THE EFFECT OF SHAREHOLDER TAXES ON CORPORATE PAYOUT CHOICE

by

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As members of the Dissertation Committee, we certify that we have read the dissertation prepared by William Joseph Moser entitled The Effect of Shareholder Taxes on Corporate Payout Choice and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

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DEDICATION

To my grandmother Madeline Elizabeth Barber who after graduating from Edenboro College in 1926 began a tradition of education followed by future generations in our family.

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ABSTRACT

This study investigates whether the difference in individual shareholder tax rates between dividend income and capital gain (the dividend tax penalty) affects a firm's choice between distributing funds to shareholders through dividends or share repurchases. The results of this study suggest that, in periods in which the dividend tax penalty increases, firms are more likely to distribute funds to shareholders through share repurchases as opposed to dividends. The results also indicate that the relationship between the dividend tax penalty and corporate payout choice is affected by the types of shareholders who own stock in the firm. As managerial share ownership increases and the dividend tax penalty increases firms are more likely to make distributions to shareholders in the form of share repurchases. As aggregate institutional ownership increases and the dividend tax penalty increases, firms are neither more likely to repurchase shares nor more likely to distribute dividends. Division of the institutional ownership category indicates that institutions classified as mutual funds and investment advisors (brokers) have the strongest preference for share repurchases as the dividend tax penalty increases. In contrast, institutions classified as banks, insurance companies and other institutions have the smallest preference for share repurchases as the dividend tax penalty increases. The implication of this study is that individual shareholder taxes affect firms' corporate payout choice.

1. INTRODUCTION

In 2002, domestic public firms distributed \$357 billion to shareholders through dividends and \$212 billion in the form of stock repurchases.¹ These substantial distributions occurred at a time when the maximum individual tax rate on dividends, at 38.6%, was significantly higher than the maximum individual tax rate on capital gains, at 20%. Despite the relative tax advantage of capital gains, firms continue to distribute a significant portion of their excess cash through dividends, creating what Black (1976) termed the “dividend tax puzzle”. The existing literature in corporate finance establishes that firms consider a variety of factors when deciding to distribute funds to shareholders in the form of share repurchases or dividends. Typically, firms will repurchase shares to signal undervaluation, to fund exercised employee stock options, or to distribute significant but non-sustainable excess cash. In contrast, firms are more likely to distribute dividends to shareholders to signal that the firm anticipates sustainable higher future earnings.

On May 28, 2003, President George W. Bush signed the 2003 Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) reducing the individual dividend tax rate from 38.6% to 15% and the capital gains tax rate from 20% to 15%. According to U.S. House of Representatives Committee Report 108-94, the purpose for the reduction in the dividend tax rate was to lower corporate cost of capital and to motivate corporations to increase dividend distributions to shareholders. Evidence from the business press supports the House Committee Report and suggests that shareholders exert influence over

¹ For the 2002 fiscal year on *Compustat*, 8,687 domestic firms reported distributing dividends and 7,427 domestic firms reported repurchasing shares.

firms regarding corporate payout policy based on shareholder tax rates.² However, there is not uniform acceptance of the view that shareholder taxes affect corporate payout choice. In a survey of 384 financial executives, Brav et. al. (2004) found that more than two-thirds of the respondents indicated that a reduction in dividend tax rates would not affect their dividend distribution decisions. The main reason given was that increases in regular dividends indicate a relatively permanent commitment to distribute future cash flows, while changes in tax rates on dividends are generally temporary.³ Despite the quantity of academic research, comments from the business press, and survey evidence, the influence of shareholder taxes over multiple tax regimes on a firm's choice between distributing funds to shareholders through share repurchases or dividends remains essentially unexplained in the accounting and finance literature.

This study investigates whether the dividend tax penalty, defined as the difference between individual shareholder tax rates on dividend income and long-term capital gains, influences firms' use of share repurchases versus dividends. Further, this study examines whether firms' ownership structure (e.g., the percent ownership by management, aggregate institutional shareholders or categories of institutional investors) influences the extent to which companies consider shareholder level taxes in their payout decisions.

² A 1987 Wall Street Journal article reported that for tax purposes Allegis Corporation's largest shareholder (Coniston Partners) was pushing for a previously announced payout to shareholders to take the form of a partial stock buy-back instead of a special dividend. More recently, in 2003 the Wall Street Journal reported that Citigroup, citing the 2003 tax act decided to increase its dividend by 43% while substantially reducing its share repurchase program. In the same Wall Street Journal article, Procter & Gamble Co., Goldman Sachs Group Inc., Walgreen Co, World Wrestling Entertainment Inc. and Microsoft all said they would initiate or significantly increase dividends in direct response to the 2003 tax act.

³ Shackelford et al. (2004) enumerate several reasons why the significant decrease in the dividend tax rate after the 2003 tax act may not have influenced a firm to increase their dividend distributions.

I examine firms' payout choices over a period with multiple tax regime changes, 1992 to 2003. I first compare firms that repurchase shares with firms that issue special dividends. Since neither share repurchases nor special dividends commit the firm to future distributions, this setting allows inferences regarding corporate payout policy behavior across tax regimes for a one-time distribution to shareholders. Because special dividends are relatively rare, I also compare firms that repurchase shares with firms that increase their regular per share dividends. Increases in regular dividends have longer-term consequences by committing the firm to higher future payouts. Thus, this setting provides evidence regarding whether changes in the dividend tax penalty influence firms' use of share repurchases versus increases in regular dividends with ongoing commitments.

The results provide evidence that shareholder taxes influence firms' choice of distribution methods. After controlling for other explanations of firms' payout choices, I find that firms are more likely to distribute funds to shareholders through share repurchases rather than as special dividends or regular dividend increases as the dividend tax penalty increases. For the share repurchase versus special dividend setting, the results indicate that a one standard deviation increase in the dividend tax penalty from approximately 20% to 28% increases the probability of a share repurchase by the mean firm from 97.21 to 98.84%. For the share repurchase vs. regular dividend increase setting, the results indicate that a one standard deviation increase in the dividend tax penalty from approximately 18.5% to 26.5% increases the probability of a share

repurchase by the mean firm from 60.52% to 67.37%. These findings imply that the dividend tax penalty on individual shareholders influences corporate payout choice.

I examine this result further by considering whether the relationship between the dividend tax penalty and corporate payout choice is affected by the types of shareholders who own stock in the firm. Managers that own stock in their companies are likely subject to the maximum dividend tax penalty. I expect that as managerial ownership increases, managers are more likely to influence their firms to make distributions to shareholders through share repurchases as opposed to special dividends or regular dividend increases as the dividend tax penalty increases. My results are consistent with this. In both the share repurchase vs. special dividend setting and the share repurchase vs. regular dividend increase setting, the results suggest that as the dividend tax penalty increases, firms with higher levels of managerial ownership are more likely to repurchase shares.

As a group, institutional shareholders have a lower dividend tax penalty than individual shareholders. As a result, institutional shareholders should be less sensitive to the dividend tax penalty. In both the share repurchase versus special dividend setting and the share repurchase versus regular dividend increase setting, the results suggest that as the dividend tax penalty increases, firms with higher levels of institutional ownership are neither more likely to repurchase shares nor more likely to distribute additional dividends.

I also subdivide the institutional ownership category to consider that some of these shareholders that may be taxable (i.e., mutual funds and investment advisors) or they may be tax-exempt or tax-favored (i.e., banks, insurance companies and other

institutional shareholders). Consistent with a tax incentive effect, these results show that as the dividend tax penalty increases, firms with higher levels of ownership by taxable institutional shareholders are more likely to repurchase shares. In contrast, as the dividend tax penalty increases, firms with higher levels of ownership by tax-exempt or tax favored institutional shareholders are less likely to repurchase shares.

This study contributes to the existing literature by providing the first evidence that firms' payout choices are sensitive to the dividend tax penalty that exists over multiple tax regimes. Further, I provide evidence that the relationship between the dividend tax penalty and corporate payout choice is affected by the types of shareholders who own stock in the firm.

The remainder of this paper proceeds as follows. Section 2 provides background information on firm's choices of alternative payout methods. Section 3 develops the research hypotheses. Section 4 discusses the sample selection procedures and data. Section 5 presents the empirical model and section 6 summarizes the empirical results. Section 7 concludes and provides suggestions for future research.

2. BACKGROUND CORPORATE PAYOUT CHOICE

Firms' payout methods to shareholders may include stock repurchases, special dividends, or regular dividends. The two most common methods firms use to repurchase their own stock include single-price tender offer repurchases and open market repurchase programs.⁴ Shareholders participating in either a tender offer stock repurchase or an open market stock repurchase recognize a capital gain to the extent the sales price exceeds the original purchase price or other tax basis. If an individual shareholder owned the stock for a certain period of time, generally at least 12 months, then the shareholder pays taxes on the capital gain at the long-term capital gain tax rate.

Instead of repurchasing shares, firms may distribute funds to shareholders through special dividends or regular dividends. Regular dividends are dividend distributions that firms make to shareholders on a recurring annual, semiannual or quarterly basis. In contrast, special dividends are usually one-time dividend distributions firms make to shareholders. Shareholders are required to pay taxes on the receipt of both types of dividends at the prevailing dividend tax rate. Typically, individual shareholders pay a higher tax rate on dividend income than on long-term capital gains.

⁴ According to Jagannathan, Stephens & Weisbach (2000) single-price tender offers and open market repurchase programs accounted for 87% of all share repurchase programs from 1985 to 1996. The remaining 13% of share repurchases originated under privately negotiated repurchase programs (9%) and Dutch auction repurchase programs (4%).

3. HYPOTHESIS DEVELOPMENT

3.1. Shareholder Taxes and Payout Choice

Table 1 summarizes the maximum individual tax rates on dividend income, long-term capital gains, and the dividend tax penalty, for the period 1984 to 2003. *Ceteris paribus*, if firms take the dividend tax penalty into consideration in their payout choices, then firms should be more likely to make dividend distributions to shareholders when the dividend tax penalty is relatively lower (1988-1992 & 2003) and more likely to repurchase shares when the dividend tax penalty is relatively higher (1984-1987 & 1993-2002). As a result, the first hypothesis is:

H_{1A} – As the dividend tax penalty increases, firms are more likely to make distributions to shareholders through stock repurchases as opposed to issuing special dividends.

H_{1B} – As the dividend tax penalty increases, firms are more likely to make distributions to shareholders through stock repurchases as opposed to increasing regular dividend payments.

To my knowledge, Lie and Lie (1999) is the only paper to date that considers the relationship between shareholder taxes and corporate payout choice over multiple tax regimes. They find that firms with low dividend yields (as a proxy for high marginal tax rate shareholders) tend to distribute funds to investors through stock repurchases rather than as dividends. However, the use of dividend yield as the test variable provides inconclusive evidence of a relationship between shareholder taxes and corporate payout policy. This finding could simply indicate that firms that do not pay dividends are less likely to use dividend distributions. In addition, contrary to the assumption that high marginal tax rate shareholders own low dividend yielding stocks, Jain (2000) finds that low marginal tax rate shareholders (institutions) are more likely to hold low-dividend

yield stocks and high marginal tax rate investors (individuals) are more likely to invest in stocks with a high dividend yield. To the extent higher dividend yield firms do not have lower tax rate shareholders, the conclusions of this study does not provide evidence on the affect of shareholders taxes on payout choice. My study takes these issues into account by explicitly controlling for the dividend taxpaying status of the firm and conducting tests of ownership structure.

3.2 Ownership Structure

Among identifiable classes of shareholders, firm managers are the most likely to incur the highest dividend tax penalty. As managerial stock ownership increases, these managers may use their influence to initiate share repurchases during high dividend tax penalty regimes, and increase dividend payments during low dividend tax penalty regimes.

Three prior papers have analyzed the relationship between firms' dividend payments and managerial ownership immediately before and after the passage of JGTRRA in 2003, which decreased the top dividend tax rate for individuals from 38.1% to 15%. Nam, Wang and Zhang (2004), Dhaliwal and Kahle (2004), and Blouin, Raedy, and Shackelford (2004) find a positive relationship between managerial ownership and dividend increases after the passage of JGTRRA. However, Blouin, Raedy, and Shackelford (2004) conclude that their finding relation is driven by 17 firms who paid special dividends in 2003. This study builds on prior research by examining this relationship across multiple tax regimes in two different choice settings. Thus, the second hypothesis is:

H_{2A} – firms with higher managerial ownership are more likely to make distributions to shareholders through stock repurchases as opposed to issuing special dividends as the dividend tax penalty increases.

H_{2B} - firms with higher managerial ownership are more likely to make distributions to shareholders through stock repurchases as opposed to increasing regular dividends as the dividend tax penalty increases.

As a group, institutional shareholders should have a lower tax rate on dividends as compared to individual shareholders, because some institutions such as charitable endowments, universities, and pension funds are tax-exempt while other institutions such as banks, insurance companies and other corporations receive the benefits of a dividends received deduction.⁵ That is, the dividend tax penalty is generally lower for institutional shareholders as compared to individual shareholders. This leads to the third hypothesis that states:

H_{3A} – firms with higher institutional ownership are less likely to make distributions to shareholders through stock repurchases as opposed to issuing special dividends as the dividend tax penalty increases.

H_{3B} - firms with higher institutional ownership are less likely to make distributions to shareholders through stock repurchases as opposed to increasing regular dividends as the dividend tax penalty increases.

As a group, institutional shareholders do not face the same tax rate on receipt of dividend income. Strickland (2002) classifies mutual funds and investment advisors (brokers) as potentially taxable institutional investors and other institutional shareholders such as pension funds, universities and charitable foundations as tax-exempt institutional

⁵ Corporations that receive dividends from other taxable, domestic corporations are entitled to the dividends received deduction. If the recipient corporation owns less than 20% of the stock of the paying corporation, then the recipient corporation gets to deduct 70% of the dividend received. If the recipient corporation owns at least 20% but less than 80% of the stock of the paying corporation, then the recipient corporation gets to deduct 80% of the dividend received. If the recipient corporation owns 80% or more of the stock of the paying corporation, then the recipient corporation gets to deduct 100% of the dividend received.

investors. Using these classifications, he finds that taxable institutions have a low preference for dividends, while tax-exempt institutions did not exhibit a preference for either low or high dividend paying stocks.

Based on the classification methodology created by Strickland (2002) and by Grinstein and Michaely (2003), I divide aggregate institutional ownership into two categories. The first category, defined as Bank, Insurance & Other, consists of shares held by banks, insurance companies, pension funds, charitable endowments, universities and other corporations. Shareholders in this group are either tax-exempt shareholders or are tax favored with respect to dividends due to the dividends received deduction. Since these shareholders are the least affected by the dividend tax penalty, I predict that institutional shareholders in this category will be the least likely to persuade firms to increase share repurchases after the dividend tax penalty increases.

The second category, defined as Mfunds&Brokers, consists of shares owned by mutual funds and independent investment advisors (brokers). In this category, while nominal ownership belongs to the individual mutual fund or broker, the underlying shareholders in this group are most likely to be individuals subject to the maximum dividend tax penalty. Since these shareholders are the most affected by the dividend tax penalty, I predict that institutional shareholders in this category are more likely to persuade firms to increase share repurchases after the dividend tax penalty increases. As a result the fourth hypothesis is:

H_{4A} – Firms with higher institutional ownership from banks, insurance companies and other institutional shareholders will be more likely to make distributions to shareholders through dividends as opposed to share repurchases even as the dividend tax penalty increases.

H_{4B} – Firms with higher institutional ownership from mutual funds or investment advisors (brokers) will be more likely to make distributions to shareholders through share repurchases as opposed to increasing regular dividends as the dividend tax penalty increases.

4. SAMPLE AND DATA

Table 2 summarizes the sample selection procedures. Consistent with Dittmar (2000) and Lie (2004), I measure common share repurchases as (*Compustat* item #115), purchases of common and preferred stock minus ($\#56_t - \#56_{t-1}$) the change in the liquidation value of preferred stock. Also consistent with Dittmar (2000) and Lie (2004), common stock repurchases that are less than 1% of the prior year's market values of equity are set equal to zero. This procedure yields an initial sample of 19,891 share repurchases for the period 1984-2003. Following DeAngelo, DeAngelo & Skinner (2000) and Lie (2004), I identify special dividends using the CRSP Distribution Code 1262 or 1272. This procedure identifies an initial sample of 3,056 special dividends between 1984 and 2003. Finally, I measure firms' regular annual split adjusted dividends as (*Compustat* item #26 / #27) Dividends Per Share by Ex-Date divided by the Adjustment Factor (Cumulative) by Ex-Date. I classify a firm as increasing its dividend in a given fiscal year if the split-adjusted per-share dividend increases by more than 1%. This procedure yields an initial sample of 39,644 dividend increases for the period 1984 to 2003.

Dittmar (2000) and Fenn and Liang (2001) find that financial firms have motives to repurchase stock that are different from other firms. As a result, I eliminate all firm year observations classified as financial firms with a one-digit SIC Code equal to six. This procedure eliminates 2,870 share repurchase observations, 809 special dividend observations and 12,935 regular dividend increase observations. I then eliminate 5,452 share repurchase observations, 1,427 special dividend observations and 13,888 regular

dividend increase observations due to insufficient financial statement data to measure the control variables. In an effort to only examine firms that either repurchased shares or distributed dividends, all firm-year observations where the firm both repurchased shares and either issued special dividends or increased regular dividends are eliminated. This restriction reduces the sample by 4,026 share repurchases, 203 special dividends and 4,320 regular dividend increases. Finally, I eliminate all observations that are missing managerial ownership or institutional ownership data. This restriction reduces the sample period to 1992-2003 and it eliminates 5,407 share repurchase observations, 553 special dividend observations and 6,352 regular dividend increase observations. These selection criteria yield the complete ownership sample of 2,136 firm-year share repurchase observations, 64 firm-year special dividend observations and 2,149 firm-year regular dividend increase observations over the period from 1992 to 2003.⁶

To investigate Hypothesis 4, I obtain information regarding the breakdown of institutional share ownership for the years 1989 to 1999. The classification of different types of institutional shareholders after 1999 is inconsistent with the classification system of institutional shareholders before 1999 and, as a result, they are not used in this study. Due to missing data on the institutional ownership breakdown, 769 share repurchase observations, 6 special dividend observations and 414 regular dividend increase

⁶ I obtain information regarding managerial share ownership and managerial stock options for executives employed by S&P 500, S&P 400 MidCap, and S&P SmallCap 600 firms from the *S&P ExecuComp* database. *ExecuComp* reports insider managerial stock ownership and outstanding managerial stock options for the period 1992 to 2003. I obtain information regarding institutional share ownership for the years 1989 to 2002. According to Grinstein & Michaely (2003) only institutions with holdings of \$100 million or more under management must file a form 13F with the SEC. The filings are submitted quarterly and include institutional holdings in every U.S. firm as long as the holdings are more than \$200,000 or 10,000 shares.

observations are excluded from the full sample. This lead to a breakdown of institutional ownership sample of 1,367 share repurchases, 58 special dividends and 1,735 regular dividend increase observations over the period 1992-1999.

Table 3 summarizes the full sample by year and one-digit industry SIC code. Figure 1 records the yearly percentages of the total number of share repurchases, special dividends and increases in regular dividends. In each year stock repurchases and regular dividend increases are larger than special dividends. Analysis of share repurchases by year indicates that beginning in 1993 firms have increasingly utilized share repurchases as a method of distributing cash to shareholders. An explanation for the popularity of share repurchases after 1993 is that the dividend tax penalty substantially increased after 1993 due to changes in tax regimes. The largest increase in share repurchases occurs between 1997 and 1998 when the dividend tax penalty increased from 11.6% to 19.6%. Dittmar (2000) and Kahle (2002) also suggest that from 1992 to 1998 firms repurchased their stock to fund employee stock options. As a result, I control for managerial option ownership in my tests of tax regime effects.

Analysis of special dividend distributions from Table 3 Panel A (Figure 1) reveals that special dividends rapidly decreased after 1992 and rapidly increased between 2002 and 2003. These changes in the frequency of special dividends correspond to time periods immediately after a change in the dividend tax penalty. Observations by year of regular dividend increases do not appear to substantially change over the twenty year sample period. This may be due to the long-term consequences of altering regular dividends. While firms can take advantage of changing shareholder tax rates with one-

time distributions either in the form of share repurchases or special dividends, increasing regular dividends substantially commits a firm to making future distributions regardless of the future dividend tax penalty.

Table 3, Panel B (Figure 2) divides the full sample by industry. Table 3, Panel B (Figure 2) indicates a higher frequency of regular dividend increase observations for SIC Code number 4 (Transportation, Communications, Electric, Gas, And Sanitary Services) and a higher frequency of share repurchases in SIC Code number 7 (Services).

5. EMPIRICAL MODEL

To test the first three hypotheses, I estimate the following binomial logistic regression model that compares the tax and non-tax characteristics of firms that repurchase shares to firms that distribute special dividends or firms that increase regular dividends. My prediction for the sign of each independent variable is above the independent variable in parenthesis.

$$\begin{aligned} \text{Repurchase} = & \alpha_0 + \overset{(+)}{\alpha_1} \text{DivTaxPenalty} + \overset{(+)}{\alpha_2} \text{MgmtOwn} * \text{DivTaxPenalty} + \quad (1) \\ & \overset{(-)}{\alpha_3} \text{Institutional} * \text{DivTaxPenalty} + \overset{(-)}{\alpha_4} \text{StockReturn} + \overset{(-)}{\alpha_5} \text{MarketBook} + \overset{(?)}{\alpha_6} \text{MgmtOwn} + \\ & \overset{(?)}{\alpha_7} \text{Institutional} + \overset{(-/+)}{\alpha_8} \text{CashRatio} + \overset{(-)}{\alpha_9} \text{CapExp} + \overset{(-)}{\alpha_{10}} \text{OpInc} + \overset{(+)}{\alpha_{11}} \text{NonOpInc} + \\ & \overset{(0/+)}{\alpha_{12}} \text{StdDevEarn} + \overset{(0/+)}{\alpha_{13}} \text{AssetSales} + \overset{(+)}{\alpha_{14}} \text{LNSize} + \overset{(?)}{\alpha_{15}} \text{DebtAsset} + \overset{(+)}{\alpha_{16}} \text{MgmtOption} + \overset{(-)}{\alpha_{17}} \text{Div} + \varepsilon \end{aligned}$$

To investigate hypothesis 4A and hypothesis 4B, I replace the variable *Institutional* from equation 1 with the variable *Banks, Insurance & Other*, and *Mutual Funds & Brokers*. In addition I replace the interaction term *Institutional * DivTaxPenalty* from equation 1 with the interaction term *DivTaxPenalty * Bank&Insur&Other* and *DivTaxPenalty * Mfund&Brokers*. My prediction for the sign of each independent variable is above the independent variable in parenthesis.

$$\begin{aligned} \text{Repurchase} = & \alpha_0 + \overset{(+)}{\alpha_1} \text{DivTaxPenalty} + \overset{(+)}{\alpha_2} \text{MgmtOwn} * \text{DivTaxPenalty} + \quad (2) \\ & \overset{(-)}{\alpha_{3A}} \text{DivTaxPenalty} * \text{Bank\&Insur\&Other} + \overset{(+)}{\alpha_{3B}} \text{DivTaxPenalty} * \text{Mfund\&Brokers} + \\ & \overset{(-)}{\alpha_4} \text{StockReturn} + \overset{(-)}{\alpha_5} \text{MarketBook} + \overset{(?)}{\alpha_6} \text{MgmtOwn} + \overset{(-)}{\alpha_{7A}} \text{Banks\&Insurance\&Other} + \\ & \overset{(+)}{\alpha_{7B}} \text{Mutual Funds\&Brokers} + \overset{(-/+)}{\alpha_8} \text{CashRatio} + \overset{(-)}{\alpha_9} \text{CapExp} + \overset{(-)}{\alpha_{10}} \text{OpInc} + \overset{(+)}{\alpha_{11}} \text{NonOpInc} + \\ & \overset{(0/+)}{\alpha_{12}} \text{StdDevEarn} + \overset{(0/+)}{\alpha_{13}} \text{AssetSales} + \overset{(+)}{\alpha_{14}} \text{LNSize} + \overset{(?)}{\alpha_{15}} \text{DebtAsset} + \overset{(+)}{\alpha_{16}} \text{MgmtOption} + \overset{(-)}{\alpha_{17}} \text{Div} + \varepsilon \end{aligned}$$

5.1 Dependent Variable

Actual share repurchases are difficult to measure.⁷ Methods used to estimate repurchases include: using data on announcements of a firm's intention to repurchase stock provided by the Securities Data Company (SDC), changes in monthly shares outstanding reported in CRSP, changes in the balance of a firm's treasury stock as reported by *Compustat*, and the Statement of Cash Flows in *Compustat*. Jagannathan et al. (2000) reports that while *Compustat* typically overstates common share repurchases, it is likely to be the most accurate measure of actual firm common stock repurchase.⁸ As a result, this study uses information from a firm's statement of cash flows as provided by Compustat to estimate a firm's share repurchases. If Purchase of Common and Preferred Stock (#115) minus changes in the Redemption Value of Preferred Stock ($\#56_t - \#56_{t-1}$) is greater than one percent of the prior firm-year observation market value of equity then I classify a firm as repurchasing stock and set the dependent variable equal to one.

If the firm made a special dividend distribution during the year, defined as a dividend distribution with a CRSP distribution code of 1262 or 1272, then I classify the firm as issuing a special dividend and code the dependent variable *Repurchase* as zero. In the alternative, if the firm increased its regular split adjusted dividend ($\#26 / \#27$) in

⁷ See Jagannathan, Stephens & Weisbach (2000) for a detailed discussion of the difficulties of measuring actual share repurchases and the alternative methods of estimating a firm's actual repurchase of common stock.

⁸ Jagannathan, Stephens & Weisbach (2000) report that based on survey information collected by Cook (1997) estimation of a firm's share repurchases using CRSP information reports about 68% of a firm's actual common stock repurchases. In contrast estimating a firm's share repurchases using Compustat information reports about 113% of a firm's actual common stock repurchases. Due to a variety of problems, estimation of share repurchases based on information provided by SDC is the least accurate method.

the current year by more than one percent of the prior year split adjusted dividend then I classify the firm as increasing its regular dividends and code the dependent variable *Repurchase* as zero.

5.2 Tax Incentive Variables

To test the first three hypotheses I use three different tax incentive variables. First, *DivTaxPenalty* equals the difference between the maximum tax rate applied to individual shareholders receiving dividend income and the maximum tax rate applied to individual shareholders recognizing long-term capital gains divided by one minus the maximum tax rate applied to individual shareholders recognizing long-term capital gains.⁹ The size of the dividend tax penalty for each year is summarized in Table 1. The coefficient on *DivTaxPenalty* should be positive if a firm is more likely to repurchase shares instead of distributing special dividends (hypothesis 1A) or increasing regular dividends (hypothesis 1B) if the shareholders face a higher tax penalty. Second, the interaction of *DivTaxPenalty* with *MgmtOwn*, measures the relationship between a firm's managerial ownership and its probability of repurchasing stock, as opposed to distributing dividends, as the dividend tax penalty increases. Third, the interaction of *DivTaxPenalty* with *Institutional*, measures the relationship between a firm's institutional ownership and its probability of repurchasing stock as opposed to distributing dividends as the dividend tax penalty increases.

⁹ The formula used to calculate the dividend tax penalty is $(t_d - t_{cg}) / t_{cg}$. The variable t_d is the maximum tax rate for individual shareholders on dividend income and t_{cg} is the maximum tax rate for individual shareholders on recognition of capital gains. This is the same formula used to calculate the dividend tax penalty in Dhaliwal, Krull, Li and Moser (2004).

To test hypothesis 4A and 4B I subdivide the institutional shareholder variable into two categories. The interaction of *DivTaxPenalty* with *Banks Insurance & Other*, measures the relationship between a firm's institutional owners classified as banks, insurance companies and other institutional shareholders and its probability of repurchasing stock as the dividend tax penalty increases. The interaction of *DivTaxPenalty* with *Mutual Fund & Brokers*, measures the relationship between a firm's institutional owners classified as mutual funds or investment advisors (brokers) and its probability of repurchasing stock as the dividend tax penalty increases.

5.3 Control Variables

5.3.1 Stock Valuation

Prior studies (Varmaelen (1981), Dann (1981) and Stephens & Weisbach (1998)) indicate that firms repurchase their own stock to signal undervaluation to the market. Similar to these studies, I use *StockReturn*, defined as the firm's prior year stock return as reported by CRSP, to proxy for the undervaluation of a firm's stock. I also include prior year *MarketBook*, defined as the firm's market value of equity (#25 * #199) plus book value of total debt (#9 + #34) plus book value of preferred stock (#10) divided by book value of total assets (#6) as a second measure of undervaluation.

5.3.2 Ownership Structure

MgmtOwn is defined as the number of shares owned by firm management as reported by S&P ExecuComp divided by the number of shares outstanding at the end of the prior year as reported by *Compustat*. As a consequence of contradictory theory and inconsistent results from prior empirical research, I am unable to ex ante predict a

relationship between *MgmtOwn* and firm payout choice.¹⁰ *Institutional* equals the number of shares owned by institutional shareholders divided by the number of shares outstanding at the end of the prior year. I also subdivide *Institutional* into two categories. The first category, *Banks Insurance & Other*, equals the number of shares owned by banks and insurance companies and other institutional shareholders divided by the number of shares outstanding at the end of the prior year. The second category, *Mutual Funds & Brokers* equals the number of shares owned by mutual funds and investment advisors (brokers) divided by the number of shares outstanding at the end of the prior year.

5.3.3 Excess Capital

Stephens and Weisbach (1999) and Dittmar (2000) find that firms' stock repurchases are positively related to a their relative cash balance. I use *CashRatio*, defined as the firm's prior year cash balance (#1) divided by prior year assets (#6), to control for the firm's cash balance. Lie (2004) suggests that as a firm's capital expenditures increase, a firm will be more likely to increase dividends as opposed to repurchase shares. *CapExp*, measured as the cash value of investments the firm made in year_{t-1} (#128) scaled by total assets in year_{t-2} (#6), controls for the firm's capital expenditures.

5.3.4 Earnings Sustainability

Jagannathan et al. (2000) and Guay and Harford (2000) find evidence that dividends are paid out of cash flows that are likely to be permanent, while stock

¹⁰ See Rozeff (1982), White (1996), Fenn & Liang (2001) and Nam, Wang & Zhang (2004)

repurchases are paid out of cash flows that are not likely to be sustained indefinitely. Based on the above papers, I control for earnings sustainability by using *OpInc*, *NonOpInc*, *StdDevEarn* and *AssetSale*. *OpInc*, equals prior year operating income divided by prior year total assets (#13/#6). *NonOpInc* equals prior year non-operating income divided by prior year total assets (#61/#6). *StdDevEarn* equals the standard deviation of operating income over the previous five years. For the share repurchases and special dividend logistic regression, I anticipate an insignificant coefficient on *StdDevEarn*, because both share repurchases and special dividends are one-time distributions making volatility of future earnings irrelevant. For the share repurchases and regular dividend increase logistic regression, I anticipate a positive coefficient on *StdDevEarn*, indicating that as the volatility of a firm's operating income increases, the firm will be more likely to undertake a share repurchase. *AssetSales* equals the value of assets the firm sold in year_{t-1} (#107) scaled by the firms total assets in year_{t-2} (#6). For the share repurchases versus special dividends logistic regression, I anticipate an insignificant coefficient on *AssetSales*. For the share repurchase versus increase in regular dividend logistic regression model, I predict a positive coefficient *AssetSales*, because cash flows generated from asset sales are likely not sustainable into the future.

5.3.5 Other Control Variables

LNSize, defined as the natural log of the firm's prior year market value of equity (#25 * #199) controls for firm size. Consistent with the findings from Lie (2004), I expect that in the share repurchase vs. special dividend model larger firms will distribute funds through share repurchases, and in the share repurchase vs. regular dividend increase

model, larger firms will distribute funds through regular dividend increases. Previous studies have found mixed results when they examined the relationship of a firm's debt to asset ratio with a firm's payout policy. *DebtAsset* is defined as the firm's prior year total debt (#9 + #34) divided by the firm's prior year assets (#6).

Research from Dittmar (2000) and Kahle (2002) establishes a positive association between outstanding managerial options and share repurchases. *MgmtOption* is defined as the number of managerial options outstanding at the end of the year divided by the total number of shares outstanding at the end of the year. *DivPayStatus*, equals one if the firm paid a dividend in the prior year and zero if the firm did not make a dividend distribution in the prior year.

6. EMPIRICAL RESULTS

6.1 Descriptive Statistics

Table 4 reports the tests of differences in means across the distribution subsamples. Panel A compares the means of the independent variables for the complete ownership sample while Panel B compares the means of the independent variables for the breakdown of institutional ownership sample. In both samples, the dividend tax penalty is significantly larger for stock repurchase firms than for either the special dividend paying firms or the regular dividend increase firms. This univariate relationship is consistent with Hypothesis 1. That is, firms are more likely to undertake stock repurchases when the dividend tax penalty is relatively higher and are more likely to distribute dividends when the dividend tax penalty is relatively lower.

Table 5, panel A summarizes Pearson correlation coefficients for the independent variables from the full sample of share repurchases and the full sample of special dividend distributions. Table 5, panel B summarizes Pearson correlation coefficients for the independent variables from the full sample of share repurchases and the full sample of firms that increased their regular dividends. Both correlation tables show a significant negative relationship between size (log of market value of equity) and managerial ownership. In contrast, both tables show a positive relationship between size and institutional ownership. Overall multicollinearity is not a problem with the data.

6.2 Logistic Regression Results

Table 6 reports the results of estimating equation 1. In model 1, the dependent variable equals one for firms that repurchase shares and equals zero for firms that issue

special dividends. In model 2, the dependent variable equals one for firms that repurchase shares and equals zero for firms that increase regular dividends. For both models, a positive coefficient on an independent variable suggests that a firm is more likely to repurchase shares. Model 1 uses the complete ownership sample of 2,136 share repurchase observations and 64 special dividend observations. Model 2 uses the complete ownership sample of 2,136 share repurchase observations and 2,149 regular dividend increase observations.

6.2.1. Tax Effect

The coefficient on *DivTaxPenalty* is significantly positive in both models on Table 6, as predicted in Hypothesis 1A and Hypothesis 1B. As the dividend tax penalty increases, firms are more likely to repurchase shares than to distribute special dividends (Model 1) or to increase regular dividends (Model 2). These results are consistent with the view that as the dividend tax penalty increases, dividends are more costly to shareholders than are capital gains from repurchases.

The coefficient on the interaction term *MgmtOwn * DivTaxPenalty* is significant and positive in both models on Table 6, as predicted in Hypothesis 2A and Hypothesis 2B. This result indicates that, firms with a higher proportion of managerial ownership are more likely to make distributions to shareholders through stock repurchases as opposed to issuing special dividends (Hypothesis 2A) or increasing regular dividends (Hypothesis 2B) as the dividend tax penalty increases. The coefficient on the interaction term *Institutional * DivTaxPenalty* is not significantly different from zero in either Model 1 or Model 2, contrary to the predictions from Hypothesis 3A and 3B. The insignificant result

may be due to the vastly different tax consequences for different types of institutional shareholders.

6.2.2. Controls

Table 6 also shows the effect of controlling for nontax reasons that explain firms' choices among repurchases, special dividends, and increases in regular dividends. In the stock valuation category, the coefficient on *StockReturn* is negative and significant in both models, supporting Stephens and Weisbach's (1998) conclusion that firms increase their own share repurchases based on their perceived degree of undervaluation. The alternative proxy for the stock undervaluation category is the variable *MarketBook*. Firms with lower market to book ratios are more likely to be perceived as undervalued and are therefore more likely to use share repurchases. Consistent with ex ante predictions, the coefficient on *MarketBook* is negative and significant in model 2. However, contrary with ex ante predictions, the coefficient on *MarketBook* is not significant in model 1. The insignificant result in model 1 may be due to the firm's market to book ratio also proxying for potential investment opportunities.

The coefficient on *MgmtOwn* is negative and significant in both model 1 and model 2, indicating that as managerial ownership increases firms are more likely to issue special dividends or increase regular dividends as opposed to repurchasing shares.¹¹ The coefficient on *Institutional* is positive and significant in model 1, but insignificant in

¹¹ Further analysis indicates that the relationship between a firm's managerial ownership and a firm's corporate payout policy follows a non-linear convex pattern. The coefficient on *MgmtOwn* is negative, while the coefficient on $(\text{MgmtOwn})^2$ is positive. These results indicate that firms with little managerial ownership or firms with significant managerial ownership prefer share repurchases.

model 2. This result indicates that as institutional ownership increases firms are more likely to repurchase shares as opposed to issuing special dividends.

The coefficient on *CashRatio* is negative in model 1 but positive in model 2. This result provides contradictory evidence for the excess capital category and suggests that firm's with higher cash balances prefer distributing funds to shareholders through special dividends as opposed to share repurchases and prefer to distribute funds to shareholders through share repurchases as opposed to increasing regular dividends. *CapExp* is negative and significant in both model 1 and model 2, indicating that firms are more likely to distribute dividends as opposed to repurchasing shares as their capital expenditures increase.

OpInc is negative and significant in both Model 1 and Model 2. This is consistent with prior findings that operating income is generally paid out as dividends. Furthermore, *NonOpInc* is positive and significant in both Model 1 and in Model 2. This is consistent with previous research findings that non-operating income is generally paid out to shareholders through share repurchases. The coefficient on *StdDevEarn* and *AssetSale* is positive and significant only in model 2. A firm that increases dividends generally commits themselves to future distributions. If a firm's earnings are volatile, the firm may be reluctant to make that future commitment. Therefore, a positive coefficient for Model 2 on *StdDevEarn* and *AssetSale* is consistent with prior theory. Since neither share repurchases nor special dividends commit firms to future payouts, it appears that the volatility of a firm's operating income or the cash generated from asset sales does not

influence the choice between distributing cash through share repurchases or special dividends.

In the other control variable category, *LNSize* and *DebtAsset* generally have insignificant effects on corporate payout choice. Consistent with the results from Kahle (2002) the variable *MgmtOption* is positive and significant in both model 1 and model 2. This result indicates that as the number of employee stock options outstanding increases, firms are more likely to repurchase stock than to distribute dividends. Consistent with Lie (2004), the coefficient on *DivPayStatus* is negative indicating that if firms paid a dividend in the prior year they are more likely to pay special dividends in the current year.¹²

6.3 Logistic Results for Hypothesis 4A and 4B

Table 7 reports the results of estimating equation 2. In model 1, the dependent variable equals one for firms that repurchase shares and equals zero for firms that issue special dividends. In model 2, the dependent variable equals one for firms that repurchase shares and equals zero for firms that increase regular dividends. For both models, a positive coefficient indicates that a firm is more likely to repurchase shares. Model 1 uses the breakdown in institutional ownership sample of 1,367 share repurchase observations and 58 special dividend observations. Model 2 uses the breakdown in ownership sample of 1,367 share repurchase observations and 1,735 regular dividend increase observations.

¹² Unreported tests reveal that in both settings (the share repurchase versus special dividend setting and the share repurchase versus regular dividend increase setting) controlling for the one digit SIC code does not affect the tax coefficient results.

6.3.1. Tax Effect

The interaction term *DivTaxPenalty * BankInsur&Other* is negative and significant for both model 1 and model 2, consistent with Hypothesis 4A. Thus, firms with a higher proportion of institutional shareholders classified as banks, insurance companies and other institutional shareholders are less likely to make distributions to shareholders through stock repurchase as the dividend tax penalty increases. The coefficient on the interaction of *DivTaxPenalty * Mfund&Brokers* is significantly positive in model 2, as predicted by Hypothesis 4B. Firms with a higher proportion of institutional shareholders classified as mutual funds or investment advisors (brokers) are more likely to make distributions to shareholders through stock repurchases as opposed to regular dividend increases as the dividend tax penalty increases.

6.3.2. Ownership Structure Results

Contrary to prior expectations, the coefficient on *BanksInsur&Other* is positive and significant in both model 1 and model 2. This result indicates that as ownership by institutional shareholders classified as banks, insurance companies and other institutional shareholders increases, firms will be more likely to repurchase shares than to increase dividends. The coefficient on *Mutual Funds & Brokers* is positive and significant in model 1 but negative and significant in model 2. This result indicates that an increase in institutional shareholders classified as either mutual funds or investment advisors (brokers) increases the probability that firms will repurchase shares in the share repurchase vs. special dividend setting, but increases regular dividends in the share repurchase vs. regular dividend increase setting.

7. CONCLUSIONS

This study investigates whether the difference in individual shareholder tax rates between dividend income and capital gain (the dividend tax penalty) affects a firm's choice between distributing funds to shareholders through dividends or share repurchases. The results suggest that the dividend tax penalty affects firms' corporate payout policy. More specifically, as the dividend tax penalty increases firms are more likely to repurchase shares than to issue special dividends or increase regular dividends.

Further, the results suggest that alternative classes of shareholders affect corporate payout choice as the dividend tax penalty increases. As firms' managerial ownership increases and the dividend tax penalty increases, firms are more likely to repurchase shares as opposed to distributing dividends. This finding implies that the impact of the dividend tax penalty is stronger for firms with higher managerial ownership. In contrast, as aggregate institutional ownership increases and the dividend tax penalty increases firms are neither more likely to distribute funds to shareholders through share repurchases or dividends. This may be due to the different tax consequences facing specific institutional shareholders.

Subdividing institutional shareholders into a taxable group and a nontaxable group produce results consistent with theory. As taxable institutional shareholder ownership (mutual funds and brokers) increases and the dividend tax penalty increases firms are more likely to repurchase shares as opposed to distributing dividends. In contrast, as nontaxable or tax favored institutional shareholder ownership (banks, insurance companies and other institutional shareholders) increases and the dividend tax

penalty increase firms are less likely to repurchase shares. This finding suggests that the impact of the dividend tax penalty is weaker for firms with high non-taxable institutional ownership as compared to other shareholder groups. Collectively, the findings indicate that shareholder taxes significantly affect corporate payout choice.

APPENDIX A: VARIABLE DEFINITIONS

Dependent Variable Definition

For the stock repurchase vs. special dividend case, the dependant variable equals one if the Purchase of Common and Preferred Stock (#115) minus changes in the Redemption Value of Preferred Stock ($\#56_t - \#56_{t-1}$) is greater than one percent of the prior firm-year observation market value of equity. In the stock repurchase vs. special dividend case, the dependent variable equals zero if the firm issued a dividend during the year with a CRSP Distribution Code of 1262 or 1272.

For the stock repurchase vs. increase in regular dividend case, the dependant variable equals one if the Purchase of Common and Preferred Stock (#115) minus changes in the Redemption Value of Preferred Stock ($\#56_t - \#56_{t-1}$) is greater than one percent of the prior firm-year observation market value of equity. In the stock repurchase vs. increase in regular dividend case, the dependent variable is equal to zero if the firm increased its split adjusted regular dividends (#26/#27) by more than one percent of its prior year regular annual dividends per share.

Explanatory Variables

Tax Incentives

DivTaxPenalty – Measures the difference in the highest marginal tax rate for individual shareholders who recognize dividend income and individual shareholders who recognize long-term capital gains. See Table 1 for summary of the dividend tax penalty by year.

DivTaxPenalty * MgmtOwn – Measures the interaction between the dividend tax penalty that exists in the year of the observation and the percentage of a firm's outstanding stock owned by management.

DivTaxPenalty * Institutional – Measures the interaction between the dividend tax penalty that exists in the year of the observation and the percentage of stock owned by institutional shareholders as reported by Compact Disclosure.

DivTaxPenalty * Bank Insur & Other – Measures the interaction between the dividend tax penalty that exists in the year of the observation and the percentage of stock owned by institutional shareholders classified as banks or insurance companies.

DivTaxPenalty * MFund&Broker – Measures the interaction between the dividend tax penalty that exists in the year of the observation and the percentage of stock owned by institutional shareholders classified as Mutual Funds or Brokers (Investment Advisors).

Stock Valuation

StockReturn – Unadjusted return on the firm's stock in the prior year as reported by CRSP.

MarketBook – Prior year market value of equity plus prior year book value of debt plus prior year book value of preferred stock divided by prior year book value of assets $\{[(\#199 * \#25) + (\#9 + \#34) + \#10] / \#6\}$.

Ownership Structure

MgmtOwn – Number of shares owned by firm management as reported by S&P ExecuComp divided by number of shares outstanding at the end of the prior year as reported by *Compustat*.

Institutional – Percentage of stock owned by institutional shareholders as reported by Compact Disclosure.

Bank Insurance & Other – Percentage of stock owned by institutional shareholders that are classified as banks, insurance companies or other institutional shareholders.

Mutual Funds & Brokers - Percentage of stock owned by institutional shareholders that are classified as either mutual funds or independent investment advisors (brokers).

Excess Capital Hypothesis

CashAsset – Prior year Cash divided by prior year assets ($\#1 / \#6$).

CapExp – Prior year Capital Expenditures divided by total assets from 2 years ago ($\#128 / \#6$).

Earnings Sustainability

OpInc – Prior period income before extraordinary items divided by prior period total assets ($\#18 / \#6$).

NonOpInc – Prior period nonoperating income divided by prior period total assets ($\#61 / \#6$).

StdDevEarn – Standard deviation of income before extraordinary items between year_{t-4} and year_t.

AssetSale – Prior year Sale of Property, Plant and Equipment divided by total assets from 2 years ago ($\#107 / \#6$).

Other

LNSize – Log of previous year market value of equity [$\text{Log}(\#199 * \#25)$].

DebtAsset – Prior year total debt divided by prior year assets $(\#9 + \#34) / \#6$.

MgmtOption – Managerial options outstanding at the end of the year as reported by *S&P ExecuComp* database divided by total shares outstanding (#199) in the prior year as reported by *Compustat*.

DivPayStatus – Equals one if the firm paid a dividend in the prior year.

APPENDIX B: TABLES & FIGURES

TABLE 1

Summary of Tax Rates for Individual Investors on Dividend Income vs. Long-Term Capital Gains by Year

Year	Individual Dividend Tax Rate (t_d) ^a	Individual Long-Term Capital Gain Tax Rate (t_{cg}) ^b	Dividend Tax Penalty ($t_d - t_{cg}$) / ($1 - t_{cg}$) ^c
1984	50.00%	20.00%	0.375
1985	50.00%	20.00%	0.375
1986	50.00%	20.00%	0.375
1987	38.50%	28.00%	0.146
1988	28.00%	28.00%	0.000
1989	28.00%	28.00%	0.000
1990	28.00%	28.00%	0.000
1991	31.00%	28.00%	0.042
1992	31.00%	28.00%	0.042
1993	39.60%	28.00%	0.161
1994	39.60%	28.00%	0.161
1995	39.60%	28.00%	0.161
1996	39.60%	28.00%	0.161
1997	39.60%	20.00%	0.245
1998	39.60%	20.00%	0.245
1999	39.60%	20.00%	0.245
2000	39.60%	20.00%	0.245
2001	39.10%	20.00%	0.239
2002	38.60%	20.00%	0.233
2003	15.00%	15.00%	0.000

^a This represents the highest marginal tax rate on dividend income for individual taxpayers during the applicable year.

^b This represents the highest marginal tax rate on long-term capital gains for individual taxpayers during the applicable year

^c The dividend tax penalty is defined as the difference between the highest marginal tax rate on dividend income and the highest marginal tax rate on long-term capital gain income divided by one minus the highest marginal tax rate on long-term capital gain.

TABLE 2
Sample Selection

	Firm-Year Observations		
	Share Repurchases	Special Dividends	Regular Dividend Increases
Initial Sample	19,891 ^a	3,056 ^b	39,644 ^c
Less: Financial Firms ^d	-2,870	-809	-12,935
Less: Firms Missing Compustat Data	-5,452	-1,427	-13,888
Less: Multiple Distributions	-4,026	-203	-4,320
Less: Firms Missing Managerial or Institutional Ownership Data ^e	-5,407	-553	-6,352
Complete Ownership Sample	2,136	64	2,149
Complete Ownership Sample	2,136	64	2,149
Less Firms Missing Breakdown Institutional Ownership ^f	-769	-6	-414
Breakdown Institutional Ownership Sample	1,367	58	1,735

^a The initial sample of share repurchases consists of all firm-year observations between 1984-2003 in which the Purchase of Common and Preferred Stock (Compustat Item #115) minus changes in the Redemption Value of Preferred Stock ($\#56_t - \#56_{t-1}$) is greater than 1 percent of the prior firm-year observation market value of equity.

^b The initial sample of special dividends consists of all dividends reported on the CRSP database with a distribution code of 1262 or a distribution code of 1272 for the period 1984-2003.

^c The initial sample of dividend increases consists of all firm year observations between 1984-2003 in which the firm increased its split-adjusted regular annual dividend ($\#26 / \#27$) by more than 1 percent.

^d Financial Firms are defined as observations with SIC Code=6.

^e Managerial ownership data and managerial option data is collected from the ExecuComp database for firms in the S&P 500, S&P 400 MidCap, and S&P SmallCap 600 firms for the period 1992-2003. Total Institutional Ownership is collected from 1989-2003.

^f Breakdown of Institutional Ownership data is collected from 1992 – 1999.

TABLE 3
Sample statistics by year and one-digit SIC Industry Code for Stock Repurchases, Special Dividends, & Regular Dividend Increases for the period 1992-2003

Panel A: Firm-year Observations By Year

	Stock		Special		Dividend	
	Repurchases	Percent	Dividends	Percent	Increases	Percent
1992	48	2.2%	13	20.3%	203	9.4%
1993	57	2.7%	10	15.6%	217	10.1%
1994	67	3.1%	9	14.1%	215	10.0%
1995	87	4.1%	6	9.4%	241	11.2%
1996	131	6.1%	4	6.3%	205	9.5%
1997	177	8.3%	1	1.6%	174	8.1%
1998	264	12.4%	3	4.7%	163	7.6%
1999	325	15.2%	3	4.7%	134	6.2%
2000	327	15.3%	0	0.0%	110	5.1%
2001	208	9.7%	3	4.7%	158	7.4%
2002	234	11.0%	3	4.7%	146	6.8%
2003	211	9.9%	9	14.1%	183	8.5%
Total	2,136		64		2,149	

Panel B: Observations By One-Digit SIC Industry Code

	Stock		Special		Dividend	
	Repurchases	Percent	Dividends	Percent	Increases	Percent
SIC 0	2	0.1%	0	0.0%	7	0.3%
SIC 1	91	4.3%	1	1.6%	95	4.4%
SIC 2	396	18.5%	18	28.1%	521	24.2%
SIC 3	682	31.9%	29	45.3%	648	30.2%
SIC 4	167	7.8%	5	7.8%	448	20.8%
SIC 5	319	14.9%	9	14.1%	286	13.3%
SIC 7	393	18.4%	2	3.1%	101	4.7%
SIC 8	77	3.6%	0	0.0%	17	0.8%
SIC 9	9	0.4%	0	0.0%	26	1.2%
Total	2,136		64		2,149	

TABLE 3 - *Continued*

^a Share repurchases consists of all firm-year observations between 1992-2003 in which the Purchase of Common and Preferred Stock (Compustat Item #115) minus changes in the Redemption Value of Preferred Stock ($\#56_t - \#56_{t-1}$) is greater than 1 percent of the prior firm-year observation market value of equity. To qualify for the sample of 2,136 firm-year stock repurchases, the firm must not have issued special dividends or increased regular dividends in the year of the observation. Furthermore, the firm must not have been a Financial Firm (SIC = 6). Finally, for each Stock Repurchase firm-year observation all of the necessary Compustat, CRSP managerial ownership and institutional ownership information must be available.

^b A special dividend observation consists of all dividends reported on CRSP with a distribution code of 1262 or a distribution code of 1272 for the period 1992 -2003. To qualify for the sample of 64 firm-year special dividend observations, the firm must not have also repurchased stock or increased regular dividends during the year. Furthermore, the firm must not have been a Financial Firm (SIC = 6). Finally, for each special dividend firm-year observation all of the necessary Compustat, CRSP, managerial ownership and institutional ownership information must be available.

^c Regular dividend increase observations consist of all firm year observations in which the firm increased its split adjusted regular dividends ($\#26/\#27$) by more than 1% of its prior year regular annual dividends per share. To qualify for the sample of 2,149 firm-year regular dividend observations, the firm must not have repurchased stock or issued special dividends the year of the observation. Furthermore, the firm must not have been a Financial Firm (SIC = 6). Finally, for each regular dividend increase firm-year observation all of the necessary Compustat, CRSP, managerial ownership and institutional ownership information must be available.

FIGURE 1
Percentage of Repurchases, Special & Regular Dividends By Year

—◆— Percentage Per Year of 2,136 Share Repurchase Observations
—■— Percentage Per Year of 64 Special Dividend Observations
—▲— Percentage Per Year of 2,149 Regular Dividend Increase Observations

FIGURE 2
Percentage of Repurchases, Special & Regular Dividends by SIC

TABLE 4

Tests of differences in means for the complete ownership sample and breakdown sample
 Panel A – t-stats of differences in means (complete ownership sample 1992-2002)

Variable	Stock Repurchase Mean n = 2,136	Special Dividend Mean n = 64	Dividend Increase Mean n = 2,149	T-Statistic Repurchases minus Special	T-Statistic Repurchase minus Regular Increase
Tax Incentives					
DivTaxPenalty	0.201	0.130	0.169	6.65 ***	13.17 ***
DivTaxPenalty * MgmtOwn	1.057	1.291	0.796	-1.03	4.40 ***
DivTaxPenalty * Institutional	11.924	5.870	8.819	13.93 ***	17.26 ***
Stock Valuation					
StockReturn	0.153	0.237	0.238	-1.38	-5.62 ***
MarketBook	1.883	1.993	1.804	-0.49	1.69 *
Ownership Structure					
MgmtOwn	5.138	10.381	4.788	-3.21 ***	1.19
Institutional	59.606	37.460	51.743	12.58 ***	14.01 ***
Excess Capital					
CashAsset	0.160	0.157	0.074	0.14	18.92 ***
CapExp	0.083	0.072	0.086	-0.16	7.67 ***
Earnings Sustainability					
OpInc	0.069	0.080	0.071	-1.34	-2.79 ***
NonOpInc	0.009	0.002	0.007	1.76 *	4.52 ***
StdDevEarn	0.051	0.044	0.029	1.42	19.79 ***
AssetSale	0.005	0.006	0.004	-0.39	1.64 *
Other					
LNSize	6.969	6.547	7.425	2.10 **	-10.00 ***
DebtAsset	0.198	0.189	0.239	0.40	-8.05 ***
MgmtOption	3.508	0.965	1.528	13.54 ***	19.48 ***
DivPayStatus	0.395	0.905	0.966	-13.37 ***	-50.53 ***

Panel B – t-stats differences in means (breakdown institutional ownership 1992-1999)

Variable	Stock Repurchase Mean n = 1,367	Special Dividend Mean n = 58	Dividend Increase Mean n = 1,735	T-Statistic Repurchases minus Special	T-Statistic Repurchase minus Regular Increase
Tax Incentives					
DivTaxPenalty	0.179	0.120	0.153	5.50 ***	8.59 ***
DivTaxPenalty * MgmtOwn	0.999	1.188	0.780	-0.82	3.25 ***
DivTaxPenalty * Banks, Insurance & Other	3.043	2.103	3.065	3.47 ***	-0.26
DivTaxPenalty * Mfund&Brokers	7.135	2.221	4.657	17.59 ***	15.60 ***
Stock Valuation					
StockReturn	0.124	0.221	0.253	-2.14 **	-8.21 ***
MarketBook	1.804	2.098	1.738	-1.23	1.31
Ownership Structure					
MgmtOwn	5.312	10.458	5.070	-2.92 ***	0.24
Banks, Insurance & Other	23.610	20.401	23.465	1.74 *	-11.28 ***
Mutual Funds & Brokers	34.205	16.345	27.181	13.51 ***	11.42 ***
Excess Capital					
CashAsset	0.163	0.156	0.075	0.35	16.08 ***
CapExp	0.074	0.074	0.090	0.03	-6.17 ***
Earnings Sustainability					
OpInc	0.062	0.082	0.071	-1.61	-3.38 ***
NonOpInc	0.009	0.003	0.007	1.50	6.04 ***
StdDevEarn	0.049	0.043	0.029	1.19	15.37 ***
AssetSale	0.005	0.006	0.004	-0.35	1.71 *
Other					
LNSize	6.870	6.580	7.301	1.43	-8.25 ***
DebtAsset	0.189	0.181	0.231	0.35	-6.88 ***
MgmtOption	3.432	0.892	1.431	12.75 ***	21.08 ***
DivPayStatus	0.407	0.914	0.964	-12.84 ***	-39.77 ***

***, **, *, indicates significance at the 0.01, 0.05, 0.10 level with a two-tailed t test. A test of differences in medians provides similar results.

TABLE 5

Panel A: Pearson Correlation Coefficients for Share Repurchases and Special Dividends ^a

	DivTaxPenalty	DivTaxPenalty * MgmtOwn	DivTaxPenalty * Institutional	Stock Return	Market Book	MgmtOwn	Institutional	Cash Asset	CapExp	OpInc	NonOpInc	StdDevEarn	Asset Sale	LnSize	Debt Asset	Mgmt Option	Div Pay Status
DivTaxPenalty	1.000																
DivTaxPenalty *																	
MgmtOwn	0.183	1.000															
DivTaxPenalty *																	
Institutional	0.559	-0.087	1.000														
StockReturn	0.041	-0.010	-0.007	1.000													
MarketBook	0.048	0.012	0.167	0.213	1.000												
MgmtOwn	0.019	0.929	-0.205	-0.023	0.000	1.000											
Institutional	0.042	-0.326	0.751	-0.066	0.171	-0.348	1.000										
CashAsset	-0.069	0.035	-0.095	0.008	0.251	0.051	-0.057	1.000									
CapExp	0.036	0.054	0.046	0.041	0.053	0.043	0.027	-0.089	1.000								
OpInc	0.008	0.016	0.109	0.151	0.097	0.000	0.122	-0.060	-0.035	1.000							
NonOpInc	0.002	-0.029	-0.060	-0.007	0.042	-0.027	-0.086	0.232	0.004	0.084	1.000						
StdDevEarn	0.001	-0.014	-0.159	0.008	0.129	-0.026	-0.223	0.270	0.027	-0.271	0.075	1.000					
AssetSale	0.034	0.069	-0.011	-0.007	-0.038	0.062	-0.021	-0.079	0.158	-0.036	0.019	0.001	1.000				
LnSize	0.068	-0.148	0.518	0.080	0.322	-0.173	0.659	-0.051	0.005	0.175	-0.072	-0.246	-0.052	1.000			
DebtAsset	0.024	-0.041	0.049	-0.006	-0.112	-0.049	0.028	-0.465	0.053	-0.126	-0.093	-0.148	0.117	0.034	1.000		
MgmtOption	0.035	0.028	0.029	0.002	-0.032	0.028	0.042	0.075	-0.021	-0.027	0.031	0.080	-0.009	-0.247	-0.015	1.000	
DivPay Status	0.038	-0.028	0.066	-0.017	-0.084	-0.029	0.064	-0.197	-0.028	0.091	-0.018	-0.218	0.000	0.244	0.048	-0.202	1.000

Bolded Values indicate significance at $p < .01$.

^a Includes the complete ownership sample of 2,136 share repurchases and the complete sample of 64 special dividends per table 2. See Appendix A for variable definitions

TABLE 5 – Continued

Panel B: Pearson Correlation Coefficients for Share Repurchases & Increase in Regular Dividends^b

	DivTaxPenalty	DivTaxPenalty * MgmtOwn	DivTaxPenalty * Institutional	Stock Return	Market Book	MgmtOwn	Institutional	Cash Asset	CapExp	OpInc	NonOpInc	StdDevEarn	Asset Sale	LnSize	Debt Asset	Mgmt Option	Div Pay Status
DivTaxPenalty	1.000																
DivTaxPenalty *																	
MgmtOwn	0.191	1.000															
DivTaxPenalty *																	
Institutional	0.590	-0.037	1.000														
StockReturn	0.054	0.007	-0.010	1.000													
MarketBook	0.033	0.048	0.140	0.203	1.000												
MgmtOwn	0.014	0.912	-0.164	0.016	0.046	1.000											
Institutional	-0.031	-0.267	0.671	-0.068	0.142	-0.293	1.000										
CashAsset	-0.018	0.099	-0.039	-0.003	0.254	0.109	-0.050	1.000									
CapExp	0.032	0.064	0.004	0.069	0.072	0.066	-0.012	-0.096	1.000								
OpInc	0.005	0.051	0.077	0.163	0.194	0.050	0.089	-0.027	0.007	1.000							
NonOpInc	0.017	-0.006	-0.025	-0.007	0.047	-0.005	-0.063	0.247	0.001	0.093	1.000						
StdDevEarn	0.036	0.031	-0.080	0.002	0.107	0.023	-0.167	0.317	0.017	-0.238	0.087	1.000					
AssetSale	0.040	0.078	0.003	-0.013	-0.041	0.074	-0.017	-0.060	0.171	-0.050	0.016	0.021	1.000				
LnSize	-0.021	-0.181	0.401	0.060	0.293	-0.209	0.597	-0.121	0.022	0.169	-0.058	-0.293	-0.057	1.000			
DebtAsset	-0.005	-0.104	0.001	-0.013	-0.175	-0.122	0.011	-0.469	0.038	-0.173	-0.105	-0.180	0.085	0.078	1.000		
MgmtOption	0.092	0.058	0.104	-0.009	-0.024	0.045	0.100	0.138	-0.045	-0.025	0.040	0.160	0.002	-0.265	-0.050	1.000	
DivPay Status	0.004	-0.073	0.009	0.046	-0.022	-0.060	0.050	-0.283	0.039	0.162	-0.048	-0.337	-0.031	0.344	0.086	-0.310	1.000

Bolded Values indicate significance at $p < .01$.

^b Includes the complete sample of 2,136 share repurchases and the complete ownership sample of 2,149 regular dividend increases per table 2. See Appendix A for variable definitions.

TABLE 6
Logistic Regression Results – Hypothesis 1A & 1B, 2A & 2B, 3A & 3B
Model 1 - Dependent Variable = 1 for a Stock Repurchase = 0 Special Dividend
Model 2 - Dependent Variable = 1 for a Stock Repurchase = 0 Reg. Dividend Increase
(Asymptotic t-statistics below each estimated coefficient)^b

Variable & Goodness of Fit	Predicted Sign	Model 1 - Special Dividend		Model 2 - Regular Dividend Increase	
		Coefficient Estimate (t-statistic)	Δ Prob	Coefficient Estimate (t-statistic)	Δ Prob
Intercept		-1.037 0.756		0.642 1.193	
Tax Incentives					
DivTaxPenalty	+	11.824 ** 2.185	1.73%	3.733 ** 2.130	6.85%
MgmtOwn * DivTaxPenalty	+	0.328 * 1.936	1.44%	0.306 *** 4.371	13.03%
Institutional * DivTaxPenalty	-	-0.060 0.564	-1.28%	0.031 0.908	4.41%
Stock Valuation					
StockReturn	-	-0.477 1.471	-0.86%	-0.689 *** 6.647	-8.39%
MarketBook	-	-0.144 1.103	-0.75%	-0.130 *** 2.866	-4.86%
Ownership Structure					
MgmtOwn	?	-0.066 ** 2.153	-1.27%	-0.064 *** 4.420	-15.33%
Institutional	?	0.057 *** 2.921	1.91%	0.009 1.489	3.78%
Excess Capital					
CashRatio	- / +	-2.613 * 1.879	-1.64%	1.737 *** 3.853	6.23%
CapExp	-	-2.565 1.068	-0.53%	-5.022 *** 6.956	-8.49%
Earnings Sustainability					
OpInc	-	-2.314 1.022	-0.64%	-2.713 *** 2.703	-4.82%
NonOpInc	+	12.982 *** 3.579	0.84%	5.466 * 1.652	2.62%
StdDevEarn	0 / +	-1.770 0.389	-0.22%	12.287 *** 7.870	10.37%
AssetSale	0 / +	-0.039 0.385	0.00%	11.133 *** 4.528	5.14%
Other					
LNSize	+	0.399 *** 3.238	1.26%	0.058 1.596	2.06%
DebtAsset	?	-0.461 0.450	-0.25%	-0.242 0.741	-0.99%
MgmtOption	+	0.602 *** 4.440	2.73%	0.212 *** 74.770	16.95%
DivPay Status	-	-3.199 *** 5.294	-9.65%	-3.546 *** 23.407	-37.82%
ρ ² (pseudo – R ²)		39.15%		41.32%	
% Correct Predictions		86.50%		82.00%	
Likelihood Ratio p(prob)		<0.0001		<0.0001	
Observations		n=2,200		n=4,285	

Significant at the *.1 or ** .05 or *** .01 level (two-tailed test without sign prediction).

The explanatory variables are defined in Appendix A. Model 1 uses the complete ownership sample of 2,136 share repurchases and 64 special dividend distributions. Model 2 uses the complete ownership sample of 2,136 share repurchases and 2,149 regular dividend increases. The samples are defined in table 2.

TABLE 7
Logistic Regression Results – Hypothesis 4A and 4B
Model 1 - Dependent Variable = 1 for a Stock Repurchase or = 0 Special Dividend
Model 2 - Dependent Variable = 1 for a Stock Repurchase or = 0 Regular Dividend
(Asymptotic t-statistics below each estimated coefficient)^b

Variable & Goodness of Fit	Predicted Sign	Model 1 - Special Dividend		Model 2 - Regular Dividend Increase	
		Coefficient Estimate (t-statistic)	Δ Prob	Coefficient Estimate (t-statistic)	Δ Prob
Intercept		-1.675 1.089		1.231 ** 2.067	
Tax Incentives					
DivTaxPenalty	+	15.577 *** 2.395	2.21%	3.694 * 1.659	7.13%
MgmtOwn * DivTaxPenalty	+	0.271 * 1.687	1.20%	0.257 *** 3.795	11.19%
DivTaxPenalty * Bank, Insur & Other	-	-0.435 *** 2.949	-4.44%	-0.106 ** 2.272	-6.61%
DivTaxPenalty * Mfund&Brokers	+	-0.025 0.822	-0.37%	0.190 *** 3.603	19.57%
Stock Valuation					
StockReturn	-	-0.571 1.046	-0.81%	-0.938 *** 6.074	-10.47%
MarketBook	-	0.240 1.559	0.85%	-0.082 1.372	-3.50%
Ownership Structure					
MgmtOwn	?	-0.061 ** 2.010	-4.84%	-0.060 *** 3.920	-14.02%
Banks, Insurance & Other	-	0.059 *** 2.818	0.98%	0.013 * 1.809	1.80%
Mutual Funds & Brokers	+	0.103 *** 2.388	2.44%	-0.021 ** 1.982	-9.39%
Excess Capital					
CashRatio	- / +	-2.945 ** 1.982	-1.88%	1.520 *** 2.781	4.98%
CapExp	-	-4.356 1.508	-0.97%	-5.136 *** 5.863	-9.49%
Earnings Sustainability					
OpInc	-	-2.111 1.063	-0.57%	-4.596 *** 3.603	-8.54%
NonOpInc	+	26.238 *** 2.587	0.88%	8.107 * 1.676	1.54%
StdDevEarn	0 / +	-3.947 0.775	-0.49%	9.413 *** 5.125	7.72%
AssetSale	0 / +	-2.325 0.300	-0.16%	11.187 *** 3.668	4.75%
Other					
LNSize	+	0.470 *** 3.036	1.38%	0.057 1.290	1.37%
DebtAsset	?	-0.165 0.105	-0.09%	-0.561 1.402	-3.03%
MgmtOption	+	0.583 *** 3.481	1.93%	0.179 *** 5.932	11.32%
DivPay Status	-	-3.391 *** 4.802	-10.80%	-3.458 *** 19.547	-31.39%
ρ ² (pseudo – R ²)		41.65%		41.27%	
% Correct Predictions		88.30%		83.20%	
Likelihood Ratio p(prob)		<0.0001		<0.0001	
Observations		n = 1,425		n = 3,102	

^a Significant at the *.1 or **.05 or ***.01 level (two-tailed test without sign prediction).

The explanatory variables are defined in Appendix A. Model 1 uses the breakdown in institutional ownership sample of 1,367 share repurchases and 58 special dividend distributions. Model 2 uses the breakdown of institutional ownership sample of 1,367 share repurchases and 1,735 regular dividend increases. The samples are defined in table 2.

REFERENCES

- Allen, F., Michaely, R., 2004. Payout Policy. Unpublished Working Paper, Financial Institutions Center.
- Aver, K., Michaely, R., 2000. Dividend and Taxes: A Re-Examination. *Financial Management* 29, 55-75.
- Bagwell, L., Shoven, J., 1989. Cash Distributions to Shareholders. *Journal of Economic Perspectives* 3, 129-140.
- Baker, M., Wurgler, J. 2002. Market Timing and Capital Structure. *The Journal of Finance* 57, 1-32.
- Barclay, M., Smith, C., 1988. Corporate Payout Policy Cash Dividends versus Open-Market Repurchases. *Journal of Financial Economics* 22, 61-82.
- Barclay, M., Holderness, C., Sheehan, D., 2004. Dividends and Dominant Shareholders. Unpublished Working Paper, University of Rochester.
- Bartov, E., 1998. Evidence on How Companies Choose Between Dividends and Open-Market Stock Repurchases. *Journal of Applied Corporate Finance* 11, 89-96.
- Black, F. 1976. The Dividend Puzzle. *Journal of Portfolio Management* 2, 5-8.
- Blouin, J., Raedy, J., Shackelford, D., 2004. Did Dividends Increase Immediately after the 2003 Reduction in Tax Rates. Unpublished Working Paper, University of North Carolina.
- Brav, A., Graham, J., Harvey, C., Michaely, R. 2004. Payout Policy in the 21st Century. Unpublished Working Paper, Duke University.
- Brennan, M., Thakor, A., 1999. Shareholder Preferences and Dividend Policy. *The Journal of Finance* 45, 993-1018.
- Chetty, R., Saez, E., 2004. Do Dividend Payments Respond to Taxes? Preliminary Evidence From The 2003 Dividend Tax Cut. NBER Working Paper Series.
- Choi, D., Chen S. 1997. The Differential Information Conveyed by Share Repurchase Tender Offers and Dividend Increases. *Journal of Financial Research* 20, 529-545.
- Cook, D., Krigman, L., Leach, J., 1997. Corporate Repurchase Programs: Execution Strategy and the Competing Market-Maker Effect. Unpublished Working Paper, University of Colorado.

- Dann, L. 1981. Common Stock Repurchases An Analysis of Returns to Bondholders and Stockholders. *Journal of Financial Economics* 9, 113-138.
- DeAngelo, H., Deangelo, L., Skinner, D., 2000. Special Dividends and the Evolution of Dividend Signaling. *Journal of Financial Economics* 57, 309-354.
- Dittmar, A., 2000. Why do firms Repurchase Stock? *Journal of Business* 73, 331-355.
- Dhaliwal, D., Kahle, K., 2004. Dividends, Ownership Structure, and Stock Options. Unpublished Working Paper, University of Arizona
- Dhaliwal, D., Li, O., Krull, L., Moser, W. 2004. Dividend Taxes and Implied Cost of Equity Capital. Unpublished Working Paper, University of Texas at Austin.
- Dhaliwal, D., Li, O., Trezevant, R. 2003. Is a Dividend Tax Penalty Incorporated into the Return on a Firm's Common Stock? *Journal of Accounting and Economics* 35, 155-178.
- Fenn, G., Liang, N., 2001. Corporate Payout Policy and Managerial Stock Incentives. *Journal of Financial Economics* 60, 45-72.
- Grinstein, Y., Michaely, R., 2004. Institutional Holdings and Payout Policy. Unpublished Working Paper, Cornell University.
- Grullon, G., Michaely, R., 2004. Are Dividend Changes A Sign of Firm Maturity? Unpublished Working Paper, Rice University.
- Grullon, G., Michaely, R., 2002. Dividends, Share Repurchases, and the Substitution Hypothesis. *The Journal of Finance* 57, 1649-1684.
- Guay, W., Harford, J., 2000. The Cash-Flow Permanence and Information Content of Dividend Increases versus Repurchases. *Journal of Financial Economics* 57, 385-415.
- Howe, K., He, J., Kao, W., 1992. One-Time Cash Flow Announcements and Free Cash-Flow Theory: Share Repurchases and Special Dividends. *The Journal of Finance* 47, 1963-1975.
- Jagannathan, M., Stephens, C., Weisbach, M., 2000. Financial Flexibility and the Choice Between Dividends and Stock Repurchases. *Journal of Financial Economics* 57, 355-384.
- Jain, R., 2000. Institutional Investors do not Prefer Dividends: Individual Investors Do. Unpublished Working Paper, Temple University.

- Kahle, K., 2002, When a Buyback Isn't a Buyback: Open Market Repurchases and Employee Options, *Journal of Financial Economics* 63, 235-261.
- Lie, E., 2004. Financial Flexibility, Performance, and the Corporate Payout Choice. Unpublished Working Paper, College of William & Mary.
- Lie, E., Lie, H., 1999. The Role of Personal Taxes in Corporate Decisions: An Empirical Analysis of Share Repurchases and Dividends. *Journal of Financial and Quantitative Analysis* 34, 533-552.
- Miller, M. Modigliani, F., 1961. Dividend Policy, Growth and the Valuation of Shares. *Journal of Business* 34, 411-433.
- Modigliani, F., Miller, M., 1958. The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review* 48, 261-297.
- Modigliani, F., Miller, M., 1963. Corporate Income Taxes and the Cost of Capital: A Correction. *The American Economic Review* 53, 433-443.
- Nam, J., Wang, J., Zhang, G. 2004. The Impact of Dividend Tax Cut and Managerial Stock Holdings on Firm's Dividend Policy. Unpublished Working Paper, Pace University.
- Ofer, A., Thakor, A. 1987. A Theory of Stock Price Responses to Alternative Corporate cash Disbursement methods: Stock Repurchases and Dividends. *The Journal of Finance* 42, 365-394.
- Perez-Gonzalez, F., 2003. Large Shareholders and Dividends: Evidence From U.S. Tax Reforms. Unpublished Working Paper, Columbia University.
- Perry, T., Zenner, M., 1998. Pay for performance; Government Regulation and the Structure of Compensation Contracts. Working paper. Chapel Hill: University of North Carolina.
- Power, W., 1995. Heard on the Street Most Buybacks are State Not Completed. *The Wall Street Journal*, March 7, 1995, c1-c2.
- Rozeff, M., 1982. Growth, Beta and Agency Costs as Determinants of Dividend Payout Ratios. *Journal of Financial Research* 5, 249-259.
- Stephens, C., Weisbach, M. 1998. Actual Share Repurchase Programs in Open-Market Repurchase Programs. *The Journal of Finance* 53, 313-333.

- Strickland, D., 2002. Determinants of Institutional Ownership: Implications for Dividend Clienteles. Unpublished Working Paper, Arizona State University.
- Talmor, E. Titman, S., 1990. Taxes and Dividend Policy. *Financial Management* 19, 32-35.
- Vermaelen, T., 1981. Common Stock Repurchases and Market Signaling: An Empirical Study. *Journal of Financial Economics* 9, 139-183.
- White, L., 1996. Executive Compensation and Dividend Policy. *Journal of Corporate Finance* 2, 335-358.