory. Rational behavior is common to the three theories. Information asymmetry in signalling theory is implied by monitoring costs in agency theory. Signalling costs are implied in some bonding devices in agency theory. Morris [1988, p. 52] states that "given the consistency of signalling and agency theories it is conceivably possible to combine them to yield predictions about accounting choices not obtainable from either theory alone."

Residual theory can be linked to agency theory through the effect of managerial self-interest on the capital structure of the firm. Residual theory states that investments should be financed internally through financial slack rather than debt. Friend and Lang [1988] put forth a simple theory which states that if managers lose their insider ownership stake at bankruptcy, they may prefer to use less debt to finance investments. They then empirically test whether capital structure decisions are motivated in part by managerial self-interest. Results show that the debt ratio is negatively related to managers' insider ownership. This links residual theory to agency theory since insider ownership is the Jensen and Meckling [1976] measure of the agency cost of equity.

The format of the rest of the paper is as follows. Section II contains a literature review, describes the sample, develops hypotheses and presents the model and results of the test of the determinants of the market reaction to a stock dividend

announcement. Section III reviews the motivation literature, describes the control sample, derives hypotheses and presents the model and results of the test of the motivations for stock dividends. Section IV contains a brief summary and limitations of the research.

II. MARKET REACTION TO STOCK DIVIDENDS

This section contains a literature review and the description of the sample. It also develops hypotheses and the model used to test the effect of various factors on the market reaction to a stock dividend announcement. Agency theory and signalling theory are tested for their relative effects on the market reaction.

A. Literature Review

1. Information Content of Dividends

Early empirical research on the market reaction to cash dividend announcements is based on signalling theory and concentrated on finding abnormal returns around the announcement date of cash dividend changes. Aharony and Swary [1980] and Asquith and Mullins [1983] find that there are abnormal returns and these returns are unrelated to earnings announcements which precede or follow the cash dividend change.

Prior literature on the market reaction to stock dividends finds positive market reaction to stock dividend announcements after controlling for earnings and cash dividend announcements [Foster and Vickrey, 1978; Woolridge, 1983b; Grinblatt, Masulis, and Titman, 1984]. The details of these three studies are listed in Table 1 to facilitate comparison.

2. Dividend Signals

Since there are abnormal returns around dividend announcements, one direction of recent literature is the attempt to relate the abnormal returns to subsequent firm performance to

determine what attribute the dividend change is signalling. Aharony and Dotan [1988] and Healy and Palepu [1988] document a positive association between unexpected cash dividend changes and subsequent earnings of the firm. This contrasts with the findings of Born, Moser and Officer [1988] which fail to detect a deterioration in subsequent growth rates of earnings for dividend decreases.

Doran and Nachtmann [1988] analyze the association between stock dividends and subsequent earnings. They find that deviations of realized earnings from expected earnings are positively related to the size of the stock dividend. This is consistent with McNichols and Dravid [1989] who show that the size of the stock distribution is positively correlated with earnings forecast errors and abnormal returns.

Lakonishok and Lev [1987] analyze earnings growth before and after a stock dividend or split to test the signalling hypothesis. Both stock dividend and split firms experience greater growth in earnings prior to the stock distribution when compared to control firms. Within a year after the stock distribution, the difference in earnings growth is not significant. This is consistent with Asquith, Healy and Palepu [1989] who find no support for a relation between stock splits and subsequent earnings growth and conclude that the positive market reaction to a stock split indicates that investors increase their expectations that pre-split earnings increases are permanent rather than transitory.

B. Sample

A sample of pure stock dividend firms are selected from those listed in Standard and Poor's Annual Dividend Records for years 1983-1988. This source is used so that the population would include smaller firms whose shares are sold over-the-counter (OTC). To be selected for the sample of pure stock dividend firms, the firm must satisfy the following criteria:

1. Firms must announce a stock distribution of up to 25% during the period 1983-1988.[1]
2. There must be no cash dividends for the stock dividend year and the three prior years.[2]
3. Daily price and return data must be available from the Center for Research in Security Prices (CRSP) or available in Standard and Poor's Daily Stock Price Record.
4. Announcement dates of earnings per share are available in

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[1]Stock distributions up to 25% require Retained Earnings to be reduced by the market value of the shares issued. Stock dividends above 25% reduce Retained Earnings by the par value of the issued shares. Since the latter do not reduce Retained Earnings by a large amount, they are not easily related to signalling theory. Stock dividends up to 25% can be linked to signalling theory through their reduction of Retained Earnings. [Grinblatt, Masulis and Titman, 1984].

[2]The experimental sample is limited to firms that do not pay cash dividends in order to separate the information conveyed by stock dividends from the information conveyed by cash dividends. Thus, the experimental sample is made up of pure stock dividend firms using the criteria in Woolridge [1983b]. This is the same approach that was used by Asquith, Healy and Palepu [1989] in their study of stock splits.

annual issues of the Wall Street Journal Index.[3]

5. There must be no Wall Street Journal article about the firm in a seven day window starting three days before and ending three days after the stock dividend announcement date.[4]
6. Financial data must be available for sample firms on the Compustat tapes.

Criteria 2, 4 and 5 are necessary to prevent the confounding effects of cash dividends, earnings announcements and contemporaneous firm events. Since stock dividend firms tend to be small [Lakonishok and Lev, 1987], by including OTC firms this study examines a variety of different characteristics of stock dividend firms that were not included in samples employed in previous research on stock dividends.

Examination of the stock dividend announcements in Standard and Poor's Annual Dividend Records yielded 454 announcements of pure stock dividends for the years 1983 to 1987. These announcements were from NYSE, AMEX and OTC firms. Of the 454 announcements only 201 had Compustat data for the five

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[3]Earnings announcement dates are needed so that no firm is included in the experimental sample if it announces earnings in a period starting three days before and ending three days after a stock dividend announcement. This criteria is used in Foster and Vickrey [1978] to enable the researcher to separate the market reaction to a stock dividend announcement from the market reaction to an earnings announcement.

[4]This criteria screens contemporaneous events so that the market reaction to a stock dividend announcement is not confounded by a market reaction to other firm specific events such as mergers and acquisitions.

years prior to the stock dividend as well as the year following the dividend.

Table 2 presents the distribution of stock dividends and industries. In general, there is no industry clustering since sample firms are distributed evenly across industries. Therefore, there should be no significant industry impact on the test results. Approximately 75% of the stock dividends are in the 1 to 10% range. Most of these small dividends are not included in the sample used by Grinblatt, Masulis and Titman [1984] because such small stock dividends tend to be repetitive on an annual basis much the same as cash dividends. However, small stock dividends are included in this sample for two reasons. The first reason is that they make up more than half of the pure stock dividend population. A second reason is that their regularity allows investors to expect them and, therefore, the market may not react to a dividend which is unchanged from the previous year.

The 201 stock dividend announcements listed in Table 2 are composed of 129 announcements of NYSE and AMEX firms while 72 announcements are from OTC firms. All 201 announcements are used in the analysis of the motivation for stock dividends in the second part of this paper.

After using criteria four and five to screen out earnings announcements and other confounding events, the sample is further reduced to 130 pure stock dividend announcements. This final sample of 130 announcements is used to examine the determinants of the market reaction to a stock dividend. The final sample is

composed of 83 exchange firm announcements and 47 OTC stock dividend announcements.

There is no survivorship bias in the sample. Appendix 2 lists the names and cusips of the firms included in the stock dividend sample. The Compustat tape which contains the firm financial data is listed to show that there is no survivorship bias. Since firms listed on the NYSE and AMEX often distribute stock dividends on a regular basis the number of firms (102) is lower than the number of stock dividend announcements (201).

C. Hypotheses

The question to be examined in this section in a cross-sectional multivariate setting is what factors affect the market reaction to a stock dividend announcement. Freeman [1987] shows that the abnormal return associated with a common class of signals is inversely related to firm size. This implies that information asymmetry in the market is related to firm size because large firms have more information in the market than small firms. Thompson, Olsen, and Dietrich [1987] provide evidence to support this implication because large firms have more information available in the Wall Street Journal than small firms. With more predisclosure information available for large firms there may be less surprise or unexpected information in their announcements and, therefore, a smaller market reaction for large firms than for the announcements of small firms. Also, market reaction to earnings announcements has been shown to be inversely related to firm size [Atiase, 1985; Freeman, 1987;

Bhushan, 1989a; Lobo and Mahmoud, 1989; Dempsey, 1989].

The same negative relation between firm size and market reaction has been found for cash dividend announcements [Eddy and Seifert, 1988; Ghosh and Woolridge, 1988; Haw and Kim, 1990]. Grinblatt, Masulis and Titman [1984] examine the effect of firm size on the relation between stock dividend and stock split announcements and market reaction. Their results are consistent with the previously cited literature.

Since smaller firms exhibit greater market reaction to announcements of earnings, cash dividends, and stock distributions, this leads to the following size hypothesis.

H1: There is a negative relation between firm size and the market reaction to a stock dividend announcement.

Grant [1980] found that there is an 'exchange effect' whereby the price reaction to an earnings announcement for an OTC firm is greater than the price reaction for a firm listed on a stock exchange. OTC firms are smaller and pay pure stock dividends more frequently than NYSE and AMEX firms.

Eisemann and Moses [1978] note that institutional investors do not trade in stocks which pay frequent stock dividends because of the increased transaction costs of handling stock dividends. With fewer institutional investors, there will be fewer analysts following the firm [Bhushan, 1989b]. Fewer analysts following OTC firms results in less predisclosure information impounded in prices and, therefore, greater surprise or market reaction to information in OTC firm announcements. The question arises as to whether the size proxy alone is adequate to measure predisclosure

information where the sample contains both exchange firms and OTC firms.

Atiase [1987] empirically demonstrates that firm size and exchange listing both affect the market reaction to firm announcements. After controlling for firm size, results show that there is an 'exchange effect' beyond the size effect. Atiase [1987] concludes that, for research designs which include OTC firms, the exchange listing must be included in the model.

Being listed on an exchange creates more exposure for the firm and more predisclosure information for the investor. The model proposed in Section D includes the exchange listing as a dummy variable where NYSE and AMEX firms are assigned to 1 and OTC firms assigned to 0. This leads to the following exchange hypothesis.

H2: Being listed on an exchange is negatively related to the market reaction to a stock dividend announcement.

Another factor which may affect the market reaction to a stock dividend announcement is the percentage of the firm owned by insiders. This variable is derived from agency theory. An insider is a corporate officer, director or individual involved in corporate decisions and whose sales or purchases of firm securities are monitored by the Securities and Exchange Commission.

The restrictions and disclosure rules on sales by insiders make it easier for investors to read financial signals by decreasing moral hazard problems [Ross, 1977]. Benston [1985]

reports that changes in the wealth of managers from their ownership of firm shares is greater than their compensation. Thus, managers would bear the penalty for false signals through their share ownership because of the restrictions on the sale of these shares.

Jensen and Meckling [1976] argue that high insider ownership aligns the goals of managers and shareholders so that the degree to which managers maximize shareholders' wealth varies with their percentage of equity ownership. Agrawal and Mandelker [1987] offer empirical evidence to support the contention that high insider ownership by managers induce them to make investment and financing decisions that are consistent with shareholders' interests.

Since high insider ownership aligns the goals of managers and shareholders and decreases moral hazard problems, the market may value the signals of high insider ownership firms differently from low insider ownership firms. Recent studies provide evidence to support this. Born [1988] reports a positive relationship between insider ownership and market reaction to cash dividend announcements. Kim, Lee, and Francis [1988] also find insider ownership positively related to abnormal returns.

Eisemann and Moses [1978] report that managers of stock dividend firms use the stock dividend to express their confidence in the firms' future prospects. Since high insider ownership decreases the conflicts between managers and shareholders, it is expected that the market reaction to the stock dividend announcement will be positively related to insider ownership. A

signal of good future firm prospects from a firm where managers and shareholders share the same goals should be trusted, leading to a greater market reaction than a signal from a low insider ownership firm. The following hypothesis relates insider ownership to price reaction.

H3: Market reaction to the stock dividend announcement is positively related to insider ownership.

Another factor which may affect the market reaction to a stock dividend announcement is the size of the stock dividend change. This factor is derived from signalling theory. Previous researchers find that the size of the cash dividend change is positively related to the market reaction to the cash dividend announcement [Aharony and Swary, 1980; Asquith and Mullins, 1983, 1986b; Eddy and Seifert, 1988; Ghosh and Woolridge, 1988; Haw and Kim, 1990].

Since a stock dividend reduces Retained Earnings in the same manner as a cash dividend, Grinblatt, Masulis and Titman [1984] and Lakonishok and Lev [1987] relate stock dividends to cash dividend signalling theory [Bhattacharya, 1979]. Signalling theory states that it is the unexpected dividend change which alters expectations and is reflected in the market reaction to the dividend announcement.

Woolridge [1983b] examines the association between the size of the stock dividend and the market reaction and shows that the size of the stock dividend is positively related to the market reaction to a stock dividend announcement. The impact of the stock dividend change on the market reaction to a stock dividend

announcement has not been examined and dividend theory states that it is the dividend change that affects expectations. The larger the unexpected change, the greater the surprise. The fourth hypothesis relates the unexpected stock dividend change to the market reaction to a stock dividend announcement.

H4: The size of the stock dividend change is positively related to the market reaction to a stock dividend announcement.

D. Methodology

1. Estimation of Abnormal Return

Abnormal returns are measured using mean adjusted and market adjusted daily returns [Brown and Warner, 1985]. In addition, for NYSE/AMEX firms, the one-factor market model is also used. The mean adjusted abnormal return e_{jt} for firm j on day t is estimated as the difference between the actual return on day t and the mean during the estimation period:

$$e_{jt} = R_{jt} - \bar{R}_j \qquad (1)$$

$$\bar{R}_j = 1/60 \sum_{-70}^{-11} R_{jt} \qquad (2)$$

where

R_{jt} is the rate of return on security j for day t, where t=0 is the stock dividend announcement day for firm j,

$\bar{R}_j$ is average of security j's daily returns in the (-70, -11) estimation period,

e_{jt} is the abnormal return for security j for day t.

The market adjusted abnormal return is estimated as the difference between the firm's return and the return on the market:

$$e_{jt} = R_{jt} - R_{mt} \qquad (3)$$

where

R_{mt} is the value weighted market index for day t.

The standard one-factor market model is also used to measure abnormal returns for firms listed on an exchange. Abnormal return e_{jt} for firm j on day t is estimated as the difference between the actual return on day t and the return predicted from the market model:

$$e_{jt} = R_{jt} - (\hat{a}_j + \hat{b}_j R_{mt}) \qquad (4)$$

where

R_{jt} is the rate of return on security j for day t, where t=0 is the stock dividend announcement day for firm j,

$\hat{a}_j$, $\hat{b}_j$ are the intercept and slope parameters for security j estimated using the market model, over 60 daily returns up to 11 days prior to the stock dividend announcement day. The Scholes-Williams [1977] procedure is used to adjust for nonsynchronous trading.

R_{mt} is the value weighted market index for day t.

e_{jt} is the abnormal return for security j for day t.

The methodology used in this study is not the standard event study which tests for the significance of the abnormal returns since the returns are not tested to see if they are significantly different from zero. The focus of this study is not whether the

abnormal returns are significantly different from zero but what are the determinants of the price reaction to a stock dividend announcement.

In order to measure the market reaction to the stock dividend announcement for each firm, the cumulative abnormal returns for individual firms are used as the dependent variable for the cross-sectional regression model of equation (6). Cumulative abnormal returns for firm j (CAR_{jt}) are obtained by summing abnormal returns for over p to q days.

$$CAR_{jt} = \sum_{t=p}^{q} e_{jt} \qquad (5)$$

where (p,q) = (-1,0), (-1,+1), (-2,0).

Grinblatt, Masulis and Titman [1984] use mean adjusted returns in their study of stock dividends and stock splits. Mean adjusted returns can be used when there is no clustering of event dates which is the case in this study. By using the mean adjusted, the market adjusted, and the one-factor market models, the sensitivity of the results to the choice of return generating model can be assessed. Since the data for the OTC firms must be hand gathered, only the mean and market adjusted returns will be estimated for those firms.

In order to examine the determinants of the market reaction to a stock dividend announcement, the cumulative abnormal return for each stock dividend announcement for an individual firm is regressed on firm size, exchange listing, insider ownership, and the stock dividend change. The subscript

t is dropped in the following model.

$$CAR_{jt} = a_o + B_1MV_j + B_2EXCH_j + B_3IOWN_j + B_4DIVCH_j + u_j \quad (6)$$

where

Expected sign

- MV is the natural log of the market value of the firm at the end of the prior year,

- EXCH is a dummy variable which shows whether a stock is listed on an exchange. NYSE/AMEX = 1, and OTC = 0,

+ IOWN is the percent of the firm owned by insiders[5] (see Appendix 1 for calculation),

+ DIVCH is the change in the percent of the stock dividend from year t-1 to year t,

u is an error term.

The above model is tested using the total sample and subsamples of NYSE/AMEX and OTC firms. In addition, to examine whether there is a greater market reaction to the dividend change of small firms vs. large firms, the total sample and subsamples will be partitioned into small and large firms using the median market value of the sample firms.

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[5]This is the Jensen-Meckling (JM) statistic used by Kim, Lee and Francis [1988].

JM = Number of shares owned by insiders / total number of shares outstanding

Share ownership information is gathered from Spectrum 6 which is a service that lists the names and number of shares owned by those who must file with the SEC as insiders. This information is available on Disclosure but Disclosure contains only the latest update. Spectrum 6 has historical as well as current information on insider ownership.

E. Analysis and Results without Size Slope Dummy

1. Univariate Tests

Summary statistics are presented for the independent variables in Table 3. These statistics are reported for the total sample and the NYSE/AMEX and OTC subsamples. It should be noted that the IOWN variable had one firm with reported insider ownership of over 100%. This variable is constrained to the next highest sample value which is 86%. All other independent variables are in a reasonable range without extreme values.

a. MV - The mean market value for the total sample shown in Table 3 (Panel A) is 3.362 with a minimum of 1.352 and a maximum of 5.942. As expected, the mean market value for the NYSE/AMEX subsample (Panel B) is larger at 3.474 with a minimum of 1.352 and a maximum of 5.942. For OTC firms (Panel C), the mean market value is 3.164 with a minimum of 1.494 and a maximum of 4.940.

The range of market values for the NYSE/AMEX subsample is larger than that of the OTC subsample. This is due not only to the fact that many exchange listed firms are larger than OTC firms but also that some are smaller than the smallest OTC firms. In fact, examination of the data reveals that the composition of the smallest decile of stock dividend firms is 54% NYSE/AMEX and 46% OTC firms, with the three smallest firms in the total sample being NYSE/AMEX firms.

b. IOWN - The means of the insider ownership variable are remarkably similar across the three samples, with the total sample (Panel A) having a mean insider ownership of 0.330.

NYSE/AMEX firms (Panel B) have the highest mean insider ownership 0.336 while the OTC firms (Panel C) have the lowest mean insider ownership 0.320. NYSE/AMEX firms have a larger range of insider ownership (0.012 to 0.860) than OTC firms (0.038 to 0.860). This is consistent with the results which show that the NYSE/AMEX subsample range for market value is larger than for the OTC subsample.

c. DIVCH - Dividend change for the total sample in Table 3 (Panel A) has a mean of 0.035 with a range of -0.50 to 0.25. Dividend change exhibits sharp differences between the NYSE/AMEX (Panel B) and OTC (Panel C) subsamples with mean values of 0.012 and 0.075 respectively. Examination of the data reveals that approximately 60% of the NYSE/AMEX stock dividends are repeated dividends so that DIVCH is zero for these firms. OTC firms tend not to repeat stock dividends on an annual basis so that DIVCH is positive for OTC firms.

2. Cross-Correlations

a. Total Sample - Pearson correlation coefficients are presented in Table 4 (Panel A) for the total sample. Correlation between market value and exchange listing is only 0.139 and not significant. Since both MV and EXCH are proxies for predisclosure information, one would expect a higher correlation for these variables. This low correlation is consistent with the univariate results showing that the NYSE/AMEX firms had a larger range of market values than the OTC firms.

Insider ownership exhibits the lowest correlations for the total sample while dividend change has the highest

correlations. The correlation between DIVCH and MV is -0.172 (Table 4, Panel A) which is significant at the 0.05 level. The correlation for the total sample between DIVCH and EXCH is -0.286 which is significant at the 0.00 level. This is consistent with earlier results where it was discussed that approximately 60% of the pure stock dividends in the NYSE/AMEX subsample are repeated dividends and DIVCH equals zero. Because of this high correlation, the full regression model is repeated without the EXCH dummy variable to reduce multicollinearity among the independent variables.

b. Subsamples - Table 4 presents the correlation coefficients for the subsample of NYSE/AMEX firms (Panel B) and OTC firms (Panel C). Correlations are increased between MV and IOWN for both subsamples over that of the total sample. For DIVCH there are sharply differing results for the subsamples with a correlation of -0.235 between DIVCH and MV for the NYSE/AMEX subsample (Panel B) and -0.052 for the OTC subsample (Panel C).

Overall, correlations among independent variables for the NYSE/AMEX subsample are higher than those for the total sample while correlations for the OTC subsample are lower than the total sample. No correlation for the OTC subsample is significant.

3. Multivariate Analysis

a. Total Sample - Three day cumulative abnormal returns (-2,0) are regressed on market value, an exchange dummy variable, insider ownership and dividend change. Results of this cross-sectional regression for the total sample are presented in Table

5. The coefficients of market value and the exchange dummy are expected to be negatively significant, while the coefficients of insider ownership and dividend change are expected to be positively significant. To test the sensitivity of the results to the measurement of abnormal returns, the mean adjusted and the market adjusted results are compared.

Adjusted R-square varies from 0.032 for the mean adjusted returns to 0.073 for market adjusted returns. The explanatory power of the market adjusted model is much higher than the mean adjusted model. The coefficient of MV is -0.01 with mean adjusted results significant at the 0.05 level and market adjusted results significant at the 0.01 level rejecting the null hypothesis that the coefficient of MV is 0.0.

Results for the exchange dummy variable are uniformly insignificant and cannot reject the null hypothesis that the coefficient of EXCH is 0.0. This could be due to the high correlations between EXCH and both MV and DIVCH. In the presence of multicollinearity, the estimated regression coefficients are unbiased but their variances are large because there is not enough independent variation to calculate the effect of an independent variable on a dependent variable. Therefore, parameter estimates are less precise, hypothesis testing less powerful and coefficients less significant. To reduce multicollinearity, the test of the model is repeated excluding the EXCH variable.

The coefficient of insider ownership ranges from 0.002 to 0.005 for the two return models but is statistically

insignificant so the null hypothesis that the coefficient of IOWN is 0.0 cannot be rejected. For dividend change, the coefficient exhibits the predicted positive sign with values ranging from 0.075 to 0.077. Results for the mean adjusted returns are significant at the 0.10 level and market adjusted returns at the 0.05 level, rejecting the null hypothesis that the coefficient of DIVCH is 0.0.

Overall, two of the four hypotheses are supported. As predicted, market value is negatively related to abnormal returns implying that there is more predisclosure information for large firms and thus less surprise in their announcements. The hypothesis that dividend change is positively related to abnormal return is also supported and is consistent with signalling theory which states that it is the change in the dividend which provides new information to the market about future cash flows. Previous stock dividend studies attributed the market reaction to a stock dividend announcement to stock dividend size.

The consistent results from the mean adjusted and the market adjusted returns show that results are not sensitive to the choice of abnormal return models. The following tests of the model delete the exchange dummy variable and also test the model by dividing the total sample into two subsamples made up of NYSE/AMEX firms and OTC firms.

b. Total Sample Reduced Model - The full model is reduced by deleting the EXCH variable due to the multicollinearity between EXCH and both MV and DIVCH. If multicollinearity is a serious problem in the full model, the coefficients and

significance levels of MV and DIVCH should increase in the reduced model.

Regression results for the model without EXCH are presented in Table 6. The coefficient of MV for the two models is exactly the same as reported in Table 5 for the full model with the same significance levels, showing that the collinearity between MV and EXCH did not degrade coefficients for MV in the full model. The coefficient for IOWN is still insignificant as in the full model.

The explanatory power of the reduced model as shown by the adjusted R-square (0.039 to 0.089) does not increase compared to the full model. The coefficient for DIVCH is slightly higher in the reduced model results (Table 6) for market adjusted returns when compared to the full model results (Table 5). The t-statistics for DIVCH show a similar increase for the market adjusted returns but the significance level is not greatly increased. Similarities between the results from the full and reduced models show that multicollinearity is not a very serious problem in the full model.

For sensitivity analysis, regressions of the cumulative abnormal returns on each individual independent variable separately, produced results very similar to those reported for the reduced model without the exchange variable (Table 6). These results are not reported here but reinforce the finding that multicollinearity is not a serious problem in this model.

c. NYSE/AMEX Subsample - Results of the cross-sectional

regression for the NYSE/AMEX subsample are presented in Table 7. As in the full model, market value is expected to be negatively related to abnormal returns, while insider ownership and dividend change are expected to be positively related to abnormal return. Adjusted R-square varies from a low of 0.060 for the mean adjusted returns to a high of 0.100 for market adjusted returns, values which are uniformly higher than the values for the total sample results. The coefficient for MV is negative as expected and almost identical (-0.015 to -0.017) across the three return models with a significance level of 0.01, rejecting the null hypothesis that the coefficient of MV is 0.0.

Results for insider ownership are insignificant as they were for the total sample, and cannot reject the null hypothesis that the coefficient of IOWN is 0.0. The coefficient of DIVCH is negative for the first two models, a change from the positive sign predicted in H4, but the results are insignificant so the null hypothesis that the coefficient of DIVCH is 0.0 cannot be rejected.

In summary, for the NYSE/AMEX subsample, results are consistent only with the hypothesis predicting a negative relation between market value and abnormal returns. The insignificance of DIVCH may be attributed to the fact reported in the univariate results that approximately 60% of the pure stock dividends for the NYSE/AMEX subsample are dividends distributed on a regular basis so they may be expected by the market.

d. OTC Subsample - Regression results for the OTC subsample are presented in Table 8. These results contrast sharply with the

results reported above for the NYSE/AMEX subsample. For the OTC subsample, the coefficient of market value is uniformly insignificant and cannot reject the null hypothesis that the coefficient of MV is 0.0. The coefficient of DIVCH is positive as predicted in hypothesis 4 and significant at the 0.05 level for market adjusted returns and the 0.01 level for mean adjusted returns, rejecting the null hypothesis that the coefficient of DIVCH is 0.0. As in all the samples, the coefficient of IOWN remains insignificant.

In summary, by contrasting the two subsamples we can see that results for the total sample in Table 6 are produced by the two subsamples. For the total sample both the hypotheses for market value and dividend change are supported while in the NYSE/AMEX subsample only MV is significant and in the OTC subsample only DIVCH is significant. In order to examine further the relationship of market value and dividend change to the market reaction to a stock dividend announcement, a size slope dummy is included in the model.

F. Analysis and Results with Size Slope Dummy

In addition to testing the effects of market value and dividend change on abnormal returns for a stock dividend announcement, a size slope dummy is developed to examine whether the market reaction to DIVCH is a function of firm size. The samples are partitioned into large and small firms using the median market value of the firm. If firm value is greater than the median firm value then the size dummy variable SIZE is

assigned to 0, if the firm value is less than or equal to the median then the size dummy variable is assigned to 1. The coefficient of the size difference, DIVSIZE, is predicted to be positive and larger than the coefficient of DIVCH if the market reaction to a dividend change is greater for small firms than for large firms.

1. Cross-Correlations

Pearson correlation coefficients are presented in Panel A of Table 9 for the total sample. Correlation between market value and DIVSIZE is -0.423 and significant at the 0.00 level. The correlation between DIVCH and DIVSIZE is 0.480 and it is also significant at the 0.00 level. However, according to Judge et al. [1980], these correlations need not be a problem in this model.

Panels B and C of Table 9 present the correlation coefficients for the subsample of NYSE/AMEX firms and OTC firms. Correlations for DIVSIZE are increased for the OTC subsample and decreased for the NYSE/AMEX subsample over those of the total sample.

2. Multivariate Analysis

a. Total Sample - Table 10 presents the results for the model including the size slope dummy. Adjusted R-square ranges from 0.042 for the mean adjusted returns to 0.098 for the market adjusted returns. Results for MV are similar to those of the total sample in Table 6 but the significance levels have decreased. The coefficient of MV has the predicted negative sign

and the null hypothesis that the coefficient of MV is 0.0 can be rejected at the 0.05 level for market adjusted returns and at the 0.10 level for mean adjusted returns. Though the coefficients of IOWN and DIVCH have the predicted positive signs, neither is significant.

The coefficient of DIVSIZE is 0.194 for the market adjusted returns and 0.127 for mean adjusted returns. It is statistically significant at the 0.05 level for market adjusted returns. This is consistent with expectations that the coefficient of the size slope dummy is larger and more significant than the coefficient of DIVCH (0.039 to 0.043) if the market reaction to a dividend change is greater for small firms than for large firms.

b. Subsamples - To examine whether the size effect on dividend change is the same for exchange firms and OTC firms, the model is tested using both subsamples. Results for the NYSE/AMEX subsample are presented in Table 11. The explanatory power of the model is substantially improved. R-square is much higher than for the total sample ranging from 0.130 for the market model returns to 0.171 for market adjusted returns.

The insider ownership and dividend change coefficients are both insignificant as in the results for the total sample. The coefficient of MV is significant across all three return models at the 0.05 level for the mean and market model returns and 0.01 for market adjusted returns. The more interesting result is for DIVSIZE where the coefficient is positive as predicted and significant at the 0.01 level for all three return models. This is consistent with the prediction of a larger market reaction to

a dividend change for small firms than for large firms.

Results for the OTC subsample are reported in Table 12 and and the power of the models is lower than those of the NYSE/AMEX subsample. For the OTC subsample the R-square is only 0.038 for the mean adjusted returns and 0.033 for the market adjusted returns. The coefficients for all the variables are insignificant which contrasts with the results in Table 8 without the slope dummy where DIVCH was significant for the OTC subsample.

When comparing the results for DIVSIZE for the two subsamples it is apparent that the small firms in the NYSE/AMEX subsample have a greater market reaction to a dividend change than large firms in the NYSE/AMEX subsample. But small firms in the OTC subsample do not experience the same differential market reaction to a dividend change. This could be due to the fact that there is a considerable variation in firm size in the NYSE/AMEX subsample. If the OTC firms are all relatively small, then partitioning the sample by size is meaningless and will not improve the results of the model.

G. Summary

This chapter examines the determinants of the market reaction to a stock dividend announcement. Hypotheses are developed from signalling theory and agency theory. According to agency theory, high insider ownership reduces moral hazard on the part of the manager to signal the market falsely. Through legal restrictions on the sale of insider ownership shares, the manager

would not profit from a false signal. This implies that the market could trust the signals of firms with high insider ownership and the market reaction would be positively related to the percent of insider ownership. Results are not consistent with this hypothesis.

Signalling theory suggests the hypothesis that stock dividend change is positively related to the market reaction to a stock dividend announcement. Previous literature related stock dividend size, not stock dividend change, to the market reaction to a stock dividend announcement. Two hypotheses about predisclosure information are also tested. Firm size and exchange listing are expected to be negatively related to the market reaction to a stock dividend announcement.

For the total sample, results are consistent with firm size being negatively related and dividend change being positively related to the market reaction to a stock dividend announcement. In the tests using the NYSE/AMEX firms, results are consistent with the hypothesis that market reaction is negatively related to firm size. In contrast, for OTC firms, results are consistent with market reaction being positively related to dividend change.

A slope dummy is created and added to the market reaction model to examine whether the market reaction to stock dividend change is a function of firm size. Results are consistent with the expectation that market reaction to stock dividend change is greater for small firms than for large firms. The strongest results are found in the NYSE/AMEX subsample and

the total sample. For the OTC subsample results are not consistent with the market reaction to dividend change being a function of firm size. This may be due to the fact that there is less variation in firm size for the OTC subsample than there is in the total sample and the NYSE/AMEX subsample.

There are two contributions to the literature from this part of the study, the first of which is the inclusion of OTC firms in the sample. More OTC firms give stock dividends than NYSE/AMEX firms but these firms have never been included in the samples of previous stock dividend studies due to the difficulty of data collection. A second contribution to the literature is the examination of the positive market reaction to dividend change as a function of firm size.

III. STOCK DIVIDEND MOTIVATIONS

Since firms are free to choose their dividend policy, it is assumed that their choice reflects a decision to achieve particular goals. The next sections suggest the following motivations with respect to the choice of stock dividends: conservation of cash to finance investments with internally generated funds, minimization of total agency costs by trading off the agency costs of equity and the agency costs of debt, and signalling the market of the firm's anticipated cash flows. These motivations can be divided into three groups under the subjects of residual theory, agency theory, and signalling theory. Since the theories are interrelated, it must be noted that these are not competing explanations of the stock dividend decision because the three groups of hypotheses are not mutually exclusive.

A. Literature Review

Eisemann and Moses [1978], in a survey of managers, reveal that conservation of cash is a primary reason for giving stock dividends. The reduction of shareholder taxes is also given as a reason for issuing stock dividends. This last reason is not consistent with the tax neutrality hypothesis of Miller and Scholes [1978] where an investor is indifferent to whether income is from cash dividends or capital gains. This neutrality is achieved by the shareholders' ability to offset interest payments against taxable dividends and the availability of tax exempt

investments.

Elgers and Murray [1985] attempt to empirically relate managerial motivations to stock split and stock dividend decisions. Their tested motivations for stock dividends include: maintenance of the share price within an optimal range, conservation of cash due to impaired liquidity, conservation of cash to fund asset expansion, signal of optimistic expectations, and reduction of political costs.

Elgers and Murray [1985] regress the size of the stock dividend on stock dividend motivations. They expect price and political costs to be positively related to the size of the stock dividend. Elgers and Murray's empirical results support neither of these expectations since the estimated coefficients of price and political costs are of the opposite sign and insignificant.

Elgers and Murray's [1985] hypothesis that stock dividends are used to conserve cash due to poor liquidity or to fund asset expansion is also not supported. Results for their signalling hypothesis show that stock dividends are issued when earnings are expected to increase in the following year. This last result is consistent with McNichols and Dravid [1989] and Doran and Nachtmann [1988] who find unexpected earnings subsequent to the stock dividend to be positively related to the size of the stock dividend.

There are several limitations of the Elgers and Murray [1985] research design which are remedied in this study. They provide no linkages between their hypotheses and theoretical

models. Although signalling theory is mentioned, the attribute being signalled is not related to any particular signalling model. This study directly links the signalling hypotheses to the future cash flows mentioned in signalling models. In addition to concrete linkages to the signalling model of Bhattacharya [1979], this study will address stock dividend motivations from the perspectives of agency theory and residual theory.

Another limitation of Elgers and Murray [1985], which is avoided in this paper, is the use of a mixed control sample. Their control sample is made up of firms which did not distribute stock but it includes both cash dividend firms and firms that distribute neither cash nor stock. In this study these cash firms and no dividend firms will be split into two samples.

B. Samples

The sample of pure stock dividend firms from the previous market study is increased by the firms deleted under criteria 4 and 5 (confounding events). These 201 firms are randomly matched to two samples both of which gave no stock distributions from 1980 to 1987. Cash dividend firms (N=248) are the control sample since the objective of the research is to examine what motivates management to issue a pure stock dividend to the exclusion of cash dividends when investors have shown a preference for the cash dividends [Long, 1978; Shefrin and Statman, 1984]. The control sample distributed cash dividends

for the stock dividend year and the five previous years. It is used to test the residual, agency, and signalling theory hypotheses.

The motivation for a stock dividend involves a two-step decision process. The first decision is whether to finance investments internally by restricting cash dividends and the second decision is whether to then signal the market via a stock dividend. In the first step, the no dividend firms make the same decision to finance internally as the stock dividend firms. In the second step, the no dividend firms decide not to signal via a stock dividend. The stock dividend firms are compared to the sample of no dividend firms as a benchmark since these firms are included in the control sample of Elgers and Murray [1985]. But no predictions are made as to the expected signs of the coefficients. This is because the no dividend firms are similar in many ways to the stock dividend firms since, as mentioned, both give no cash dividends and finance investments with internally generated capital.

Lakonishok and Lev [1987] matched each stock dividend firm to a firm that did not distribute stock during the test period. This even matching of experimental and control samples results in a state-based sample. Zmijewski [1984] discusses the problems of using choice or state-based samples which are not completely random. He defines this type of sampling as the result of the attributes of the group affecting the probability that an observation enters a sample. Palepu [1986] states that there is a prediction error bias in research designs that are not

completely random and which result in equal share samples matched on a one to one basis.

These problems will be mitigated in this study by choosing a random control sample in which the ratio of pure stock dividend firms to control firms will be the same as the ratio in the population. By maintaining the population ratio in the tested samples, the problems of state-based sampling will be avoided. This study will also use logit analysis which is less affected than probit analysis by disproportionate sampling [Maddala, 1983].

C. Hypotheses

1. Residual Theory

Conservation of cash is cited by managers as a primary reason for giving stock dividends [Eisemann and Moses, 1978]. The conservation of cash as a means of financing the firm's investments through internally generated funds can signal the market of profitable investment opportunities.

Assuming the firm has enough investment opportunities so that all of the cash flows from existing assets can be reinvested, then the question becomes one of how to finance the investments. Myers and Majluf [1984] present a residual theory where firms should finance investments with internal capital before issuing either debt or equity. In their model, the investment decision precedes the financing decision and financing should be from internal sources by restricting cash dividends. Thus the dividend policy is the residual of the investment and financing decisions.

Myers and Majluf [1984] state that firms should finance investments with internally generated capital because the investors' lack of information may force the firm to issue stock or bonds at less than the previous market price. Asquith and Mullins [1986a] offer evidence to support this contention showing that 80% of their sample experienced a price reduction associated with an equity issue announcement. The average reduction in market price was 3% on the day the stock offering was announced.

From the perspective of residual theory, the need for investment funds is one determinant of the dividend policy since firms can generate funds internally by withholding or restricting cash dividends. If a pure stock dividend firm gives no cash dividends so as to conserve as much cash as possible to finance investments without relying on debt, this implies under residual theory that the pure stock dividend firm is growing. Kim and Sorensen [1986] show that high growth firms use less debt than firms growing at a slower rate.

According to residual theory investments should be funded from internal sources before using debt but cash dividend firms do not conserve all of their cash for investments. Miller and Rock [1985] state that cash dividend firms will choose a level of dividends that signals their level of earnings but at the cost of a level of investment which is lower than optimal. This implies that cash dividend firms are growing at a slower rate than pure stock dividend firms. If, however, we assume that cash dividend firms do not forgo profitable investments this implies under residual theory that they finance some investments with debt.

Since Kim and Sorensen [1986] show that high growth firms use less debt, this implies that cash dividend firms may be growing at a slower rate than stock dividend firms. The previous discussion leads to the following hypothesis.

H5 (Growth): Stock dividend firms are growing faster than cash dividend firms.

2. Agency Theory

Agency theory views the firm as made up of owners and managers, each seeking to maximize their own utility. Jensen and Meckling [1976] describe the firm as a "nexus of contracts" between suppliers of factors of production. They define the contracts between the owner-manager and the shareholders and bondholders as agency relationships in which the agent performs a service for the principals who, in turn, delegate decision-making authority to the agent.

Each source of outside capital gives rise to agency costs because of the conflict of interests between shareholders and bondholders. Firms must trade-off these agency costs when they make financing and dividend decisions. The agency costs of debt and equity will affect the market reaction to a debt or equity issue as well as the market reaction to a dividend signal [Born, 1988; Ross, 1977].

Agency costs of debt arise from the possibility that managers may shift wealth from bondholders to shareholders. Kalay [1982] shows that debt covenants restrict cash dividends, share repurchases and other asset distributions to shareholders

through the firm's balance of Retained Earnings.

Though bondholders seek to restrict cash dividends, shareholders prefer cash dividends to stock dividends [Long, 1978; Shefrin and Statman, 1984]. Firms that distribute dividends have three choices: stock only, cash only or a combination of cash and stock. The two choices that involve cash increase the agency cost of debt because bond covenants seek to limit cash dividends. Thus, cash dividend firms are increasing their agency costs of debt by distributing cash dividends. Also, if they do not forgo investments, cash dividend firms increase the agency costs of debt by financing some investments with additional debt.

Conservation of cash by the use of stock dividends would cause a decrease in the firm's agency cost of debt because there would be less debt in the capital structure since investments would be funded by internally generated funds. Jensen and Meckling [1976] state that the agency costs of debt are an increasing function of debt to total equity. This leads to the following hypothesis.

H6 (Agency Cost of Debt): Stock dividend firms have lower debt to equity ratios than cash dividend firms.

As noted earlier, dividend policy is subject to the trade-off between the agency costs of equity and debt. Agency costs of equity arise from the possibility that managers may take actions in their own interests to the detriment of shareholders.

Several studies suggest that the payment of cash dividends will mitigate the agency costs of equity. Rozeff [1982] presents

a model for optimal dividend payout, in which increased cash dividends lower the agency costs of equity. Copeland and Weston [1983] suggest that cash dividends serve as a means of monitoring management performance.

Easterbrook [1984] identifies two agency costs of equity: the cost of monitoring managers and risk aversion on the part of managers. He states that both costs are mitigated if cash dividends force managers to go to the capital market to finance investments. The bond market will monitor managers' actions.

When managers own a high percentage of a firm's stock, their objectives will be more congruent with the outside shareholders thereby decreasing the agency costs of equity because the degree to which managers maximize shareholders' wealth varies with their percentage ownership in the firm [Jensen and Meckling, 1976; Agrawal and Mandelker, 1987]. With the reduction of the agency costs of equity due to high insider ownership, there is less motivation for managements to give cash dividends as a means of reducing these agency costs.

Jensen and Meckling [1976] state that the agency costs of equity are an increasing function of the ratio of outside equity to inside equity. Since pure stock dividend firms do not use cash dividends to reduce the agency costs of equity, this implies that they have higher insider ownership which acts as the mechanism to reduce the agency costs of equity. This leads to the following hypothesis.

H7 (Agency Cost of Equity): Stock dividend firms have a greater percentage of insider ownership than cash dividend

firms.

3. Signalling Theory

The Miller and Modigliani [1961] (MM) irrelevance proposition states that, in perfect capital markets, the value of the firm and returns to investors are independent of the firm's dividend policy. In the presence of market imperfections (information asymmetries, transaction costs, taxes, etc.), the irrelevance proposition does not hold. MM state that in a world of information asymmetry, investors may interpret a change in dividend policy as a signal of management's expectations of future earnings prospects. Bhattacharya [1979] develops a signalling model which states that an increase in cash dividends signals the market that the firm expects increased cash flows in the future.

Ofer and Siegel [1987] show that analysts revise their earnings forecasts following unexpected cash dividend changes. The authors interpret this revision in forecasts to mean that the dividend change signals insider information about future cash flows. This interpretation is consistent with the model of Bar-Yosef and Huffman [1986] which shows that the size of the declared dividend is an increasing function of expected cash flows.

Stock dividends serve the same purpose as cash dividend changes in signalling the market of favorable expectations [Foster and Vickrey, 1978; Woolridge, 1983b; Grinblatt, Masulis, and Titman, 1984]. McNichols and Dravid [1989] and Doran and Nachtmann [1988] find that the size of the stock dividend is

positively related to subsequent unexpected earnings.

In order for the stock dividend to qualify as a signal, it must satisfy Riley's [1979] requirements. These include a penalty for firms giving false signals, costly signals, a well-defined attribute to be signalled and a beneficiary of the signal. The costs of a stock dividend are the transaction costs of issuing more shares. The attributes to be signalled are the expected cash flows and firm value while the beneficiaries of the signal are the shareholders both inside and outside the firm. The last requirement is a penalty for firms giving false signals. If there were no penalty, all firms would signal with the anticipation that they would reap the benefits of positive abnormal returns.

Grinblatt, Masulis, and Titman [1984] advance a Retained Earnings hypothesis explaining the penalty for stock dividend firms. Since stock dividends are deducted from Retained Earnings, the additional shares can further restrict a firm's ability to pay cash dividends at a future date due to bond covenant restrictions. Firms that expect poor earnings but signal favorable expectations will expect the Retained Earnings covenant restrictions to become binding as a penalty for false signals.

Why would a firm want to signal the market? If the management has information that would raise the price of the stock if it were known, they would be motivated to convey this information as early as possible. Benston [1985] states that changes in the value of managers' insider ownership holdings are larger than their employment incomes. Also, Handjinicolaou and

Kalay [1984] state that any increase in firm value due to good news signals accrues totally to the shareholders to the exclusion of bondholders.

In Bhattacharya's [1979] model, the attribute being signalled is expected cash flows. Since stock dividends act as a signal, it is assumed that there is asymmetric information about future cash flows which the signal will correct. Because all the stock dividend firms are signalling, there is either more information for the stock dividend firms to signal or there is prior information in the market about the cash dividend firms' future cash flows.

The forgoing discussion and the following considerations yield two signalling hypotheses.

H8 (Cash Flows): Stock dividend firms have a greater increase in cash flows than cash dividend firms.

There is a richer information set available for larger firms [Brown, Richardson, and Schwager, 1987], more coverage in the financial press [Thompson, Olsen, and Dietrich, 1987], and greater numbers of analysts following the firm [Bhushan, 1989b; Dempsey, 1989]. This "information production thereby increases the 'precision' of security prices." [Freeman, 1987, p. 197]

It would seem that large firms that are closely followed by analysts and the financial press should have less motivation to signal the market. Since forecasters remove much of the informational asymmetries in the market, they reduce the motivation for large firms to signal because their future

prospects have been revealed by the forecasters and impounded in share prices. Small firms, however, must remove informational asymmetries themselves via signals.

The prior information in the market for large firms leads to the following hypothesis.

H9 (Prior Information): Stock dividend firms are smaller than cash dividend firms.

D. METHODOLOGY

The joint probability of the independent variables to explain firm characteristics and managerial motivations for the stock dividend choice will be examined using logit and probit analyses. Recent studies have used probit and logit models to examine management choices [Lilien and Pastena, 1982; Pastena and Ruland, 1986; Ghicas, 1990; Ruland, Tung and George, 1990].

Logit and probit analyses are less restrictive than regression analysis in that they assign a distribution to the dependent variable. Both are superior to multiple discriminant analysis because they provide significance tests for the individual independent variables as well as for the overall classification.

The model used to test the residual, agency, and signalling hypotheses is as follows:

$$DIV_{jt} = b_o + b_1 GRO_{jt+1} + b_2 DE_{jt-1} + b_3 IOWN_{jt} + b_4 CCF_{jt+1} + b_5 INF_{jt-1} + u_{jt} \qquad (7)$$

where

Expected Sign		
	j	is the firm index,
	t	is the year of the stock dividend,
	DIV	is 1 if the firm gives only stock dividends, 0 if the firm gives cash dividends,
+	GRO	is the percentage change in total sales from year t-1 to t+1,
-	DE	is the ratio of debt to equity in year t-1,
+	IOWN	is the percentage of firm stock owned by insiders in year t,
+	CCF	is the percentage change in cash flows from year t to t+1,
-	INF	is the natural log of sales in year t-1,
	u	is an error term.

More complete definitions of the variables and data sources can be found in Appendix 1.

E. Analysis and Results with Cash Dividend Firms

1. Univariate Tests

Summary statistics for the independent variables are presented in Table 13. Also reported are the results of the univariate mean difference t-test for each group for hypotheses H5 through H9. These results are summarized below for unrestricted variables, for variables with outliers winsorized and for variables with outliers deleted.

a. Univariate results for unrestricted variables:

Table 13 (Panel A)

1. GRO - The average growth rate for stock dividend firms (0.802) is higher than for cash dividend firms (0.099) and significant at the 0.05 level. This is consistent with H5.

2. DE - The debt to equity ratios are almost the same between the two groups with 0.262 for stock dividend firms and 0.259 for cash dividend firms.

3. IOWN - The difference in insider ownership between stock dividend firms (0.337) and cash dividend firms (0.129) is significant at the 0.01 level which is consistent with H7.

4. CCF - Stock dividend firms have a greater increase in cash flows (0.643) than cash dividend firms (-3.649) but this difference is not significant due to high variances.

5. INF - Stock dividend firms are smaller (3.797) than cash dividend firms (5.861) which is consistent with H9 and significant at the 0.01 level.

b. Univariate results with outliers winsorized:

Table 13 (Panel B)

1. GRO - The criteria used to winsorize the growth variable was to restrict growth to 4.5 which affected one firm in the sample. The mean growth for stock dividend firms (0.457) is decreased by about half from the unrestricted results but is still greater than the growth of the cash dividend firms (0.099) which is significant at the 0.01 level and consistent with H5.

2. IOWN - Four of the 399 firms in the sample had insider ownership percentages slightly higher than 100%. The criteria

used to winsorize this variable was to restrict insider ownership to 86%. As before, the stock dividend firms maintained a higher mean insider ownership (0.322) than cash dividend firms (0.129) which is consistent with H7 and significant at the 0.01 level.

3. CCF - The criteria used to winsorize change in cash flows was to restrict the variable to the range of -9.0 to +8.0 which affected 26 firms. This reverses the unrestricted results with stock dividend firms exhibiting sharply decreased cash flows (0.036) and cash firms sharply increasing cash flows (0.171). However, the difference remains insignificant.

Results for DE and INF are not presented since they are not winsorized.

c. Univariate results with outliers deleted: Table 13 (Panel C)

The outliers that were winsorized in the previous test are deleted in this section. Deletion of a firm because of an outlier on one variable affects the means of all the other variables.

1. GRO - The mean growth for both stock dividend firms (0.432) and cash dividend firms (0.091) decreases but is still significantly different at the 0.01 level and is consistent with H5.

2. DE - The debt to equity level for the stock dividend firms (0.243) is still almost the same as that of the cash dividend firms (0.249). This finding does not hold, however, in the following logit and probit analyses.

3. IOWN - The difference in the mean level of insider ownership is still significant at the 0.01 level and consistent

with H7 since the level for cash dividend firms (0.129) is lower than that for stock dividend firms (0.312).

4. CCF - With outliers deleted, cash dividend firms have higher cash flows (0.003) than stock dividend firms (-0.176) but this difference is not significant.

5. INF - Results for information are virtually unchanged with stock dividend firms (3.748) smaller than cash dividend firms (5.867) at a significance level of 0.01.

2. Cross-Correlations

Table 14 (Panel A) summarizes the bivariate correlation coefficients for unrestricted variables. Correlation coefficients are relatively low with three exceptions. GRO (-0.157), DE (0.256), and IOWN (-0.330) are all highly correlated with INF at the 0.00 level of significance. Table 14 (Panels B and C) contains the bivariate correlation coefficients for variables with outliers winsorized and with outliers deleted. Winsorizing increases the correlations between INF and GRO to -0.279, and between IOWN and INF to -0.366. The advantages of winsorizing may be offset by increased collinearity of the variables.

Multicollinearity is an inherent feature of much accounting data. The consequences are that the estimated regression coefficients are still unbiased but their variances are large because there is not enough independent variation to confidently calculate the effect of an independent variable on a dependent variable. Parameter estimates are less precise, thus making hypothesis testing less powerful and coefficients less

significant. Thus, winsorizing decreases the variance of the individual variable but if it increases the correlations between variables other problems caused by multicollinearity are introduced into the multivariate analysis.

3. Multivariate Logit Analyses

Table 15 presents multivariate logit models for unrestricted variables, winsorized variables and the model with outliers deleted. The dependent variable is the stock dividend decision (1 for stock dividend and 0 for cash dividend) with GRO, DE, IOWN, CCF AND INF as the independent variables. The chi-square statistics for all three models are significant at the 0.00 level. Results will be presented by variables.

a. GRO - With the exception of the unrestricted variables model, GRO is significant at the 0.00 level with the predicted positive sign and is consistent with H5 that stock dividend firms are growing faster that cash dividend firms. For the unrestricted model, the significance level and chi-square statistic for GRO is not computed due to the dispersion of the variable.

b. DE - For the models with unrestricted variables and winsorized variables, DE is significant at the 0.00 level while the significance level for the model with deleted outliers is 0.03. The negative sign, however, is the opposite of that predicted in H6, showing that cash dividend firms have significantly lower debt to equity ratios than stock dividend firms. Examination of the data reveals the surprising finding that 25 cash dividend firms have no long term debt while only 6 stock dividend firms have no long term debt. This suggests a motivation for the stock

dividend decision that is influenced by the borrowing capacity of the stock dividend firms which may already be at their optimal debt to equity ratio while many of the cash dividend firms have yet to tap the bond market.

c. IOWN - Across all three models IOWN is significant at the 0.00 level with the correct sign and is consistent with H7 that stock dividend firms have higher insider ownership than cash dividend firms.

d. CCF - The cash flow variable has the opposite sign from that predicted in H8 but is insignificant in all three models.

e. INF - In all three models the information variable is significant the 0.00 level consistent with H9 that stock dividend firms are smaller than cash dividend firms.

Overall, the three logit models show fairly stable coefficients and probabilities with the exception of the cash flow variable CCF. This variable had the greatest dispersion with a large number of outliers. Of the five variables in the model, four are highly significant at least at the 0.01 level in the winsorized model with coefficients almost identical to those in the unrestricted model. All three models have highly significant chi-square statistics. The similarity of probabilities and coefficients among the models shows that the results do not depend on outliers.

Results are consistent with the residual theory hypothesis that stock dividend firms are investing all their capital and thereby growing faster than cash dividend firms. Results are also consistent with the agency cost hypothesis that stock

dividend firms have higher insider ownership.

For the signalling hypotheses, results are only consistent with the hypothesis that stock dividend firms are smaller than cash dividend firms but not consistent with the hypothesis that cash flows for stock dividend firms are higher than those of cash dividend firms.

4. Multivariate Probit Analyses

Table 16 presents multivariate probit models for unrestricted variables, winsorized variables and the model with outliers deleted. The dependent variable is the stock dividend decision (1 for stock dividend and 0 for cash dividend) with GRO, DE, IOWN, CCF AND INF as the independent variables. The chi-square statistics for all three models are significant at the 0.00 level. Results will be presented by variables.

a. GRO - GRO is significant at the 0.00 level with the predicted positive sign for all three models and is consistent with H5 that stock dividend firms are growing faster that cash dividend firms.

b. DE - For the models with unrestricted variables and winsorized variables, DE is significant at the 0.00 level while the significance level for the model with deleted outliers is 0.01. The negative sign, as in the logit model, is the opposite of that predicted in H6 showing that cash dividend firms have significantly lower debt to equity ratios than stock dividend firms.

c. IOWN - Across all three models, IOWN is significant at the 0.00 level with the correct positive sign consistent with H7 that stock dividend firms have higher insider ownership than cash

dividend firms.

d. CCF - The cash flow variable has the opposite sign from that predicted in H8 but is significant (0.08) only in the model with outliers deleted.

e. INF - In all three models the information variable is significant the 0.00 level consistent with H9 that stock dividend firms are smaller than cash dividend firms.

The results for the probit analysis show the same consistency across all three models that was shown in the logit models. Significance levels are also the same as are the signs on the coefficients. The coefficient estimates while slightly different from those estimated using the logit model, yield the same support for the the hypotheses. All in all, the probit analysis results reinforce conclusions drawn from the logit analysis.

F. Results for the Benchmark Comparison

1. Univariate Tests

Summary statistics for the independent variables are presented in Table 17. Also reported are the results of the univariate mean difference t-test for each group. These results are summarized below for unrestricted variables, for variables with outliers winsorized and for variables with outliers deleted. This comparison is simply made as a benchmark without predictions because as mentioned earlier the no dividend firms also make the same decision to withhold cash dividends. Thus, their decisions under the residual and agency hypotheses are the same as the stock dividend firms.

a. Univariate results for unrestricted variables:

Table 17 (Panel A)

1. GRO - The average growth rate for stock dividend firms (0.802) is higher than for no dividend firms (0.535) but the difference is not significant.

2. DE - The debt to equity ratios are almost the same between the two groups with 0.262 for stock dividend firms and 0.270 for no dividend firms.

3. IOWN - The difference in insider ownership between stock dividend firms (0.337) and no dividend firms (0.259) is significant at the 0.01 level.

4. CCF - Stock dividend firms have a smaller increase in cash flows (0.643) than no dividend firms (0.911) but this difference is not significant.

5. INF - Stock dividend firms are slightly larger (3.797) than no dividend firms (3.543) which is significant at the 0.10 level.

b. Univariate results with outliers winsorized:

Table 17 (Panel B)

1. GRO - The criteria used to winsorize the growth variable was to restrict growth to 5.0. The mean growth for stock dividend firms (0.457) is decreased by about half from the unrestricted results but is still greater than the growth of the no dividend firms (0.374).

2. IOWN - Four firms in the sample had insider ownership percentages slightly higher than 100%. The criteria used to winsorize this variable was to restrict insider ownership to 92%. As before, the stock dividend firms maintained a higher mean

insider ownership (0.323) than no dividend firms (0.258) which is significant at the 0.01 level.

3. CCF - The criteria used to winsorize change in cash flows was to restrict the variable to the range of -7.0 to +10.0. No dividend firms (0.527) still had higher cash flows than stock dividend firms (0.163). However, the difference remains insignificant.

Results for DE and INF are not presented since they are not winsorized.

c. Univariate results with outliers deleted:

Table 17 (Panel C)

The outliers that were winsorized in the previous test are deleted in this section. Deletion of a firm because of an outlier on one variable affects the means of all the other variables.

1. GRO - The mean growth for stock dividend firms (0.470) is higher than no dividend firms (0.332) and is significant at the 0.10 level.

2. DE - The debt to equity level for the stock dividend firms (0.240) is still almost the same as that of the no dividend firms (0.252).

3. IOWN - The difference in the mean level of insider ownership is still significant at the 0.01 level with the mean for no dividend firms (0.257) lower than that for stock dividend firms (0.319).

4. CCF - With outliers deleted, no dividend firms have higher cash flows (0.474) than stock dividend firms (-0.035) and

this difference is significant at the 0.05 level.

5. INF - Results for information are virtually unchanged with stock dividend firms (3.746) slightly larger than no dividend firms (3.492) at a significance level of 0.10.

2. Cross-Correlations

Table 18 (Panel A) summarizes the bivariate correlation coefficients for unrestricted variables. Correlation coefficients are relatively low with two exceptions. GRO (-0.208) and DE (0.428) are highly correlated with INF at the 0.00 level of significance. Table 18 (Panels B and C) contains the bivariate correlation coefficients for variables with outliers winsorized and with outliers deleted. Winsorizing increases the correlation between INF and GRO to -0.297.

3. Multivariate Logit Analyses

Table 19 presents multivariate logit models for unrestricted variables, winsorized variables and the model with outliers deleted. The dependent variable is the stock dividend decision (1 for stock dividend and 0 for no dividend) with GRO, DE, IOWN, CCF AND INF as the independent variables. The chi-square statistics for all three models are significant at least at the 0.05 level. Results will be presented by variables.

a. GRO - With the exception of the model with outliers deleted, GRO is not significant. For the model with deletions stock dividend firms are growing faster than no dividend firms. The coefficient is significant at the 0.05 level.

b. DE - For all three models DE not significant. This is consistent with the univariate results showing almost identical

debt to equity ratios.

c. IOWN - Across all three models, IOWN is significant at least at the 0.05 level showing that stock dividend firms have higher insider ownership that no dividend firms.

d. CCF - The cash flow variable is insignificant in the unrestricted and winsorized models. In the model with deleted outliers, it is significant at the 0.05 level showing that no dividend firms have higher cash flows that stock dividend firms.

e. INF - In all three models the information variable is significant at less than the 0.10 level, consistent with the univariate results that stock dividend firms are slightly larger than no dividend firms.

In summary, the three logit models do not exhibit the stable coefficients and probabilities that were the case in the comparison of stock dividend firms and cash dividend firms. The coefficients and probabilities increase from model to model. These models are affected by outliers. As expected, there are no strong differences between the stock dividend firms and no dividend firms. Only the insider ownership variable is significant at the 0.01 level showing that stock dividend firms have higher insider ownership than no dividend firms.

4. Multivariate Probit Analyses

Table 20 presents multivariate probit models for unrestricted variables, winsorized variables and the model with outliers deleted. The dependent variable is the stock dividend decision (1 for stock dividend and 0 for no dividend) with GRO, DE, IOWN, CCF AND INF as the independent variables. The

chi-square statistics for all three models are significant at the 0.00 level. Results will be presented by variables.

a. GRO - GRO is significant at the 0.10 level for the model with outliers deleted, showing that stock dividend firms are growing faster than no dividend firms. However, for the other two models it is insignificant.

b. DE - For all the models DE is not significant. This is consistent with univariate and logit results.

c. IOWN - Across all three models, IOWN is significant at the 0.00 level with a positive sign showing that stock dividend firms have higher insider ownership than no dividend firms.

d. CCF - The cash flow is not significant in any of the models which is not consistent with the logit results which show that no dividend firms have higher cash flows in the model with deletions.

e. INF - In all three models, the information variable is significant at the 0.01 level, showing stock dividend firms are larger than no dividend firms. The significance levels on this variable are much higher for probit than for logit analysis.

The overall results for the probit analysis show the same trend across all three models that was shown in the logit models. Significance levels increase as do the coefficients as variables are winsorized or deleted. The significance levels estimated by the probit model are higher than those estimated using the logit model. All in all, the probit analysis results reinforce the conclusions drawn from the logit analysis that there are more similarities than differences between stock dividend and no dividend firms.

G. Summary

This chapter examines motivations for issuing stock dividends instead of cash dividends. Motivations suggested by residual, agency and signalling theories are tested using logit and probit analyses. A cash dividend control sample is used for the tests and a benchmark comparison between stock dividend firms and no dividend firms is also made. Results from the benchmark comparison show that stock dividend firms are very similar to no dividend firms with the exception that stock dividend firms have higher insider ownership than no dividend firms.

For the tests of the motivations for stock dividends, residual theory is used to derive the first hypothesis about the growth of stock dividend firms. Residual theory states that investments should be financed with internal capital by restricting cash dividends. This implies that firms that give no cash dividends may be growing faster than firms which distribute some of their earnings as cash dividends. Both logit and probit results are consistent with this hypothesis.

Agency theory states that each source of capital has agency costs because of the conflicting interests of bondholders and shareholders. Jensen and Meckling [1976] hold that the agency costs of equity are measured by the percent of insider ownership. High agency costs of equity are associated with low insider ownership. The literature suggests that the agency costs of equity are reduced by distributing cash dividends. Since stock dividend firms do not distribute cash dividends to reduce agency

costs, this implies that they have high insider ownership which controls these costs and motivates the retention of cash within the firm. Results are consistent with the hypothesis that stock dividend firms have higher insider ownership than cash dividend firms.

Signalling theory suggests that one motivation for giving stock dividends is to signal the market of future cash flows because of informational asymmetry in the market for small firms. Two signalling hypotheses are tested. Results are consistent with the hypothesis that stock dividend firms are smaller than cash dividend firms while the results are not consistent with the hypothesis that stock dividend firms have a greater increase in cash flows.

Two reasons for the insignificant results for the cash flow hypothesis are suggested. The stock dividend firms may be signalling that their future cash flows are as good as, not better than, those of the cash dividend firms. A more likely explanation is that the cash flow signal relates to the stock dividend firms' own past and future cash flows which should not be compared to cash flows of cash dividend firms. In other words, the wrong control group is used to test this signalling hypothesis. Stock dividend firms should be their own control, with future cash flows being compared to past cash flows to test for the increase predicted by the stock dividend signal. This future vs. past approach was taken by Asquith, Healy and Palepu [1989] in their study of earnings and stock splits.

Overall, strong logit and probit results are consistent with

the agency and residual theory hypotheses but not consistent with the signalling hypothesis about cash flows. Results for the benchmark comparison show that there are more similarities than differences between stock dividend firms and no dividend firms.

This chapter makes a contribution to the literature by linking residual theory and agency theory to the motivations for stock dividends. Earlier literature used signalling theory to study stock dividends. By including the other theories in the analysis, this study demonstrates that there is more than one perspective from which to examine stock dividend motivations.

IV. SUMMARY AND CONCLUSIONS

The first part of this paper examines the determinants of the market reaction to a stock dividend announcement. Abnormal returns are regressed on firm size, exchange listing, insider ownership and stock dividend change. Insider ownership measures the agency cost of equity and stock dividend changes measures the new information in the stock dividend announcement.

Agency theory suggests that high insider ownership reduces moral hazard on the part of the manager to signal the market falsely. Because of legal restrictions on the sale of insider ownership shares, a manager would bear the penalty for false signals. The market should trust the signal of high insider ownership firms implying that the market reaction to a stock dividend announcement is positively related to insider ownership. Results are not consistent with this hypothesis.

Signalling theory suggests the hypothesis that stock dividend change is positively related to the market reaction to a stock dividend announcement. Results are consistent with this contention. Previous research attributed the market reaction to the size rather than the change in the stock dividend. A slope dummy is created to examine whether the market reaction to stock dividend change is a function of firms size. Results are consistent with the expectation that market reaction to stock dividend change is greater for small firms than for large firms. Results are strongest for the NYSE/AMEX subsample.

The contributions to the literature from the first part of this paper are the inclusion of OTC firms in the sample and the

examination of the market reaction to the stock dividend change as a function of firm size.

The second part of this paper examines motivations for issuing stock dividends instead of cash dividends. Motivations suggested by residual, agency and signalling theories are tested using logit and probit analyses. A cash dividend control sample is used for the tests and a benchmark comparison between stock dividend firms and no dividend firms is also made. Results from the benchmark comparison show that stock dividend firms are very similar to no dividend firms with the exception that stock dividend firms have higher insider ownership than no dividend firms.

For the tests of the motivations for stock dividends, residual theory is used to derive the first hypothesis about the growth of stock dividend firms. Residual theory states that investments should be financed by internal capital by restricting cash dividends. This implies that firms that give no cash dividends may be growing faster than firms which distribute some of their earnings as cash dividends. Both logit and probit results are consistent with this hypothesis.

Agency theory states that each source of capital has agency costs because of the conflicting interests of bondholders and shareholders. Jensen and Meckling [1976] hold that the agency costs of equity are measured by the percent of insider ownership. High agency costs of equity are associated with low insider ownership. The literature suggests that the agency costs of equity are reduced by distributing cash dividends. Since stock

dividend firms do not distribute cash dividends to reduce agency costs, this implies that they have high insider ownership which controls these costs and motivates the retention of cash within the firm. Results are consistent with the hypothesis that stock dividend firms have higher insider ownership than cash dividend firms.

Signalling theory suggests that one motivation for giving stock dividends is to signal the market of future cash flows because of informational asymmetry in the market for small firms. Results are consistent with the hypothesis that stock dividend firms are smaller than cash dividend firms while results are not consistent with the hypothesis that stock dividend firms have a greater increase in cash flows.

Two reasons for the insignificant results for the cash flow hypothesis are suggested. The stock dividend firms may be signalling that their future cash flows are as good as, not better than, those of the cash dividend firms. A more probable explanation is that the cash flow signal relates to the stock dividend firms' own past and future cash flows which should not be compared to cash flows of cash dividend firms. In other words, the wrong control group is used to test this signalling hypothesis. Stock dividend firms should be their own control, with future cash flows being compared to past cash flows to test for the increase predicted by the stock dividend signal.

The second part of this paper makes a contribution to the literature by linking residual theory and agency theory to the motivations for stock dividends, showing that there is more than

one perspective from which to examine stock dividend motivations.

A limitation of this research is that there is no meta-theory linking residual, agency and signalling theories though the theories share some common assumptions. The development of such a meta-theory would lend greater validity to the findings of this research.

Table 1

Stock Dividend Announcement Abnormal Returns
Empirical Results from Prior Literature

Study	Abnormal Return (t-statistics)	Return Model (test period)	Size of Distribution	Limitations of Study
Foster and Vickrey [1978]	2.0% (4.83)	Market Model (announcement day)	all stock dividends	1. firms also paid cash dividends 2. OTC not included
Woolridge [1983b]	0.6% (3.99)	Mean Adjusted (announcement day and day after)	dividend less than 25%	1. OTC not included
Grinblatt Masulis and Titman [1984]	4.9% (15.16)	Mean Adjusted (announcement day and day after)	dividend from 10% to 25%	1. did not include dividends less than 10% 2. firms also paid cash dividends 3. OTC not included

Table 2

Distribution of Stock Dividend Sizes and Industries

Industry Code	Size of stock dividend 1-5%	6-10%	11-15%	16-20%	21-25%	Industry Total
1311	3	3				6
1382			1			1
1623	1					1
1700		1				1
2040		2				2
2211	4					4
2250			1		1	2
2273					1	1
2320		5				5
2340		3				3
2451					2	2
2673	3		1			4
2761		1				1
2834		1				1
3021		1				1
3080	4	1				5
3270		1				1
3286	1					1
3330	1					1
3390					1	1
3420	1	5				6
3448	1	1				2
3490	1	1				2
3560	6	4				10
3569					2	2
3577		1	1		4	6
3613		1				1
3634	1	1				2
3651		1				1
3661	4				1	5
3663	1					1
3670	3				1	4
3674		4				4
3677	1					1
3679	2				1	3
3713	2					2
3724			1			1
3812	1				2	3
3823	5					5
3825	5				1	6
3826	1					1
3845					1	1
3861		1			5	6
3911		3				3
4412	1					1
4512		1			1	2

Table 2 (continued)

Distribution of Stock Dividend Sizes and Industries

Industry Code	Size of stock dividend 1-5%	6-10%	11-15%	16-20%	21-25%	Industry Total
4833	3				2	5
4841	1					1
4924	1					1
5031		1				1
5063					1	1
5065	2	1				3
5080					2	2
5122	4					4
5140	2					2
5160					1	1
5172		1				1
5399	1					1
5411		1	1			2
5412		2				2
5812					1	1
5945					1	1
5961	1	3				4
6153	1	2				3
6399					1	1
6552	1	5		1	1	8
7011		3				3
7359					1	1
7372	1					1
7373	2					2
7377		2				2
7389		1			1	2
7391				2		2
7510	2					2
7812	3					3
7819		2				2
7990		1				1
8062		3				3
8071	2	1				3
8731	1					1
Total	81	74	6	3	37	201

Table 3

Summary Statistics for Independent Variables

Panel A. Total Sample

Variable	N	Mean	Standard Deviation	Range Minimum	Range Maximum
MV	130	3.362	1.075	1.352	5.942
IOWN	125	0.330	0.201	0.012	0.860
DIVCH	130	0.035	0.106	-0.500	0.250

Panel B. NYSE/AMEX Subsample

Variable	N	Mean	Standard Deviation	Range Minimum	Range Maximum
MV	83	3.474	1.122	1.352	5.942
IOWN	79	0.336	0.209	0.012	0.860
DIVCH	83	0.012	0.075	-0.450	0.250

Panel C. OTC Subsample

Variable	N	Mean	Standard Deviation	Range Minimum	Range Maximum
MV	47	3.164	0.965	1.494	4.940
IOWN	46	0.320	0.187	0.038	0.860
DIVCH	47	0.075	0.137	-0.500	0.250

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change

Table 4

Pearson Correlation Matrix

Panel A. Total Sample (N=125)

	MV	EXCH	IOWN	DIVCH
MV	1.000	0.139	-0.005	-0.172
	(0.00)	(0.11)	(0.95)	(0.05)
EXCH		1.000	0.038	-0.286
		(0.00)	(0.67)	(0.00)
IOWN			1.000	0.072
			(0.00)	(0.43)
DIVCH				1.000
				(0.00)

Panel B. NYSE/AMEX Subsample (N=79)

	MV	IOWN	DIVCH
MV	1.000	0.080	-0.235
	(0.00)	(0.48)	(0.03)
IOWN		1.000	0.138
		(0.00)	(0.22)
DIVCH			1.000
			(0.00)

( ) two-tailed probability values

MV = Natural Log of Market Value
EXCH = 1 for NYSE/AMEX
0 for OTC
IOWN = Insider Ownership
DIVCH = Dividend Change

Table 4 (continued)

Pearson Correlation Matrix

Panel C. OTC Subsample (N=46)

	MV	IOWN	DIVCH
MV	1.000	0.144	-0.052
	(0.00)	(0.34)	(0.72)
IOWN		1.000	0.044
		(0.00)	(0.77)
DIVCH			1.000
			(0.00)

( ) two-tailed probability values

MV = Natural Log of Market Value
EXCH = 1 for NYSE/AMEX
0 for OTC
IOWN = Insider Ownership
DIVCH = Dividend Change

Table 5

Regression Results for Total Sample (N=125)
CAR(-2,0) as the Dependent Variable

Expected Sign		-	-	+	+	Adjusted R^2
CAR =	a +	B_1MV +	B_2EXCH +	B_3IOWN +	B_4DIVCH	
Mean Adjusted Returns	0.052 (2.755)[a]	-0.010 (-2.120)[b]	0.004 (0.389)	0.002 (0.092)	0.075 (1.592)[c]	0.032
Market Adjusted Returns	0.067 (3.611)[a]	-0.013 (-2.839)[a]	-0.003 (-0.282)	0.005 (0.230)	0.077 (1.657)[b]	0.073

( ) t-statistics for a one-tail test

Significance Levels:
a = 0.01
b = 0.05
c = 0.10

MV = Natural Log of Market Value
EXCH = 1 for NYSE/AMEX
0 for OTC
IOWN = Insider Ownership
DIVCH = Dividend Change

Table 6

Regression Results of Reduced Model for Total Sample (N=125)
CAR(-2,0) as the Dependent Variable

Expected Sign		-	+	+	Adjusted R^2
CAR =	a +	B_1MV +	B_3IOWN +	B_4DIVCH	
Mean Adjusted Returns	0.053 (2.962)[a]	-0.010 (-2.098)[b]	0.003 (0.117)	0.070 (1.551)[c]	0.039
Market Adjusted Returns	0.065 (3.675)[a]	-0.013 (-2.897)[a]	0.005 (0.213)	0.081 (1.819)[b]	0.080

( ) t-statistics for a one-tail test

Significance Levels:
a = 0.01
b = 0.05
c = 0.10

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change

Table 7

Regression Results for NYSE/AMEX Subsample (N=79)
CAR(-2,0) as the Dependent Variable

Expected Sign		-	+	+	Adjusted R^2
CAR =	a +	B_1MV +	B_3IOWN +	B_4DIVCH	
Mean Adjusted Returns	0.080 (3.616)[a]	-0.015 (-2.784)[a]	-0.014 (-0.496)	-0.044 (-0.560)	0.060
Market Adjusted Returns	0.082 (3.934)[a]	-0.017 (-3.367)[a]	-0.004 (-0.171)	-0.009 (-0.199)	0.100
Market Model Returns	0.073 (3.347)[a]	-0.015 (-2.879)[a]	0.005 (0.174)	0.002 (0.020)	0.070

( ) t-statistics for a one-tail test

Significance Levels:
a = 0.01
b = 0.05
c = 0.10

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change

Table 8

Regression Results for OTC Subsample (N=46)
CAR(-2,0) as the Dependent Variable

Expected Sign		-	+	+	Adjusted R^2
CAR =	a +	B_1MV +	B_3IOWN +	B_4DIVCH	
Mean Adjusted Returns	0.015 (0.483)	-0.003 (-0.357)	0.038 (0.841)	0.132 (2.149)[a]	0.055
Market Adjusted Returns	0.038 (1.143)	-0.007 (-0.730)	0.027 (0.556)	0.117 (1.816)[b]	0.027

( ) t-statistics for a one-tail test

Significance Levels:
a = 0.01
b = 0.05
c = 0.10

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change

Table 9

Pearson Correlation Matrix

Panel A. Total Sample (N=125)

	MV	IOWN	DIVCH	DIVSIZE
MV	1.000	-0.005	-0.172	-0.423
	(0.00)	(0.95)	(0.05)	(0.00)
IOWN		1.000	0.072	-0.045
		(0.00)	(0.43)	(0.62)
DIVCH			1.000	0.480
			(0.00)	(0.00)
DIVSIZE				1.000
				(0.00)

Panel B. NYSE/AMEX Subsample (N=79)

	MV	IOWN	DIVCH	DIVSIZE
MV	1.000	-0.080	-0.234	-0.347
	(0.00)	(0.48)	(0.03)	(0.00)
IOWN		1.000	0.138	0.056
		(0.00)	(0.22)	(0.62)
DIVCH			1.000	0.436
			(0.00)	(0.00)
DIVSIZE				1.000
				(0.00)

( ) two-tailed probability values

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change
DIVSIZE = DIVCH*SIZE
SIZE = 1 for small firm
= 0 for large firm

Table 9 (continued)

Pearson Correlation Matrix

Panel C. OTC Subsample (N=46)

	MV	IOWN	DIVCH	DIVSIZE
MV	1.000	0.144	-0.052	-0.552
	(0.00)	(0.34)	(0.73)	(0.00)
IOWN		1.000	0.044	-0.110
		(0.00)	(0.77)	(0.47)
DIVCH			1.000	0.438
			(0.00)	(0.00)
DIVSIZE				1.000
				(0.00)

( ) two-tailed probability values

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change
DIVSIZE = DIVCH*SIZE
SIZE = 1 for small firm
= 0 for large firm

Table 10

Regression Results for Total Sample (N=125)
CAR(-2,0) as the Dependent Variable

Expected Sign		-	+	+	+	Adjusted R^2
CAR =	a +	B_1MV +	B_3IOWN +	B_4DIVCH +	B_5DIVSIZE	
Mean Adjusted Returns	0.044 (2.202)[b]	-0.007 (-1.525)[c]	0.005 (0.225)	0.043 (0.856)	0.127 (1.180)	0.042
Market Adjusted Returns	0.050 (2.596)[a]	-0.010 (-2.046)[b]	0.009 (0.385)	0.039 (0.805)	0.194 (1.857)[b]	0.098

( ) t-statistics for a one-tail test

Significance Levels:
a = 0.01
b = 0.05
c = 0.10

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change
DIVSIZE = DIVCH*SIZE
SIZE = 1 for small firm
= 0 for large firm

Table 11

Regression Results for NYSE/AMEX Subsample (N=79)
CAR(-2,0) as the Dependent Variable

Expected Sign		-	+	+	÷	Adjusted R^2
CAR =	a +	B_1MV +	B_3IOWN +	B_4DIVCH +	B_5DIVSIZE	
Mean Adjusted Returns	0.064 (2.917)[a]	-0.012 (-2.206)[b]	-0.014 (-0.528)	-0.114 (-1.426)	0.610 (2.706)[a]	0.134
Market Adjusted Returns	0.067 (3.238)[a]	-0.014 (-2.799)[a]	-0.005 (-0.190)	-0.074 (-0.988)	0.574 (2.697)[a]	0.171
Market Model Returns	0.059 (2.683)[a]	-0.012 (-2.334)[b]	0.004 (0.169)	-0.062 (-0.778)	0.556 (2.468)[a]	0.130

( ) t-statistics for a one-tail test

Significance Levels:
a = 0.01
b = 0.05
c = 0.10

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change
DIVSIZE = DIVCH*SIZE
SIZE = 1 for small firm
= 0 for large firm

Table 12

Regression Results for OTC Subsample (N=46)
CAR(-2,0) as the Dependent Variable

Expected Sign		-	+	+	+	Adjusted R^2
CAR =	a +	B_1MV +	B_3IOWN +	B_4DIVCH +	B_5DIVSIZE	
Mean Adjusted Returns	0.003 (0.068)	-0.000 (-0.006)	0.040 (0.868)	0.114 (1.606)[c]	0.076 (0.508)	0.038
Market Adjusted Returns	0.009 (0.213)	0.000 (0.035)	0.030 (0.641)	0.075 (1.030)	0.176 (1.134)	0.033

( ) t-statistics for a one-tail test

Significance Levels:
a = 0.01
b = 0.05
c = 0.10

MV = Natural Log of Market Value
IOWN = Insider Ownership
DIVCH = Dividend Change
DIVSIZE = DIVCH*SIZE
SIZE = 1 for small firm
= 0 for large firm

Table 13

Descriptive Statistics
Stock Dividend vs. Cash Dividend Firms

Panel A. Without Restrictions on Variables:

Variables	Hypotheses	Stock Dividend Firms (1) Mean	Cash Dividend Firms (0) Mean	Mean Difference t-statistic
GRO	H5 1>0	0.802	0.099	1.897[b]
DE	H6 1<0	0.262	0.259	0.136
IOWN	H7 1>0	0.337	0.129	9.184[a]
CCF	H8 1>0	0.643	-3.649	0.643
INF	H9 1<0	3.797	5.861	-12.521[a]

Panel B. With Outliers Winsorized:

Variables	Hypotheses	Stock Dividend Firms (1) Mean	Cash Dividend Firms (0) Mean	Mean Difference t-statistic
GRO	H5 1>0	0.457	0.099	6.074[a]
DE	H6 1<0	0.262	0.259	0.136
IOWN	H7 1>0	0.322	0.129	10.338[a]
CCF	H8 1>0	0.036	0.171	- 0.503
INF	H9 1<0	3.797	5.861	- 12.521[a]

a = Significant at the 0.01 level for a one-tail test.
b = Significant at the 0.05 level for a one-tail test.
c = Significant at the 0.10 level for a one-tail test.

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 13 (continued)

Descriptive Statistics
Stock Dividend vs. Cash Dividend Firms

Panel C. With Outliers Deleted:

Variables	Hypotheses	Stock Dividend Firms (1) Mean	Cash Dividend Firms (0) Mean	Mean Difference t-statistic
GRO	H5 1>0	0.432	0.091	6.276[a]
DE	H6 1<0	0.243	0.249	- 0.280
IOWN	H7 1>0	0.312	0.129	9.404[a]
CCF	H8 1>0	-0.176	0.003	- 0.832
INF	H9 1<0	3.748	5.867	-11.854[a]

a = Significant at the 0.01 level for a one-tail test.
b = Significant at the 0.05 level for a one-tail test.
c = Significant at the 0.10 level for a one-tail test.

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 14

Pearson Correlation Matrix
Stock Dividend Firms and Cash Dividend Firms

Panel A. Without Restrictions on Variables:

	GRO	DE	IOWN	CCF	INF
GRO	1.000	-0.058	0.094	0.001	-0.157
	(0.00)	(0.23)	(0.06)	(0.99)	(0.00)
DE		1.000	-0.057	0.007	0.256
		(0.00)	(0.25)	(0.89)	(0.00)
IOWN			1.000	0.030	-0.330
			(0.00)	(0.54)	(0.00)
CCF				1.000	-0.134
				(0.00)	(0.00)
INF					1.000
					(0.00)

Panel B. With Outliers Winsorized:

	GRO	DE	IOWN	CCF	INF
GRO	1.000	-0.042	0.189	-0.011	-0.279
	(0.00)	(0.39)	(0.00)	(0.82)	(0.00)
DE		1.000	-0.060	-0.017	0.256
		(0.00)	(0.22)	(0.72)	(0.00)
IOWN			1.000	0.017	-0.366
			(0.00)	(0.73)	(0.00)
CCF				1.000	-0.020
				(0.00)	(0.67)
INF					1.000
					(0.00)

( ) = two-tailed probability values

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 14 (continued)

Pearson Correlation Matrix
Stock Dividend Firms and Cash Dividend Firms

Panel C. With Outliers Deleted:

	GRO	DE	IOWN	CCF	INF
GRO	1.000	-0.007	0.164	-0.021	-0.274
	(0.00)	(0.90)	(0.00)	(0.68)	(0.00)
DE		1.000	-0.045	-0.018	0.271
		(0.00)	(0.36)	(0.72)	(0.00)
IOWN			1.000	0.045	-0.369
			(0.00)	(0.40)	(0.00)
CCF				1.000	-0.018
				(0.00)	(0.73)
INF					1.000
					(0.00)

( ) = two-tailed probability values

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 15

Results of Multivariate Logit Models for
Stock Dividend Firms (1) and Cash Dividend Firms (0)

Expected Sign		+	-	+	+	-	Chi-Square
Dividend Decision	=	$b_0 + b_1GRO + b_2DE + b_3IOWN + b_4CCF + b_5INF$					
Without restrictions		1.683 (0.00)	1.197 (*)	1.969 (0.00)	4.397 (0.00)	-0.002 (0.42)	-0.763 (0.00)	210.2 (0.00)
Outliers winsorized		1.658 (0.00)	1.195 (0.00)	1.952 (0.00)	4.436 (0.00)	-0.036 (0.44)	-0.758 (0.00)	210.3 (0.00)
Outliers deleted		1.806 (0.00)	1.287 (0.00)	1.663 (0.03)	4.381 (0.00)	-0.105 (0.12)	-0.783 (0.00)	184.9 (0.00)

* Chi-Square and Probability not listed in logit regression due to dispersion of variable.

Dividend Decision = 1 if the firm gives only stock dividends
= 0 if the firm gives only cash dividends

( ) = Probability for a one-tail test

Without restrictions (1) N=183 (0) N=216
Outliers winsorized (1) N=183 (0) N=216
Outliers deleted (1) N=159 (0) N=191

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 16

Results of Multivariate Probit Models for
Stock Dividend Firms (1) and Cash Dividend Firms (0)

Expected Sign		+	-	+	+	-	Chi-Square
Dividend Decision	=	$b_0 + b_1GRO + b_2DE + b_3IOWN + b_4CCF + b_5INF$					
Without restrictions		0.683 (0.00)	0.588 (0.00)	1.062 (0.00)	2.720 (0.00)	-0.004 (0.23)	-0.367 (0.00)	213.9 (0.00)
Outliers winsorized		0.595 (0.00)	0.591 (0.00)	1.022 (0.00)	2.751 (0.00)	-0.010 (0.44)	-0.365 (0.00)	219.3 (0.00)
Outliers deleted		0.546 (0.00)	0.680 (0.00)	0.877 (0.01)	2.896 (0.00)	-0.056 (0.08)	-0.366 (0.00)	186.9 (0.00)

Dividend Decision = 1 if the firm gives only stock dividends
= 0 if the firm gives only cash dividends

( ) = Probability for a one-tail test

Without restrictions (1) N=183 (0) N=216
Outliers winsorized (1) N=183 (0) N=216
Outliers deleted (1) N=159 (0) N=191

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 17

Descriptive Statistics
Stock Dividend Firms vs. No Dividend Firms

Panel A. Without Restrictions on Variables:

Variables	Stock Dividend Firms (1) Mean	No Dividend Firms (0) Mean	Mean Difference t-statistic
GRO	0.802	0.535	0.661
DE	0.262	0.270	- 0.353
IOWN	0.337	0.259	3.049[a]
CCF	0.643	0.911	-0.174
INF	3.797	3.543	1.830[c]

Panel B. With Outliers Winsorized:

Variables	Stock Dividend Firms (1) Mean	No Dividend Firms (0) Mean	Mean Difference t-statistic
GRO	0.457	0.374	0.985
DE	0.262	0.270	-0.353
IOWN	0.323	0.258	3.010[a]
CCF	0.163	0.527	-1.145
INF	3.797	3.543	1.830[c]

a = Significant at the 0.01 level for a two-tail test.
b = Significant at the 0.05 level for a two-tail test.
c = Significant at the 0.10 level for a two-tail test.

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 17 (continued)

Descriptive Statistics
Stock Dividend Firms vs. No Dividend Firms

Panel C. With Outliers Deleted:

Variables	Stock Dividend Firms (1) Mean	No Dividend Firms (0) Mean	Mean Difference t-statistic
GRO	0.470	0.332	1.674[c]
DE	0.240	0.252	-0.510
IOWN	0.319	0.257	2.767[a]
CCF	-0.035	0.474	-1.952[b]
INF	3.746	3.492	1.678[c]

a - Significant at the 0.01 level for a two-tail test.
b - Significant at the 0.05 level for a two-tail test.
c - Significant at the 0.10 level for a two-tail test.

GRO - Growth
DE - Debt to Equity
IOWN - Insider Ownership
CCF - Change in Cash Flow
INF - Information (Size)

Table 18

Pearson Correlation Matrix
Stock Dividend Firms and No Dividend Firms

Panel A. Without Restrictions on Variables:

	GRO	DE	IOWN	CCF	INF
GRO	1.000	-0.090	0.125	-0.013	-0.208
	(0.00)	(0.07)	(0.02)	(0.80)	(0.00)
DE		1.000	-0.053	0.091	0.428
		(0.00)	(0.30)	(0.06)	(0.00)
IOWN			1.000	0.008	-0.059
			(0.00)	(0.88)	(0.25)
CCF				1.000	-0.110
				(0.00)	(0.02)
INF					1.000
					(0.00)

Panel B. With Outliers Winsorized:

	GRO	DE	IOWN	CCF	INF
GRO	1.000	-0.112	0.123	-0.016	-0.297
	(0.00)	(0.03)	(0.02)	(0.75)	(0.00)
DE		1.000	-0.049	-0.066	0.428
		(0.00)	(0.33)	(0.18)	(0.00)
IOWN			1.000	0.006	-0.064
			(0.00)	(0.90)	(0.21)
CCF				1.000	-0.020
				(0.00)	(0.68)
INF					1.000
					(0.00)

( ) = two-tailed probability values

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 18 (continued)

Pearson Correlation Matrix
Stock Dividend Firms and No Dividend Firms

Panel C. With Outliers Deleted:

	GRO	DE	IOWN	CCF	INF
GRO	1.000	-0.058	0.112	0.010	-0.224
	(0.00)	(0.28)	(0.05)	(0.85)	(0.00)
DE		1.000	-0.027	0.026	0.387
		(0.00)	(0.63)	(0.63)	(0.00)
IOWN			1.000	0.009	-0.016
			(0.00)	(0.87)	(0.77)
CCF				1.000	-0.088
				(0.00)	(0.10)
INF					1.000
					(0.00)

( ) - two-tailed probability values

GRO - Growth
DE - Debt to Equity
IOWN - Insider Ownership
CCF - Change in Cash Flow
INF - Information (Size)

Table 19

Results of Multivariate Logit Models for
Stock Dividend Firms (1) and No Dividend Firms (0)

Dividend Decision = $b_0 + b_1$GRO + b_2DE + b_3IOWN + b_4CCF + b_5INF							Chi-Square
Without restrictions	-0.832 (0.01)	0.025 (0.48)	-0.318 (0.53)	1.292 (0.01)	-0.002 (0.72)	0.136 (0.09)	11.8 (0.04)
Outliers winsorized	-0.985 (0.01)	0.215 (0.12)	-0.316 (0.53)	1.369 (0.01)	-0.039 (0.23)	0.157 (0.06)	14.2 (0.00)
Outliers deleted	-1.040 (0.01)	0.357 (0.04)	-0.609 (0.28)	1.431 (0.02)	-0.099 (0.04)	0.191 (0.04)	19.1 (0.00)

Dividend Decision = 1 if the firm gives only stock dividends
= 0 if the firm gives no dividends

( ) = Probability for a two-tail test

Without restrictions (1) N=183 (0) N=186
Outliers winsorized (1) N=183 (0) N=186
Outliers deleted (1) N=160 (0) N=156

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Table 20

Results of Multivariate Probit Models for
Stock Dividend Firms (1) and No Dividend Firms (0)

Dividend Decision = $b_0 + b_1GRO + b_2DE + b_3IOWN + b_4CCF + b_5INF$							Chi-Square
Without restrictions	-0.713 (0.00)	0.011 (0.54)	-0.220 (0.43)	1.060 (0.00)	-0.005 (0.34)	0.111 (0.01)	23.6 (0.00)
Outliers winsorized	-0.778 (0.00)	0.097 (0.20)	-0.232 (0.31)	1.129 (0.00)	-0.023 (0.21)	0.118 (0.01)	24.8 (0.00)
Outliers deleted	-0.293 (0.11)	0.149 (0.10)	0.000 (0.96)	0.000 (0.00)	0.000 (0.43)	-0.143 (0.00)	21.8 (0.00)

Dividend Decision = 1 if the firm gives only stock dividends
= 0 if the firm gives no dividends

( ) = Probability for a two-tail test
Note: probabilities in the last model for DE, IOWN and CCF vary because of the differences in their standard errors.

Without restrictions (1) N=183 (0) N=186
Outliers winsorized (1) N=183 (0) N=186
Outliers deleted (1) N=160 (0) N=156

GRO = Growth
DE = Debt to Equity
IOWN = Insider Ownership
CCF = Change in Cash Flow
INF = Information (Size)

Appendix 1

Definitions and computations of variables:

(1) GRO is defined as the three year percentage growth of total sales. It is measured using Compustat data items (hereafter, items). GRO = (item 12_{t+1} - item 12_{t-1}) / item 12_{t-1}.

(2) DE is defined as the ratio of debt to equity. It is measured the same way as in Agrawal and Mandelker [1987] as (book value of long-term debt + preferred stock) / (book value of long-term debt + preferred stock + market value of equity). Compustat data items were used. DE = (item 9 + item 130) / (item 9 + item 130 + (item 24 * item 25)).

(3) The percentage of insider ownership (IOWN) is defined as the portion of the firm's equity controlled by those who must regularly submit insider ownership information to the SEC. The majority of insiders consist of management, directors, and shareholders who own at least 10% of the outstanding shares. IOWN is measured as the total number of shares directly owned by insiders / total number of shares outstanding. The direct share ownership (OWN) is taken from Spectrum 6 which summarizes ownership information from submissions to the SEC. IOWN = (OWN / 1,000,000) / item 25.

(4) The percentage change in cash flows (CCF) is defined as the one year change in cash flow from operations (CFO). CFO is measured as in Bowen, Burgstahler and Daley [1987]. They start with working capital from operations and add changes in non-cash current assets and liabilities to derive cash from operations (CFO) using items 110, 2, 3, 68, 70, 71, and 72. CCF = (CFO_{t+1} - CFO_t) / abs(CFO_t).

(5) Information (INF) is defined as the amount of information about the firm available to the investor. INF is measured as the natural logarithm of sales using item 12.

Appendix 2

Sample Firms Used in Study
Sorted by Compustat Tape

Firm	Tape	CUSIP
ARX	1	001909
American President Co	1	029103
Amrep Corp	1	032159
Applied Magnetics	1	038213
Bamberger Polymers	1	059422
Baruch Foster	1	069689
Bethlehem Corp	1	087257
Calprop	1	131352
Casa Blanca Industries	1	147129
Chris Craft Industries	1	170520
Clayton Homes	1	184190
Continental Info Systems	1	211496
DWG Corp	1	233351
Designatronics	1	250559
Designcraft Industries	1	250568
ESI Industries	1	269072
Emerson Radio	1	291087
Endevco	1	292586
Fischer & Porter	1	337693
Fluke (John) Manufacturing	1	343856
Galaxy Carpet Mills	1	363171
Greenman Bros	1	395370
Hampton Industries	1	409189
Horizon	1	440416
Horn & Hardart	1	440506
IPM Technology	1	449820
Inspiration Resources	1	457729
Jetronic Industries	1	477178
Ketchum & Co	1	492620
Luria & Son	1	550484
Matrix Corp	1	576829
Nantucket Industries	1	630183
Nu Horizons Electronics	1	669908
Prepaid Legal Services	1	740065
Price Communications	1	741437
Sanmark Stardust	1	801050
Servotronics	1	817732
TII Industries	1	872479
Tenney Engineering	1	880625
Torotel	1	891305
Union Corp	1	906072
United Medical	1	910844
Unitel Video	1	913253
VTX Electronics	1	918388
Vishay Intertechnology	1	928298

Appendix 2 (continued)

Sample Firms Used in Study
Sorted by Compustat Tape

Firm	Tape	CUSIP
Agency Rent A Car	2	008450
Air Wisconsin Services	2	009236
American Western Corp	2	030475
Auto Trol Technology	2	052754
Basic American Medical	2	069836
Big Bear Inc	2	089009
Dairy Mart Convenience Stores	2	233860
Digilog	2	253806
Dycom Industries	2	267475
Erly Industries	2	268839
EIL Instruments	2	268526
Electro Rent	2	285218
Farm House Foods	2	307670
Florafax	2	339825
Fonar	2	344437
Hi Port Industries	2	428395
Initio	2	457203
Insituform East	2	457662
Interface Systems	2	458667
Jones Intercable	2	480206
Kreisler Manufacturing Corp	2	500773
Kustom Electronics	2	501341
Maxwell Laboratories	2	577763
Natures Sunshine Products	2	639027
Network Systems	2	641217
Paris Business Forms	2	699556
Patrick Industries	2	703343
Photo Control Corp	2	719219
RSI Corp	2	749722
Servico	2	817647
Terminal Data Corp	2	880790
Anderson Jacobson	3	034046
Applied Data Research	3	038157
Arundel	3	043177
Advanced Systems	3	007547
Grant Industries	3	388092
Oxford First Corp	3	691449
RAI Research	3	749226
T-Bar	3	872230
Texas American Energy	3	882149
Timeplex	3	887350

Appendix 2 (continued)

Sample Firms Used in Study
Sorted by Compustat Tape

Firm	Tape	CUSIP
Baird Corp	4	057068
Bellwether Exploration	4	079895
Modulaire Industries	4	607832
Powertec	4	739361
Scan Tron Corp	4	806048
Shoney's South	4	825041
Simmons Airlines	4	828688
Sippican Inc	4	829902
American Adventure	6	023685
Dynascan	6	268075
Enzo Biochemicals	6	294100
GTS Corp	6	362370
Haber Inc	6	404450
Metallurgical Industries	6	591265
Taylor Devices	6	877163
Amfesco Industries	9	031145

Compustat Tape:
1 = Industrial Annual 1989 tape
2 = OTC Annual 1989 tape
3 = Industrial Research tape
4 = OTC Research tape
6 = OTC Annual 1988 tape
9 = Industrial Annual 1987 tape

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