

# Insiders' Tax Preferences and Firms' Choices between Dividends and Share Repurchases

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## Abstract

This paper investigates whether corporate payout policy is associated with insiders' share holdings and their tax preferences. We find that insider ownership and the implied tax liabilities are positively related to a firm's propensity to employ share repurchases. Firms with higher levels of or greater increases in insider ownership prefer stock repurchases to cash dividends. This relation is more significant in years when dividends were more tax disadvantaged relative to capital gains. Our findings are robust to the endogeneity of insider ownership and the inclusion of various control variables such as firm size, permanence of cash flows, growth opportunities, institutional ownership, and executive stock options. Overall, our results suggest that personal tax considerations from insiders affect corporate payout decisions.

## I. Introduction

Since the seminal work of Miller and Modigliani (1961), taxes have been recognized as a major determinant in corporate payout policy. While various theories have been proposed to explain why firms pay out cash flows given the unfavorable tax treatment of dividends for most investors, understanding how taxes affect payouts has proven difficult. Existing literature on the relation between corporate payouts and taxation mainly addresses two issues: i) whether a firm sets its payout policy to accommodate the heterogeneous tax status of its shareholders (the tax clientele effect), and ii) how tax rational investors trade in reaction to firms' payout changes.<sup>1</sup> Thus far, little consensus has been reached on whether and how taxation affects payouts.

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<sup>1</sup>See, for example, Brennan (1970), Constantinides (1984), Michaely and Vila (1995), Allen, Bernardo, and Welch (2000) for theories. Aharony and Swary (1980), Asquith and Mullins (1983), Naranjo, Nimalendran, and Ryngaert (1998), and others present empirical evidence. Allen and Michaely (2003) summarize current findings on this topic. In earlier literature, researchers mostly studied dividend rather than payout policy. Payout and dividend were sometimes used interchangeably. To avoid ambiguity, the term "payout" refers to cash dividend plus share repurchase throughout this paper.

This study investigates the relation between taxes and corporate payout policies by focusing on the individuals who institute those policies: corporate executives and directors. In particular, we examine whether insiders' share holdings and their tax preferences affect firms' choices between dividends and share repurchases as a means of disbursing cash.

The advantage of this approach is twofold. First, we identify a set of shareholders who not only determine payout policies, but also are significantly affected by disparate tax treatments between dividends and share repurchases. Their tax status is also more homogeneous than other types of investors. During our sample period from 1991 through 2001, if we assume that i) insiders fall into the highest marginal tax bracket for dividend income, a reasonable assumption given insiders' high compensations and overall personal wealth, and ii) firms distribute all of their payouts as cash dividends, insiders would have had to pay \$1.01 billion in dividend taxes in 1991 and \$3.22 billion in 2001. Conceivably, insiders' substantial exposure to dividend taxes would give them strong incentives to establish a payout policy that suits their own interests.

The second advantage of our approach rises from focusing on firms' payout choices between dividends and share repurchases. Corporate payout decisions usually include whether and how much to pay out as well as the form of payment. These decisions as a whole are affected by various firm characteristics such as profitability, investment opportunities, earnings prospects, and signaling considerations. By examining the impact of taxes on one aspect of the payout policy, the form of payout, we can distinguish tax effects from other theoretical determinants that are more related to the decisions of whether and how much to pay out.<sup>2</sup> In addition, several recent articles examine whether firms are substituting repurchases for cash dividends as the main form of payout (see, e.g., Grullon and Michaely (2002) and Dittmar and Dittmar (2005)). We extend this line of research and study whether the increasing popularity of repurchases in the 1990s is also related to insiders' tax preferences.

In this paper, we use variables derived from insiders' share holdings and corporate payouts to proxy for insiders' tax preferences. Our finding can be simply summarized: corporate payout policy is strongly associated with the tax preferences of corporate insiders. Firms with higher insider ownership are more likely to utilize share repurchases than dividends as a means of disbursing cash. Four main results lead us to this conclusion. First, using the level of insider ownership as our main measure of insiders' tax preferences, we find a strong positive relation between insider ownership and the proportion of repurchases in the total payouts. Second, we estimate the payout amount to insiders based on their levels of ownership and firms' total payouts. Payouts to insiders provide a direct esti-

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<sup>2</sup>In particular, the two well-known theories on firms' dividend policy, the signaling model (Bhattacharya (1979), Miller and Rock (1985)) and the agency-cost model (Easterbrook (1984), Jensen (1986)) are concerned about why and how much extra cash a firm should pay out. The extra cash could be distributed to shareholders through either cash dividend or share repurchase. Studying tax incentives based on form of payout is largely absent from signaling or free cash flow considerations. Two recent studies link different types of cash flows with payout choices (Guay and Harford (2000), Jagannathan, Stephens, and Weisbach (2000)). They find that firms tend to pay out permanent cash flows as dividends but pay out temporary cash flows as repurchases. We control for such effects in our empirical tests.

mate of insiders' potential tax liabilities from corporate payouts. When insiders are expected to receive a higher payout amount, they will have more incentives to lower their tax liabilities. The evidence supports this argument: a higher level of payout to insiders (and hence higher potential tax liabilities) increases a firm's propensity to pay out cash in the form of share repurchases. The relation between insiders' tax preferences and corporate payout choice is robust to various control variables also related to payout policy.

Third, we further take into account the time variation of disparate tax treatments between dividends and capital gains in our analysis à la Poterba and Summers (1985) and Perez-Gonzalez (2003). The difference in these two tax rates varies from 3.0% to 19.6% during our sample period of 1991–2001. A higher tax rate on dividends than on capital gains increases tax benefits of share repurchases and affects insiders' tax preferences. Therefore, a greater divergence in these two tax rates, combined with a higher level of payout to insiders, should provide a stronger impact on payout policy. Our results are consistent with this prediction. When dividends are more tax disadvantaged, firms with higher levels of insider ownership are more likely to choose share repurchases as the form of payout.

Lastly, existing literature on dividend policy indicates that, due to signaling or information asymmetry, firms that have been paying dividends historically will normally continue to do so (see, e.g., Michaely, Thaler, and Womack (1995)). Relating to such evidence, we examine whether the change in insider ownership provides sufficient incentives for firms to modify their payout policies. We find strong support for this conjecture: the change in insiders' share holdings is positively correlated with the change in firms' payouts through repurchases. Thus, when firms decide to increase their payouts to shareholders, they are more likely to use repurchases if insider ownership is high. Using changes in payout to insiders and their tax liabilities also reaches the same conclusion. These findings provide an effective reevaluation of the relation between the level of insiders' holdings and the form of payout.

Overall, our analysis supports the notion that personal tax considerations from insiders affect corporate payout decisions. It is worth noting that our results are distinct from previous studies on the tax implications of payout policies. Prior studies rely mostly on the assumption that management intends to satisfy shareholders' objectives by suiting their heterogeneous tax situations (see, e.g., Brennan and Thakor (1990), Allen et al. (2000)). While corporate insiders are an important subset of shareholders, their tax situations do not play any specific role in these theories. Our evidence, however, suggests that insiders might establish a payout policy to pursue their own objectives if their decisions greatly enhance their benefits. Consequently, insiders' tax preferences could dominate tax situations of other investors and affect corporate payouts.

Our research contributes to the existing literature in several dimensions. First, it expands our understanding on whether and how personal taxes affect corporate payouts. We show that taxes do affect payouts and such relations could be established through insiders' tax preferences. This evidence also has strong implications on how firms respond to the dividend tax cut in the Jobs and Growth Tax Relief Reconciliation Act of 2003. Recent studies find that firms increased dividend payments after the 2003 dividend tax cut (Blouin, Raedy, and Shack-

elford (2004), Chetty and Saez (2005)). Blouin et al. further document that after the passage of the bill, the amount of dividend increase is positively related to insider ownership. In addition, Brown, Liang, and Weisbenner (2007) show that a firm is more likely to increase dividends after the 2003 dividend tax cut if executives own a large fraction of outstanding shares. This is consistent with the implications in this paper.

Second, our analysis helps us better understand why firms distribute cash to shareholders via a certain form of payout. Jagannathan et al. (2000) and Guay and Harford (2000) find that firms distribute permanent earnings as dividends and transitory cash flows as open market repurchases. In addition, Weisbenner (2000) and Fenn and Liang (2001) show that managerial option holdings could explain the rise of share repurchases. Our study extends this line of research and shows that insiders' tax preferences are also an important determinant of corporate payout choices. Our results are robust to various control variables from these previous studies.

Finally, our analysis complements recent papers on the relation between firm ownership and dividend policy. Barclay, Holderness, and Sheehan (2008) study whether corporations change their dividends following trades of blockholders who have opposite preferences for dividends. Their results indicate that firms seldom change their dividends even after the substitution of a new blockholder. Perez-Gonzalez (2003) investigates a similar issue, but finds that firms with large individual shareholders tend to have lower dividends in years when dividends were more tax disadvantaged. His result supports the view that personal income taxes, particularly those of dominant shareholders, affect corporate dividend policy. Our study differs from the above studies in two aspects. First, we focus on the importance of corporate insiders while Barclay et al. and Perez-Gonzalez examine the tax preferences of blockholders. Second, we study the impact of tax considerations on payout choices while they examine the impact of taxation only on dividends.<sup>3</sup>

The remainder of the paper is organized as follows. Section II discusses why insiders' tax preferences might matter for corporate payout policies and defines the main variables of interest. Section III describes the data used in the study and presents summary statistics of our sample. Section IV presents the empirical results. Section V provides robustness checks on the main results and Section VI concludes.

## II. Literature Review and Hypotheses

Prior studies on the relation between taxation and corporate payout policy typically build upon the premise that firms set payout policies to maximize shareholders' wealth given their heterogeneous tax status. For example, firms could adjust their payouts to attract better informed shareholders by considering their tax situations (see Allen et al. (2000)). Agency theories, however, recognize that

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<sup>3</sup>Our sample is also different from those in Barclay et al. (2008) and Perez-Gonzalez (2003). The main advantage in our sample is that we include more firms with a longer time period. However, as discussed in Perez-Gonzalez, the beneficial owners calculated from Compact Disclosure may not be an accurate measure of actual ownership. We discuss this issue in the data section.

insiders could adjust corporate decisions to advance their own benefits. Thus, if executives and directors consider their own personal income taxes in setting payout policies, their own tax status could materially affect these policies.

While a substantial body of research recognizes the role of taxation in dividend policy, existing empirical studies provide mixed evidence in identifying the *types* of shareholders whose tax preferences are likely to matter for payout policies. Surprisingly, few studies have directly examined the relation between insiders' tax statuses and firms' payouts. In this section, we briefly review related work and formulate our hypotheses on why insiders' tax statuses could matter for corporate payouts.

### A. Ownership Structure, Taxes, and Dividends

Since dividends were the dominant form of payout before the 1990s, most studies focus on whether managerial share holdings are related to firms' decisions to disburse cash as dividends to shareholders. For instance, using 1,197 firms in 1982 and 1987, Jensen, Solberg, and Zorn (1992) show that the level of managerial stock ownership has a negative impact on firms' dividend levels. Agrawal and Jayaraman (1994) find a similar result for 71 all-equity firms in 1981. Both papers argue that higher managerial ownership lowers agency costs of equity, thus substituting the role of dividends in reducing free cash flows. Their findings, however, could also be consistent with the notion that insiders' tax considerations have an impact on the observed differences in dividend payments across firms. Neither paper formally tests this hypothesis.

Two recent studies investigate whether the tax preferences of *blockholders* affect dividend payments. Perez-Gonzalez (2003) presents evidence that dividends are increased when they are less tax disadvantaged relative to capital gains for firms with large individual blockholders. Barclay et al. (2008) study the impact of changes in block ownership but reach a different conclusion. They show virtually no relation between large-block corporate ownership and dividend policy. Public firms with other companies as large shareholders do not pay higher dividends even though corporate shareholders have a tax preference for cash dividends.

In addition to the above two studies, Grinstein and Michaely (2004) study the relation between institutional ownership and corporate payout policy. They find that corporate payout affects institutional holdings, but not vice versa. Graham and Kumar (2006) study stock holdings of more than 60,000 households and provide evidence that low income retail investors prefer stocks with high dividend yields, consistent with tax clienteles.

In sum, while there is some evidence that different types of investors exhibit different preferences toward corporate payouts, there is little research on whether and how firms choose specific payout methods in response to the tax preferences of various types of shareholders. More important, it remains unclear which shareholders' tax status affects corporate payout.

## B. Insiders' Tax Preferences and Corporate Payout Choices

Given insiders' substantial exposure to dividend taxes, it is conceivable that insiders take into account their own tax liabilities in setting payout policies. The recent controversy regarding Microsoft's dividend policy illustrates whether and how insiders' tax-related motivations may affect payout decisions. Microsoft had never paid a dividend until 2003 even though it had been generating stable profit since inception and hoarded cash in excess of \$40 billion at the end of 2002. Microsoft's founder and its largest owner, Bill Gates, owns 12% of Microsoft stocks. In discussing Microsoft's dividend policy, many commentators agree, "It is more tax efficient for management that has meaningful equity positions in their companies not to pay a dividend." Ralph Nader even called this practice "a tax-avoidance scheme for the big shareholders."<sup>4</sup> It is worth noting that these commentators failed to notice that in 2001 alone, Microsoft distributed more than \$6 billion in cash to its shareholders through share repurchase.<sup>5</sup>

While the above anecdotal controversy centers on the dividend payments, it also suggests that share repurchases provide great advantages over dividends to corporate insiders. Interestingly, although the link between insiders' tax preferences and corporate payout practices has generated considerable discussions in the public press, it has received limited attention in academic research. It remains unclear whether insiders, notably those with significant tax exposures to payout, are both willing and able to adjust payout policies to lower their own tax burdens. In theory, Miller and Modigliani (1961) suggest that the choice between cash dividends and share repurchases could be influenced by tax preferences of shareholders. In practice, management recommends payout decisions to the board of directors who in turn review and approve the proposed policy. Notwithstanding the controversies regarding Microsoft's dividend policy, payout decisions are less subject to shareholders' scrutiny and rarely regulated. Thus, if insiders face significant dividend taxes, their personal tax preferences could prevail and affect how firms pay out cash to all shareholders.

Furthermore, the tax benefits of share repurchases over dividends are particularly important to insiders. If investors, including insiders, could effectively engage in trading strategies to mitigate dividend taxes, taxes should have limited impact on corporate payouts.<sup>6</sup> Such strategies, however, are less effective for insiders because of high transaction costs in trading blocks of shares and restrictions on insider trading. For example, the most popular dividend avoidance strategy of selling shares prior to ex-dividend dates and buying back after dividends are paid

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<sup>4</sup>*The Wall Street Journal*, January 7, 2002.

<sup>5</sup>Microsoft initiated an annual dividend payment of 8 cents per share before the passage of the Jobs and Growth Tax Relief Reconciliation Act of 2003. After the passage of the bill and the reduction of the dividend tax rate to 15%, the same rate as on capital gains, Microsoft increased its annual dividend payment to 16 cents per share. In 2004, Microsoft further increased its quarterly dividend payment to 8 cents per share and paid a special dividend of \$32 billion.

<sup>6</sup>There exist a number of dynamic trading strategies that investors can use to mitigate dividend taxes. While there is little evidence that investors are able to or actually carry out such strategies as prescribed in Miller and Scholes (1978) and others to completely avoid taxes, there is substantial evidence on dynamic tax-motivated strategies around ex-dividend days (see Allen and Michaely (2003) for a review of the literature).

would violate the round-trip rules.<sup>7</sup> Thus, a viable alternative for insiders to lower their dividend taxes is to distribute cash flows through share repurchases.<sup>8</sup>

### C. Variable Construction and Empirical Hypotheses

To test whether insiders' tax preferences influence corporate payout choices, we use insider ownership as our main proxy for insiders' tax preferences. In the empirical analysis, we further interact insider ownership with the tax rate differential between dividends and capital gains to account for the varying tax advantage of share repurchases versus dividends during the sample period. We also include estimates of insiders' implied tax liabilities to examine the impact of their tax exposure on payout choices.

Insider ownership could be the most direct proxy for insiders' tax preferences because it measures how insiders' shares of their own firms will be affected by the disparate tax rates on dividends and capital gains. A higher level of insider ownership also implies that insiders have more control over corporate decisions. Thus, insiders face fewer restrictions on catering financial policies for their own benefits. If ownership level is low, considerations other than insiders' tax situations may play a more important role in payout decisions. It is also evident that the relation between insider holdings and a firm's propensity to repurchase shares could depend on the relative tax costs of dividends versus capital gains. If the tax difference is high, insiders could generate more tax savings by disbursing cash in the form of a repurchase. This leads to our first hypothesis: *A firm is more likely to distribute cash in the form of a share repurchase rather than a dividend when insider ownership is high. This effect of insider ownership is greater when dividends are more tax disadvantaged than capital gains.*

Moreover, we estimate insiders' potential tax liabilities from corporate payout by combining the level of insider ownership and the amount of total payout. Within any given amount of cash payment, a higher level of insider ownership indicates that more insiders' personal income is affected by the differential tax treatments. Similarly, given a constant level of insider ownership, a higher corporate payout increases payout to insiders and eventually their tax liabilities. Thus, the dollar payout to insiders measures the extent to which insiders' personal income from corporate payout is affected by the method of payout. Including this variable in the analysis captures the incremental impact from insiders' tax exposures. This leads to our second hypothesis: *A firm is more likely to distribute cash in the form of a share repurchase rather than a dividend when the payout to insiders is high. Such a relation should be stronger when the tax advantage of share repurchases relative to dividends is greater.*

<sup>7</sup>Section 16(b) of the Securities and Exchange Act of 1934 prohibits insiders from making round-trip trades within a six-month period, and any profit earned by insiders from any purchase and sale can be recovered by the issuing company.

<sup>8</sup>Share repurchases also provide significant benefits to corporate insiders beyond the favorable tax treatments of capital gains. For instance, share repurchases offer the timing flexibility in realizing capital gains to all investors, including insiders. In particular, capital gains have long been thought to be the most under the direct control of taxpayers and are easier to avoid relative to other forms of income such as dividends. Studies also show that individuals with high personal wealth can shelter a substantial portion of their capital gains. See Auerbach, Burman, and Siegel (2000) and the references therein.

### III. Sample Procedure and Summary Statistics

#### A. Payout Firms

The initial sample consists of all firms on both CRSP and Compustat files over the period 1991–2001. Our sample period starts in 1991 when insider ownership data became available to us. Utility (SIC: 4900 to 4999) and financial firms (6000 to 6999) are excluded. To remain in the sample, each firm-year observation must have information available on market value of equity (MVE, Compustat data #25\*#199), dividend (DIV), repurchase (REPO), and the market-to-book ratio (MVBV,  $(\#25 * \#199 + \#130 + \#9 + \#34) / \#6$ ). Following Grullon and Michaely (2002), we define DIV as the total amount of dividend (in millions, #21) declared on the common stock and REPO as the expenditure (in millions) on the purchase of common and preferred stocks (#115) minus any reduction in redemption value of preferred stock (#56). We also include eight firm characteristics shown to affect corporate payouts. The details of these variables are described in Section III.E and the Appendix.

Although this study investigates firms' payout choices, we are careful to treat firms with no payout (DIV = 0 and REPO = 0). Table A.1 compares firm characteristics between firms with and without payouts. Overall, payout firms are larger, more profitable, and with a higher level of institutional holdings. In contrast, firms with no payout tend to have more growth opportunities and higher income volatility. They are also associated with a higher level of insider ownership. To ensure that our results are not driven by different characteristics between payout and non-payout firms, we perform our tests using samples both with and without non-payout firms. Our results are similar in both samples. Thus, unless noticed, we present findings using payout firms.<sup>9</sup>

#### B. Insider Ownership

Insider ownership is taken from Compact Disclosure. Following numerous studies in the literature, we define insider ownership as aggregate holdings by all officers and directors in a firm. Compared with CEO holdings, aggregate insider ownership is particularly meaningful in this study for two reasons. First, corporate payout policies are not determined solely by management since proposed policies must be approved by the board of directors. Second, as discussed in Holderness and Sheehan (2000) and others, large blockholders usually serve as directors even though they may not act as CEOs or presidents. These blockholders are also more likely to face significant tax burdens. We also recognize, however, that beneficial owners defined by Compact Disclosure might not be an accurate measure of actual ownership, an issue discussed in Perez-Gonzalez (2003).<sup>10</sup> Hence, we conduct a robustness check using executive equity holdings from Execucomp. While Execucomp covers fewer firms and reports holdings from executives only, its reporting is more consistent. Overall, we reach the same conclusions with different

<sup>9</sup>Results using both payout and non-payout firms are available from the authors.

<sup>10</sup>In particular, there are two issues that could bias the number of beneficial owners. First, a charitable foundation designates a person for voting. She could be counted as an insider. Second, if two individuals share voting rights, they could be counted as different insiders.



definitions of “insiders.” The details are discussed in Section V.C. After including insider ownership data, the final sample consists of 17,038 firm-year observations.

### C. Summary Statistics on Insider Ownership and Payout Variables

Panel A of Table 1 reports, for payout firms, means and medians of insider ownership and payouts each year. As noted by the sample size in the far right column, the number of firms paying out cash as dividends or repurchases has increased from 1,180 in 1991 to 1,954 in 1999 and then was reduced to 1,793 in 2001, the last year of our sample. Column 1 shows that both means and medians of insider ownership for the payout firms are quite stable over time. Insiders hold 20% of their own firms’ shares on average while the median is a lower 13%.

As shown in column 2 of Table 1, the average dividend in each firm has increased from \$37.1 million to \$59.8 million while the median has declined from \$2.4 million to almost zero. This pattern is consistent with DeAngelo, DeAngelo, and Skinner (2004), showing that the top payers have increased real dividends although more firms have lowered or even stopped paying dividends. Column 3, in contrast, shows a different picture for share repurchases. Both the mean and median amounts for stock repurchases have increased over time, indicating that more corporations have started to distribute cash via repurchases. Interestingly, we observe substantial changes in corporate payouts after 1997. The median dividend has dropped significantly since 1997 while the median repurchase has risen sharply. In 1997, the capital gain tax was lowered to 24%, which was further reduced to 20% in 1998.<sup>11</sup> In addition, column 4 reveals that the mean percentage of share repurchases in total payouts has increased from 35% to 66%. The median figures, increasing from 6% to 100%, are even more dramatic.

We next calculate summary statistics on insiders’ stake of corporate payout. The results are displayed in columns 5 and 6 of Table 1. Overall, corporate insiders, like other investors, received an increasing amount of total payout during the sample period.<sup>12</sup> The average payout to insiders in each firm was \$2.77 million in 1991 (\$1.77 million from dividends and \$1.00 million from repurchases). It increased to \$4.59 million in 2001. This upward trend is mainly due to share repurchases rather than cash dividends for many firms. Even though corporations increase dividend distributions during our sample period, the amount to insiders is, in fact, quite stable, ranging from a low of \$1.52 million in 2001 to a high of \$1.87 million in 1998. Note that we use the payout to insiders as the second proxy for insiders’ tax preferences.<sup>13</sup>

<sup>11</sup>Combining dividends and repurchases, we find that the total payout in each firm has steadily increased. The mean (median) total payout is \$52.2 (\$3.86) million in 1991 and \$127.1 (\$4.9) million in 2001. The cash amount disbursed through share repurchases has increased faster than the amount for dividends. This result is consistent with the overall payout pattern documented in Hsieh and Wang (2006).

<sup>12</sup>The calculation of insiders’ portion of repurchases implicitly assumes that insiders tender the same percentage of their shares as other investors. Obviously if insiders do not tender their shares, their savings from repurchases would be even higher.

<sup>13</sup>From a quick glimpse, one might be puzzled that column (1) times (2) does not equal (5). In fact, column (1) is calculated as  $\sum_i IO_i/N$  (for  $N$  firms), column (2) as  $\sum_i DIV_i/N$ , and column (5) as  $\sum_i IO_i * DIV_i/N$ . Hence, (1) \* (2)  $\neq$  (5).

TABLE 1  
Sample Description of Payout Firms and Summary Statistics on Tax Variables

Table 1 reports descriptive statistics for a sample of 17,038 firm-year observations. The sample consists of all payout firms on both the CRSP and Compustat files from the period 1991–2001. Utilities (SIC: 4900 to 4999) and financial firms (6000 to 6999) are excluded. We delete individual firm-years with missing values for total assets, DIV, REPO, MVE, and MVBV. DIV is the total amount of dividends (in millions) declared on the common stock (Compustat data #21). REPO is the expenditure (in millions) on the purchase of common and preferred stocks (#115) minus any reduction in redemption value of preferred stock (#56). MVE is the market value of equity (#25\*#199) and MVBV is the market-to-book ratio ( $(\#25 * \#199 + \#130 + \#9 + \#34) / \#6$ ). Since this table reports variables related to payouts (dividend + repurchase), we exclude firm-years with zero payout (DIV = 0 and REPO = 0). Including non-payout firms in our sample does not alter our results. The initial CRSP/Compustat sample is then matched with the insider ownership (IO) data collected from Compact Disclosure. IO, defined as aggregate holdings of officers and directors, is scaled by a firm's total common shares outstanding. Individual tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ) are the maximum marginal tax rates for individual shareholders under the Internal Revenue Code during the sample period. Panel A reports the mean and median figures of insider ownership and payouts variables while Panel B shows the figures of tax liabilities to insiders. The dividend tax preference is defined as the difference in tax rates between dividends and capital gains, ( $T_D - T_C$ ).

Panel A. Sample Distribution of Payout Firms on Insider Ownership and Payout Variables

Year	Insider Ownership IO (1)		Corporate Payouts on				%Total Payouts as Repurchases REPO/(DIV+REPO) (4)		Payouts to Insiders as				N
	Mean	Median	Dividends DIV (2)	Repurchases REPO (3)	Mean	Median	Mean	Median	Dividends IO * DIV (5)	Repurchases IO * REPO (6)	Mean	Median	
1991	0.21	0.14	37.09	2.44	15.07	0.06	34.8%	5.8%	1.77	0.26	1.00	0.01	1,180
1992	0.20	0.14	38.27	2.46	14.29	0.04	34.6%	3.2%	1.59	0.27	1.01	0.00	1,224
1993	0.20	0.14	35.92	2.22	15.60	0.05	36.5%	5.2%	1.81	0.24	1.16	0.01	1,285
1994	0.20	0.14	38.24	2.09	20.09	0.10	41.4%	20.3%	1.68	0.23	1.40	0.02	1,377
1995	0.21	0.14	41.85	1.76	35.94	0.26	45.3%	32.6%	1.69	0.20	1.82	0.04	1,464
1996	0.19	0.12	48.12	1.94	42.13	0.55	48.3%	45.4%	1.66	0.20	3.02	0.08	1,529
1997	0.19	0.12	47.95	1.30	57.20	0.98	56.0%	66.9%	1.73	0.12	3.81	0.14	1,663
1998	0.20	0.12	49.20	0.34	68.85	2.40	64.8%	90.6%	1.87	0.02	4.61	0.28	1,696
1999	0.21	0.14	50.37	0.00	66.71	2.45	68.9%	100.0%	1.72	0.00	4.29	0.32	1,954
2000	0.21	0.13	52.99	0.00	75.67	2.74	68.6%	100.0%	1.55	0.00	3.77	0.36	1,873
2001	0.21	0.13	59.77	0.00	67.31	1.00	65.5%	100.0%	1.52	0.00	3.07	0.14	1,793
1991–2001	0.20	0.13	46.50	1.16	47.23	0.60	53.5%	61.2%	1.69	0.12	2.83	0.09	17,038

Panel B. Sample Distribution of Payout Firms on Tax Variables

Year	Individual Tax Rate on		Dividend Tax Preference $\phi = T_D - T_C$ (3)	Total Payouts to Insiders Taxed at $T_D$ $IO * (DIV + REPO) * T_D$ (4)		Total Payouts to Insiders with Tax Preference Variable $IO * (DIV + REPO) * (T_D - T_C)$ (5)	
	Dividends ( $T_D$ ) (1)	Capital Gains ( $T_C$ ) (2)		Mean	Median	Mean	Median
1991	0.310	0.280	0.030	0.856	0.124	0.083	0.012
1992	0.310	0.280	0.030	0.804	0.138	0.078	0.013
1993	0.360	0.280	0.080	1.070	0.151	0.238	0.034
1994	0.396	0.280	0.116	1.221	0.176	0.358	0.052
1995	0.396	0.280	0.116	1.388	0.189	0.407	0.055
1996	0.396	0.280	0.116	1.852	0.244	0.543	0.071
1997	0.396	0.240	0.156	2.192	0.222	0.864	0.087
1998	0.396	0.200	0.196	2.564	0.258	1.270	0.128
1999	0.396	0.200	0.196	2.381	0.300	1.180	0.149
2000	0.396	0.200	0.196	2.107	0.319	1.043	0.158
2001	0.391	0.200	0.191	1.795	0.201	0.878	0.098
1991–2001				1.745	0.209	0.695	0.065

#### D. Summary Statistics on Variables of Insiders' Tax Liabilities

We now estimate insiders' tax liabilities from insiders' share holdings and corporate total payouts. Columns 1 and 2 in Panel B of Table 1 display individual tax rates on dividends and capital gains at the top income bracket. To capture the effect of disparate tax treatments over time, we create a tax preference ratio:  $\phi = T_D - T_C$  where the tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ) are the maximum marginal tax rates for individual shareholders under the Internal

Revenue Code. Column 3 shows that the difference between these two tax rates has increased from 3% to 19%. We hypothesize that the higher the disparity between these two tax rates (the higher  $\phi$ ), the more pronounced the insiders' preferences to choose repurchases as the payout method.

Column 4 of Table 1 displays the time series of the mean and median insiders' tax liabilities *assuming* all payouts were distributed and taxed as dividends.<sup>14</sup> This is an estimate of how much tax insiders would have to pay *if* a firm had distributed all cash payout as a dividend. This value represents an upper bound of insiders' potential tax obligation.<sup>15</sup> The mean (median) potential maximum taxes have increased from \$0.86 (\$0.12) million in 1991 to \$1.80 (\$0.20) million in 2001. The highest average is \$2.56 million in 1998 while the highest median is \$0.32 million in 2000. This upward trend is mainly driven by the fact that the payout to insiders has increased over time.

Column 5 of Table 1 shows the mean and median of payouts to insiders combined with the differential tax rates between dividends and capital gains. This interaction variable, also serving as a proxy for insiders' tax preferences in our later analysis, measures the tax advantage of share repurchases based on the amount of payout insiders receive. The higher the difference between  $T_D$  and  $T_C$ , the more taxes that insiders could save by switching to repurchases. Both mean and median values have increased over time, suggesting a steady increase in tax advantages from repurchases. This is driven by increases in both total corporate payouts and the difference in tax rates on dividends and capital gains.

## E. Firm Characteristics and Insiders' Tax Preferences Based on Different Payout Methods

Existing studies suggest that several firm characteristics affect firms' decisions to choose different payouts. For instance, Guay and Harford (2000) and Jagannathan et al. (2000) find that firms distribute extra cash to shareholders according to cash flow permanence and flexibility. Grullon and Michaely (2002) show that mature, large firms tend to use dividends. Allen et al. (2000) argue that firms use dividends to attract various investor clienteles. In this subsection, we provide summary statistics of the firm characteristics that we use in our multivariate analysis. The mean and median values of these variables, along with the previously defined proxies for insiders' tax preferences, are displayed based on three different payout methods.

The left six columns of Table 2 show that among 17,038 payout firms, we have 4,978 dividend-only firm observations and 6,686 repurchase-only observations. There are 5,364 firm observations that have both share repurchases and cash dividends. The final six columns present the level and significance of differences between the subsamples. Several interesting patterns emerge from this table. For instance, dividend-paying firms with or without repurchases are associated with

<sup>14</sup>The dividend taxes are estimated under the pre-stated assumption that insiders are taxed at the highest marginal tax rate on dividends.

<sup>15</sup>For robustness checks, we also use this variable in our multivariate analysis. In particular, we hypothesize and find evidence that when the maximum tax liabilities from insiders are high, they have more incentives to shift some of the cash payout toward share repurchases. For brevity, we do not include this part of the analysis.

greater institutional ownership and are larger in firm size and more profitable relative to those with repurchases only. Insider ownership is lower in dividend-paying firms. Repurchase-only firms, on the other hand, have higher non-operating income. Their income is also more volatile. These results are consistent with Jagannathan et al. (2000). Operating income is more permanent, but non-operating income, higher in repurchase-only firms, is relatively transitory. We also find that repurchase-only firms have a higher level of cash than dividend-paying firms. Overall, the evidence here indicates that dividend-paying firms are different from repurchase-only firms. Dividend-paying firms are comparable in characteristics even though many of them use additional funds for share repurchases.

TABLE 2  
Payout Firm Characteristics and Tax Variables According to Different Payout Methods

Table 2 reports payout firms' characteristics and insider ownership based on payout methods. DIV is the total amount of dividends declared on the common stock. REPO is the expenditure on the purchase of common and preferred stocks minus any reduction in redemption value of preferred stock. PayoutToInsiders is defined as total payout (DIV plus REPO) multiplied by the percentage of insider ownership. Insider ownership, defined as aggregate holdings of officers and directors, is scaled by a firm's total common shares outstanding. Individual tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ) are the maximum marginal tax rates for individual shareholders under the Internal Revenue Code during the sample period. CASH is the book value of cash and short-term investments. DEBT is the sum of long-term and short-term debt. The market-to-book ratio (MVBV) is defined as the ratio of the market value of assets to the book value of assets. Firm size (FS) is the logarithm of net sales. PROFITABILITY is operating income before depreciation. NOPER is the non-operating income. CAPEX is the capital expenditures. CASH, DEBT, PROFITABILITY, NOPER, and CAPEX are scaled by the book value of the total assets. The standard deviation of operating income,  $\sigma$ (ROA), is the standard deviation of the ratio of operating income to total assets measured over the five-year period. Institutional ownership (InsOwn) is obtained from SEC 13F filings recorded by Spectrum. We normalize InsOwn by a firm's total common shares outstanding. The right six columns report the difference in means and medians between two groups. \* indicates significance at the 1% level.

	DIV > 0, REPO = 0 (N = 4,978)		DIV = 0, REPO > 0 (N = 6,686)		DIV > 0, REPO > 0 (N = 5,364)		Difference between Two Groups					
	(1)	(2)	(3)	(1) - (2)	(1) - (3)	(2) - (3)						
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Insider Ownership (IO)	0.175	0.101	0.260	0.402	0.155	0.079	-0.085*	-0.301*	0.012*	0.022*	0.097*	0.323*
PayoutToInsiders	1.897	0.402	2.424	0.225	9.555	1.849	-0.527	0.177*	-8.837*	-1.447*	-8.220*	-1.625*
(PayoutToInsiders)* $T_D$	0.709	0.151	0.951	0.087	3.697	0.707	-0.242*	0.064*	-3.448*	-0.556*	-3.173*	-0.620*
CASH	0.096	0.044	0.189	0.104	0.095	0.046	-0.093*	-0.060*	-0.004	-0.002	0.088*	0.058*
DEBT	0.210	0.199	0.187	0.109	0.185	0.168	0.023*	0.090*	0.020*	0.031*	-0.005	-0.058*
MVBV	1.423	1.057	1.691	1.094	1.559	1.215	-0.268*	-0.037	-0.185*	-0.159*	0.064*	-0.121*
FS	6.253	6.184	4.811	4.785	6.771	6.771	1.442*	1.399*	-0.589*	-0.586*	-2.026*	-1.986*
PROFITABILITY	0.142	0.137	0.081	0.120	0.168	0.162	0.062*	0.017*	-0.029*	-0.026*	-0.094*	-0.043*
NOPER	0.008	0.005	0.012	0.008	0.009	0.006	-0.003*	-0.002*	-0.002	-0.001	0.001*	0.002*
CAPEX	0.072	0.056	0.071	0.047	0.066	0.054	0.001	0.009*	-0.003*	0.001	0.002*	-0.008*
$\sigma$ (ROA)	0.071	0.030	0.130	0.056	0.044	0.026	-0.060*	-0.025*	-0.003	0.005*	0.066*	0.030*
InsOwn	0.438	0.438	0.356	0.314	0.487	0.505	0.082*	0.124*	-0.049*	-0.067*	-0.131*	-0.190*

Some interesting patterns are also exhibited in the estimated insiders' tax liabilities across different payout samples. Dividend-only firms have the lowest payout to insiders, on average, while repurchase-only firms have the lowest median values. Firms with both dividends and repurchases have the highest payout to insiders even though they have the lowest insider ownership. While the evidence from the dividend-paying and repurchase-only firms seems to suggest insiders' tax preferences differ across payout choices, it is unclear whether insiders' tax preferences are a significant determinant of corporate payout choice for firms that use both dividends and share repurchases. In particular, the total payouts in those firms do not differentiate dividends from share repurchases. In the following analysis, we construct variables that measure a firm's tendency to employ share

repurchases versus dividends, taking into account the fact that more than 30% of our sample firms use both forms of payout. We separately examine whether a systematic relation between insiders' tax preferences and payout methods exists within firms that employ both dividends and repurchases.

#### IV. Insiders' Tax Preferences and Choice of Payout

In this section, we first explore the univariate evidence between insider ownership and corporate payouts. We then study the relation between insiders' tax preferences and corporate payout choices while controlling for firm characteristics also known to affect payouts.

##### A. The Univariate Relation between Insider Ownership and Corporate Payouts

Our first hypothesis posits that firms with higher insider ownership are more likely to employ share repurchases as the form of payout. Additionally, the effect of insider shareholdings should be more significant when the tax costs of dividends are higher relative to capital gains. To conduct a preliminary test, we perform a two-way sort. We first sort all payout firms each year into quintiles based on their payout levels. Quintile 1 (5) contains firms with the lowest (highest) payout. We then further sort firms in each payout quintile into five quintiles based on the level of insider ownership. Quintile 1 (5) contains firms with the lowest (highest) insider ownership. This two-way sort results in 25 portfolios. Within each portfolio, we calculate the average ratio of repurchase to total payout.

Panel A of Table 3 shows that except for the lowest payout firms (quintile 1), firms with higher insider ownership are associated with greater ratios of repurchases to total payouts. For example, in payout quintile 2 the repurchase ratio changes from 45.9% to 55.9%. For the highest payout firms (quintile 5) the ratio increases from 36.6% to 60.9%. The differences, ranging from 10% to almost 29%, are significant at the 1% level. We further examine whether this trend is different in years when the tax costs of dividends are higher. In Panels B and C, we repeat the same exercise as in Panel A for two time periods: 1991–1996 and 1997–2001. The differences between tax rates on dividends and capital gains are smaller during the first time period. As shown in both panels, the ratio of purchases to total payouts remains positively correlated with insider ownership in both periods. More important, the differences between Q5 and Q1 are larger in the second period. This indicates that the effect of insider shareholdings is stronger when the tax costs of dividends are higher than those of capital gains. In the next section, we conduct multivariate tests on insiders' tax preferences and corporate payout policy.

##### B. Association between Insiders' Tax Preferences and Payout Choices

To test our hypotheses, we use the following two specifications: For each firm  $i$ ,

TABLE 3  
Average Percentage of Repurchases in Total Payouts Based on Levels of Payouts and Insider Ownership

Table 3 presents the average percentage of repurchases in total payouts based on different levels of payouts and insider ownership. We sort all payout firms each year into payout and insider ownership quintiles independently. Q1 (5) contains firms with the lowest (highest) level of payout or insider ownership. We then calculate average ratios of repurchase to total payouts within each quintile. Total payout is DIV plus REPO where DIV is the total amount of dividends declared on the common stock and REPO is the expenditure on the purchase of common and preferred stocks minus any reduction in the redemption value of preferred stock. Insider ownership, defined as aggregate holdings of officers and directors, is scaled by the firm's total common shares outstanding. Panel A reports results from the whole sample period, 1991 to 2001. Panels B and C report results from two subperiods, 1991–1996 and 1997–2001. The first period has lower dividend tax preferences than the second period (see Table 1, Panel B, column 3). The right two columns present differences between quintiles 1 and 5.  $p$ -values are in parentheses.

Payout Quintile	Insider Ownership Quintile					Difference	
	Q1 (Low)	Q2	Q3	Q4	Q5 (High)	Q5 – Q1	( $p$ -Value)
<i>Panel A. The Average Ratio of Repurchases to Total Payouts (1991–2001)</i>							
Q1 (Low)	0.802	0.764	0.781	0.793	0.781	–0.021	(0.590)
Q2	0.459	0.543	0.528	0.535	0.559	0.100	(0.006)
Q3	0.300	0.419	0.480	0.513	0.518	0.218	(0.000)
Q4	0.292	0.451	0.510	0.507	0.577	0.285	(0.000)
Q5 (High)	0.366	0.542	0.506	0.553	0.609	0.243	(0.000)
<i>Panel B. The Average Ratio of Repurchases to Total Payouts (1991–1996)</i>							
Q1 (Low)	0.744	0.724	0.722	0.696	0.691	–0.053	(0.382)
Q2	0.352	0.424	0.386	0.354	0.413	0.061	(0.242)
Q3	0.158	0.281	0.324	0.352	0.330	0.172	(0.000)
Q4	0.182	0.304	0.360	0.364	0.426	0.245	(0.000)
Q5 (High)	0.265	0.405	0.382	0.355	0.521	0.255	(0.000)
<i>Panel C. The Average Ratio of Repurchases to Total Payouts (1997–2001)</i>							
Q1 (Low)	0.862	0.796	0.839	0.875	0.863	0.001	(0.986)
Q2	0.552	0.646	0.660	0.707	0.682	0.129	(0.007)
Q3	0.433	0.547	0.601	0.674	0.690	0.257	(0.000)
Q4	0.399	0.585	0.640	0.632	0.701	0.301	(0.000)
Q5 (High)	0.452	0.670	0.636	0.695	0.733	0.281	(0.000)

$$(1) \quad \left( \frac{\text{REPO} - \text{DIV}}{\text{REPO} + \text{DIV}} \right)_i = \alpha_1 + \beta_1 \text{ITP}_i + \beta_2 (\text{TotalPayout})_i + \beta_3 X_i + \varepsilon_i,$$

$$(2) \quad \left( \frac{\text{REPO} - \text{DIV}}{\text{TotalAssets}} \right)_i = \alpha_1 + \beta_1 \text{ITP}_i + \beta_2 (\text{TotalPayout})_i + \beta_3 X_i + \varepsilon_i,$$

where REPO (DIV) is the amount of repurchase (dividend), ITP is a measure of insiders' tax preferences,  $X_i$  is a vector of control variables, and  $\varepsilon_i$  is an error term. As discussed in the previous section, we use insider ownership as the major proxy for insiders' tax preference. We further interact insider ownership with the tax rate differential between dividends and capital gains in the regressions to capture the time-varying tax advantage of share repurchases during the sample period. In addition, we include payout to insiders to gauge the incremental impact of insiders' estimated tax liabilities on payout choice. In all specifications, we include the logarithm of total payout to control for any possible time trends in payouts.

In the above specifications, we construct two continuous dependent variables to measure a firm's choice of payout:  $(\text{REPO} - \text{DIV})/(\text{REPO} + \text{DIV})$  and  $(\text{REPO} - \text{DIV})/(\text{TotalAssets})$ . A positive (negative) ratio indicates that a firm uses more cash in repurchase (dividend). A ratio of zero means that a firm has

exactly the same amount of dividend and repurchase in that year. Both dependent variables enable us to capture managerial incentives to pay out cash as a dividend or repurchase or both at the same time. This is especially useful for firms that are dividend payers but that are also required to pay out additional cash flows possibly because of agency issues. Existing studies show that once firms have initiated dividend programs, they usually continue to do so in the future. Moreover, Feldstein and Green (1983) suggest that the Internal Revenue Service would not allow firms to eliminate taxes totally through full displacement of dividends by share repurchases. As shown in Table 2, more than 30% of our sample firms have both dividends and share repurchases. In these cases, managers can either increase existing dividend levels or employ repurchase programs if they are required to distribute extra cash to shareholders.

Further, some differences exist in our two dependent variables. The first variable is better than the second in capturing a firm's propensity to utilize a specific form of payment because it indicates the net percentage of total payout as repurchase. It, however, does not adjust for the size of the total payout. For example, some firms may choose to pay out a high percentage of their earnings to their shareholders while others may pay a very small amount. If a firm's total payout is low, considerations other than insiders' tax preferences may be more important. This potential issue is mitigated in our second dependent variable in which we use the difference between repurchases and cash dividends normalized by total assets to measure the payout decisions. Overall, our results are qualitatively similar using these two different dependent variables.

Since the first dependent variable is constrained between  $-1$  and  $+1$ , we resort to Tobit regressions censored on both sides. The second specification is estimated in cross-sectional regressions. We include year dummies in all regressions to control for potential time effects. Table 4 presents estimates of our models predicting payout choices. Regressions 1–4 (5–12) provide results from the first (second) specification.<sup>16</sup> Models 1 to 8 include all payout firms, while models 9 to 12 include firms that employ both dividends and repurchases.

We first estimate the effect of insider ownership on payout policy. We argue that firms prefer share repurchases if insider shareholdings are high. The results in models 1, 5, and 9 of Table 4 support this hypothesis, indicating a positive relation between insider ownership and corporate propensity to disburse cash via repurchases. All three coefficients are statistically and economically significant. For example, the standard deviation of insider ownership is 20.2% (Table A.1) and the average total assets in our sample firms are \$2,825.94 million. Consequently, in model 5, an increase of one standard deviation of insider ownership corresponds to an \$11.49 million increase of the difference between repurchase and dividend.

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<sup>16</sup>We also estimate our models using panel data with firm fixed effects. This is to control for unobservable firm characteristics that might also affect corporate payout policy. Firms with more than three observations are included in panel regressions. The results, available from the authors, are similar.

TABLE 4  
Cross-Sectional Regressions Predicting a Firm's Choice of Payout

The dependent variable in regressions 1 to 4 and 9 to 12 is defined as  $(REPO - DIV) / (REPO + DIV)$ . The dependent variable in regressions 5 to 8 is defined as the percentage of  $(REPO - DIV) / (TotalAssets)$ . Regressions 1 to 4 and 9 to 12 are censored regressions (Tobit) on both sides,  $(-1, +1)$ . Year dummies from 1991 to 2000 are included in all regressions. DIV is the total amount of dividends declared on the common stock. REPO is the expenditure on the purchase of common and preferred stocks minus any reduction in redemption value of preferred stock. PayoutToInsiders is calculated as total payout (DIV plus REPO) multiplied by the percentage of insider ownership. Insider ownership (IO) is defined as aggregate holdings of officers and directors. TaxPreference is the difference in individual tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ), which are the maximum marginal tax rates for individual shareholders under the Internal Revenue Code during the sample period (Table 1, Panel B, column 3). Institutional ownership (InsOwn) is obtained from SEC 13F filings recorded by Spectrum. Both ownership variables are scaled by the firm's total common shares outstanding. CASH is the book value of cash and short-term investments. DEBT is the sum of long-term and short-term debt. The market-to-book ratio (MBV) is defined as the ratio of the market value of assets to the book value of assets. Firm size (FS) is the logarithm of net sales. PROFITABILITY is operating income before depreciation. NOPER is the non-operating income. CAPEX is the capital expenditures. CASH, DEBT, PROFITABILITY, NOPER, and CAPEX are scaled by the book value of the total assets. The standard deviation of operating income,  $\sigma(ROA)$ , is the standard deviation of the ratio of operating income to total assets measured over the five-year period. *p*-values, in parentheses, are computed using the Huber-White (for Tobit) or White (for cross-sectional) standard error correction method.

	Sample: All Payout Firms				Sample: All Payout Firms				Sample: Firms with DIV > 0 and REPO > 0			
	Dep Var: $\frac{(REPO - DIV)}{(REPO + DIV)}$				Dep Var: $\frac{(REPO - DIV)}{(TotalAssets)}$				Dep Var: $\frac{(REPO - DIV)}{(TotalAssets)}$			
	Model: Tobit				Model: Cross-Sectional				Model: Cross-Sectional			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Intercept	0.813 (0.000)	0.796 (0.000)	0.898 (0.000)	0.875 (0.000)	6.039 (0.000)	6.100 (0.000)	6.600 (0.000)	6.540 (0.000)	0.429 (0.000)	0.434 (0.000)	0.461 (0.000)	0.459 (0.001)
Insider Ownership (IO)	0.746 (0.000)	-1.002 (0.000)	-1.131 (0.000)	-1.066 (0.000)	2.012 (0.001)	0.249 (0.731)	-0.403 (0.582)	-0.128 (0.861)	0.474 (0.000)	-0.100 (0.273)	-0.147 (0.112)	-0.122 (0.185)
(IO)* (TaxPreference)		13.023 (0.000)	12.845 (0.000)	12.675 (0.000)		12.715 (0.036)	12.655 (0.035)	11.450 (0.053)		4.092 (0.000)	4.023 (0.000)	3.884 (0.000)
PayoutToInsiders			0.512 (0.000)				0.028 (0.000)				0.078 (0.000)	
(PayoutToInsiders)* (TaxPreference)				2.467 (0.000)				0.159 (0.000)				0.453 (0.000)
Payout	-0.081 (0.000)	-0.081 (0.000)	-0.097 (0.000)	-0.093 (0.000)	1.307 (0.000)	1.307 (0.000)	1.227 (0.000)	1.239 (0.000)	0.248 (0.000)	0.244 (0.000)	0.238 (0.000)	0.239 (0.000)
InsOwn	0.424 (0.000)	0.465 (0.000)	0.541 (0.000)	0.522 (0.000)	2.107 (0.000)	2.126 (0.000)	2.536 (0.000)	2.485 (0.000)	0.319 (0.000)	0.304 (0.000)	0.318 (0.000)	0.316 (0.000)
CASH	2.979 (0.000)	2.946 (0.000)	2.930 (0.000)	2.933 (0.000)	0.393 (0.655)	0.345 (0.693)	0.178 (0.836)	0.202 (0.815)	-0.025 (0.752)	0.000 (1.000)	0.006 (0.939)	0.005 (0.947)
DEBT	0.588 (0.000)	0.577 (0.000)	0.579 (0.000)	0.575 (0.000)	3.200 (0.009)	3.193 (0.009)	3.208 (0.008)	3.194 (0.008)	0.287 (0.000)	0.260 (0.000)	0.262 (0.000)	0.261 (0.000)
MBV	0.127 (0.000)	0.128 (0.000)	0.112 (0.000)	0.115 (0.000)	0.461 (0.002)	0.464 (0.002)	0.415 (0.005)	0.416 (0.005)	-0.061 (0.000)	-0.062 (0.000)	-0.066 (0.000)	-0.066 (0.000)
FS	-0.276 (0.000)	-0.281 (0.000)	-0.310 (0.000)	-0.303 (0.000)	-0.307 (0.000)	-0.313 (0.000)	-0.469 (0.000)	-0.447 (0.000)	0.011 (0.045)	0.010 (0.069)	0.002 (0.670)	0.003 (0.570)
PROFITABILITY	-2.303 (0.000)	-2.243 (0.000)	-2.175 (0.000)	-2.187 (0.000)	-3.486 (0.062)	-3.422 (0.068)	-3.369 (0.073)	-3.389 (0.071)	0.646 (0.000)	0.660 (0.000)	0.683 (0.000)	0.685 (0.000)
NOPER	-2.177 (0.004)	-1.998 (0.008)	-2.007 (0.008)	-1.990 (0.008)	0.927 (0.734)	1.080 (0.693)	0.975 (0.721)	1.016 (0.710)	-0.999 (0.010)	-1.021 (0.006)	-1.018 (0.006)	-1.012 (0.007)
CAPEX	1.285 (0.000)	1.252 (0.000)	1.245 (0.000)	1.250 (0.000)	-1.461 (0.135)	-1.503 (0.124)	-1.511 (0.120)	-1.489 (0.125)	-0.507 (0.004)	-0.485 (0.006)	-0.486 (0.006)	-0.486 (0.006)
$\sigma(ROA)$	0.026 (0.599)	0.026 (0.604)	0.026 (0.606)	0.026 (0.606)	-0.003 (0.941)	-0.004 (0.923)	-0.003 (0.944)	-0.003 (0.944)	0.002 (0.814)	0.004 (0.706)	0.004 (0.731)	0.003 (0.732)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	15,262	15,262	15,262	15,262	15,262	15,262	15,262	15,262	4,998	4,998	4,998	4,998
Adjusted R <sup>2</sup>	0.188	0.190	0.195	0.194	0.116	0.117	0.125	0.124	0.205	0.214	0.217	0.217



We further test whether the effect of insider ownership is stronger when the tax costs of dividends are greater by including an interaction variable:  $(IO) * (TaxPreference)$ .  $TaxPreference$ , defined as  $T_D - T_C$ , captures the tax disparity between dividends and capital gains. The difference in tax rates between dividends and capital gains exhibits significant time variations during our sample period. The difference jumped from 3.0% in 1991 to 19.6% in 2000 as a result of the tax rate increase on dividends and decrease on capital gains. As discussed earlier, even though the tax benefit of share repurchases is not purely driven by the differential tax rates, the magnitude of the difference between these two tax rates could still influence insiders' payout choices. When the difference in the two tax rates increases, the motivations for insiders to adjust their payouts toward repurchases should be stronger. The coefficients of the interaction variable in all nine models of Table 4 are significantly positive at least at the 5% level. The results indicate that the higher the relative tax benefits to insiders, the higher the probability that firms will use repurchases. Interestingly, after the interaction variable is included in the regressions, insider ownership becomes either insignificant or negative. This suggests that insider shareholdings are an important determinant of corporate payout policy especially when the tax costs of dividends are high.

We next explore the impact of payout to insiders on corporate payout policy. Regressions 3, 7, and 11 show that firms tend to employ share repurchases when the payout to insiders is high. Again, we estimate the economic significance of the coefficients. The standard deviation of the payout to insiders is \$18.55 million; consequently, in model 7, an increase of one standard deviation of the payout to insiders corresponds to a \$14.68 million increase of the difference between repurchase and dividend.

We further investigate the impact of insiders' tax motivation on corporate payout choices using the variable,  $(PayoutToInsiders) * (T_D - T_C)$ , in the analysis. One interpretation from this variable is that it calculates the differences in tax payments for insiders *as if* firms distributed all cash payouts through share repurchases or cash dividends. It essentially estimates the maximum amount insiders could save on taxes if firms distributed all payouts through repurchases rather than dividends. Thus, this variable provides a direct measure of insiders' tax preferences. To some extent, it also captures the time-varying tax advantage of share repurchases. We expect that insiders will have greater incentives to utilize repurchases if their potential tax savings are high. By moving part of cash distributions to repurchases, insiders are able to realize their tax savings. The findings from regressions 4, 8, and 12 support this conjecture. If insiders' potential tax savings are high, insiders are more inclined to use repurchases as the form of payout. Overall, the findings in Table 4 support our argument that insiders' tax preferences influence corporate payout policy.

### C. The Impact of Total Payouts and Firm Characteristics on Payout Choice

So far we have presented our insiders' tax explanations of corporate payout policy. Here, we investigate whether total payouts to shareholders alone can explain why firms choose certain forms of payout. As examined in various studies

in corporate payout policy, if firms consider major shareholders' (not simply insiders') tax situations, we could observe a positive relation between total payouts to shareholders and firms' incentives toward repurchases.<sup>17</sup> To explore this possibility, we include total payouts in all specifications. In addition, including total payouts in our analysis further controls for the fact that fluctuations in payouts could almost be explained by fluctuations in share repurchases during our sample period.<sup>18</sup>

As presented in Table 4, the coefficients of total payouts to shareholders are not consistent, ranging from  $-0.097$  to  $1.307$ . The signs of coefficients alternate depending on different specifications. It is evident that the level of total payouts alone cannot explain corporate payout choices after controlling for insiders' tax preferences. This also implies that insiders' tax preferences, and not the overall shareholders' tax exposures, affect payout decisions.

Moreover, the results from control variables in Table 4 provide additional explanations on why firms use different forms of payout. For example, firms with less debt are more likely to pay out cash via dividends. This is consistent with the predictions of Lintner (1956). In our full sample, we also find that larger and profitable firms tend to use dividends while those with more growth opportunities (higher market-to-book ratios) have a greater propensity to pay out cash through repurchases. Finally, we find that institutional holdings are positively associated with firms' tendencies to use repurchases.

#### D. The Relation between the Change in Insiders' Tax Preferences and the Change in Payouts

Our previous multivariate analysis strongly supports the notion that insiders' tax preferences are an important determinant of payout methods. In this section, we examine whether the changes in insiders' tax preferences induce firms to adjust their existing payout practices to fit insiders' own tax situations. This presents an effective reevaluation on the results we have documented using the level of insiders' tax preferences. In this subsection, we use a specification similar to equations (1) and (2). For each firm  $i$ ,

$$(3) \quad \left( \frac{\Delta \text{REPO}_t - \Delta \text{DIV}_t}{\text{REPO}_{t-1} + \text{DIV}_{t-1}} \right)_i = \alpha_i + \beta_1 \Delta \text{ITP}_{it} + \beta_2 \Delta \text{Payout}_{it} + \beta_3 X_{it} + \varepsilon_i,$$

$$(4) \quad \left( \frac{\Delta \text{REPO}_t - \Delta \text{DIV}_t}{\text{TotalAssets}_{t-1}} \right)_i = \alpha_i + \beta_1 \Delta \text{ITP}_{it} + \beta_2 \Delta \text{Payout}_{it} + \beta_3 X_{it} + \varepsilon_i.$$

In both equations, the dependent variable is the net change in repurchase in year  $t$  normalized by the payout level or total assets in the previous year ( $t - 1$ ). Note that the net change in repurchase in the numerator is after the adjustment of the change in dividend. Thus, if the increased amount in the dividend is higher than that in the repurchase in the same year, the numerator could be negative.

<sup>17</sup>Obviously this argument assumes that dividends are taxed higher than capital gains for most shareholders. One exception is that corporations that own stock in other corporations are taxed lower on dividends than on capital gains. Barclay et al. (2008) find that, despite this unusual aspect of tax code, firms' dividend levels remain similar after corporations purchase large blocks of stock.

<sup>18</sup>We thank the referee for this suggestion.

There are two benefits from these specifications. One, although we control for various factors related to payout policy in our level regressions (equations (1) and (2)), some omitted variables could still affect the results. There are two ways to mitigate this issue. The first is to utilize panel models with firm fixed effects and the second is to estimate how the change in one variable would affect the change in other variables of interest. By examining the relation between the change in corporate payout and the change in insiders' tax preferences, we are able to net out the impact of those omitted or firm-specific variables. Two, as discussed in many studies in share ownership by insiders, the observed correlation between the level of insider ownership and many variables of interest (such as firm value) could be spurious.<sup>19</sup> McConnell, Servaes, and Lins (2003) show that using changes in share ownership can at least mitigate the endogeneity issue. We adopt both solutions in our additional tests. To conserve space, we only report the results from the second approach.<sup>20</sup>

To test our hypotheses, we regress the net change in repurchases against the change in insiders' tax preferences. The results are presented in Table 5. If the change in insiders' tax preferences provides sufficient incentives for firms to modify their existing payout policies, then we should observe a positive and significant coefficient of  $\beta_1$ . We find that increases in insiders' tax preferences are positively related to firms' shift of payout policy toward share repurchases. Regressions 1 and 6 show that an increase in insider ownership is related to a positive change in net repurchases. The coefficients are also economically significant. For instance, in model 6, a 1% increase in insider ownership results in a net increase of \$117.7 million in share repurchases, on average. Furthermore, models 2 and 7 present evidence that the impact of the change in insider ownership is quite significant when the tax costs of dividends are higher. This implies that the positive relation between the changes in net repurchases and insider ownership is mostly driven during the period when dividends are more tax disadvantaged. When the difference in tax rates on dividends and capital gains is higher, insiders have more incentives to readjust corporate payout policy toward repurchases.

Regressions 3 and 8 show that an increase in payout to insiders is significantly associated with an increase in a firm's net repurchase. For example, in model 3, one standard deviation of the change in payout to insiders (\$22.17 million) corresponds to a positive 25.16% change of the difference between repurchase and dividend relative to last year's payout level. Further, as indicated in models 4 and 9, after taking into account the tax disparity between repurchases and dividends, an increase in insiders' potential tax preferences also induces the firm to redistribute cash toward a repurchase.<sup>21</sup> Overall, the evidence in Table 5 reconfirms our earlier findings and suggests that the change in corporate payout policy is strongly motivated by the change in insiders' tax preferences.

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<sup>19</sup>See for example, Demsetz (1983), Demsetz and Lehn (1985), Cho (1998), Himmelberg, Hubbard, and Palia (1999), and Coles, Lemmon, and Meschke (2003).

<sup>20</sup>Results from panel regressions are qualitatively similar and available from the authors.

<sup>21</sup>In Table 5, we use the level of firm characteristics as independent variables. We rerun regressions using changes in firm characteristics. The main results are unchanged.

TABLE 5  
 Cross-Sectional Regressions Predicting a Firm's Change in Payout Method

The dependent variables are the change in net repurchases, defined as  $(\Delta\text{REPO} - \Delta\text{DIV})_t / (\text{REPO} + \text{DIV})_{t-1}$  or  $(\Delta\text{REPO} - \Delta\text{DIV})_t / (\text{TotalAssets})_{t-1}$ . DIV is the total amount of dividends declared on the common stock. REPO is the expenditure on the purchase of common and preferred stocks minus any reduction in redemption value of preferred stock. PayoutToInsiders is defined as total payout (DIV plus REPO) multiplied by the percentage of insider ownership. Insider Ownership (IO) is defined as aggregate holdings of officers and directors. Institutional ownership (InsOwn) is obtained from SEC 13F filings recorded by Spectrum. Both ownership variables are scaled by the firm's total common shares outstanding. TaxPreference is the difference in individual tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ), which are the maximum marginal tax rates for individual shareholders under the Internal Revenue Code during the sample period (Table 1, Panel B, column 3). CASH is the book value of cash and short-term investments. DEBT is the sum of long-term and short-term debt. The market-to-book ratio (MVBV) is defined as the ratio of the market value of assets to the book value of assets. Firm size (FS) is the logarithm of net sales. PROFITABILITY is operating income before depreciation. NOPER is the non-operating income. CAPEX is the capital expenditures. CASH, DEBT, PROFITABILITY, NOPER, and CAPEX are scaled by the book value of the total assets. The standard deviation of operating income,  $\sigma(\text{ROA})$ , is the standard deviation of the ratio of operating income to total assets measured over the five-year period. Year dummies from 1991 to 2000 are included in all regressions.  $\rho$ -values, in parentheses, are computed using the White standard error correction method.

	Dep Var: $(\Delta\text{REPO} - \Delta\text{DIV})_t / (\text{REPO} + \text{DIV})_{t-1}$					Dep Var: $(\Delta\text{REPO} - \Delta\text{DIV})_t / (\text{TotalAssets})_{t-1}$				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Intercept	0.795 (0.002)	0.668 (0.009)	0.705 (0.005)	0.735 (0.004)	0.842 (0.001)	-0.805 (0.075)	-0.958 (0.040)	-0.727 (0.110)	-0.657 (0.145)	-0.652 (0.129)
$\Delta(\text{IO})$	2.954 (0.001)	-1.146 (0.253)	-1.257 (0.207)	-1.097 (0.274)	-0.675 (0.383)	4.165 (0.000)	-0.187 (0.856)	-0.791 (0.428)	0.059 (0.952)	0.068 (0.944)
$\Delta(\text{IO}) * (\text{TaxPreference})$		29.541 (0.000)	28.648 (0.000)	27.131 (0.000)	25.087 (0.000)		33.632 (0.000)	27.807 (0.001)	22.800 (0.003)	22.092 (0.006)
$\Delta(\text{PayoutToInsiders})$			1.135 (0.049)					0.063 (0.000)		
$\Delta[(\text{PayoutToInsiders}) * \text{TaxPreference}]$				8.921 (0.001)	9.282 (0.001)				0.363 (0.001)	0.367 (0.000)
$\Delta\text{Payout}$	0.179 (0.058)	0.164 (0.091)	0.158 (0.091)	0.157 (0.089)	0.165 (0.067)	2.091 (0.000)	2.074 (0.000)	2.040 (0.000)	2.048 (0.000)	1.942 (0.000)
$\Delta\text{InsOwn}$	-0.487 (0.615)	-0.798 (0.421)	-0.854 (0.390)	-0.878 (0.376)		0.948 (0.402)	0.552 (0.618)	0.307 (0.776)	0.307 (0.775)	
InsOwn					0.923 (0.004)					0.545 (0.257)
CASH	0.721 (0.087)	0.717 (0.089)	0.710 (0.091)	0.712 (0.090)	0.587 (0.156)	0.341 (0.681)	0.320 (0.699)	0.286 (0.726)	0.318 (0.697)	0.376 (0.636)
DEBT	0.749 (0.096)	0.741 (0.099)	0.739 (0.097)	0.741 (0.095)	0.718 (0.098)	1.368 (0.410)	1.355 (0.413)	1.352 (0.404)	1.368 (0.398)	1.378 (0.392)
MVBV	-0.059 (0.114)	-0.051 (0.175)	-0.055 (0.140)	-0.060 (0.104)	-0.076 (0.039)	-0.053 (0.560)	-0.044 (0.630)	-0.070 (0.426)	-0.088 (0.318)	-0.092 (0.282)
FS	-0.093 (0.007)	-0.081 (0.018)	-0.085 (0.011)	-0.089 (0.009)	-0.164 (0.000)	0.003 (0.949)	0.018 (0.727)	-0.011 (0.844)	-0.020 (0.722)	-0.059 (0.407)
PROFITABILITY	1.294 (0.001)	1.262 (0.001)	1.257 (0.001)	1.258 (0.001)	1.161 (0.001)	2.951 (0.002)	2.923 (0.003)	2.883 (0.002)	2.905 (0.002)	2.946 (0.001)
NOPER	1.215 (0.284)	1.226 (0.283)	1.214 (0.286)	1.204 (0.289)	1.221 (0.264)	4.950 (0.245)	5.059 (0.238)	4.914 (0.247)	4.882 (0.248)	4.919 (0.240)
CAPEX	0.048 (0.960)	-0.126 (0.896)	-0.161 (0.867)	-0.154 (0.872)	-0.227 (0.811)	-0.354 (0.781)	-0.536 (0.672)	-0.736 (0.556)	-0.657 (0.599)	-0.694 (0.574)
$\sigma(\text{ROA})$	-0.036 (0.474)	-0.026 (0.587)	-0.025 (0.604)	-0.024 (0.619)	-0.029 (0.579)	-0.472 (0.315)	-0.496 (0.289)	-0.468 (0.292)	-0.461 (0.294)	-0.452 (0.294)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	11,471	11,471	11,471	11,471	11,593	1,426	10,426	10,426	10,426	10,508
Adjusted $R^2$	0.016	0.019	0.020	0.022	0.021	0.044	0.047	0.075	0.074	0.072

## V. Robustness Checks

We noted several robustness checks in the preceding analyses. In this section, we discuss additional tests with respect to firm size, different definitions of insiders, the inclusion of management stock options, and the endogeneity issue.

### A. Payout Decisions Based on Different Levels of Payout and Firm Size

Firms with different levels of payouts may have different incentives on payouts. It is reasonable to assume that if corporate payout levels are low (hence payouts to insiders are low), management may have little incentive to adjust the payout policy for their own benefits. Thus, the previously documented effect of insider ownership on corporate payouts could be different between low and high payout firms. The findings in Table 6 provide some support for this argument. As shown in models 1 and 5, the coefficient of insider ownership is highly significant for high payout firms, but not so for low payout firms. Interestingly, the results also reveal that the effect of insider ownership continues to be significant when the tax costs of dividends are high irrespective of the payout levels. We also find that the payout to insiders remains significant in both subsamples.

Further, firms with various market capitalizations could implement different payout policies (Jagannathan et al. (2000) and Grullon and Michaely (2002)). The payout amount could also be correlated with firm size and affect insiders' incentive to choose different methods of payout. To control for this effect, we split our sample by the median firm size and rerun regressions within each subsample. The results are displayed in Table 7. Overall, our main findings remain strong. Interestingly, judging from the significance of the coefficients, insiders' tax preferences seem to have more impact on the form of payout in large firms. It is likely that the payout amount to insiders in large firms is higher such that management has more incentives to adjust payouts toward repurchases.

### B. Managerial Stock and Option Incentives

Weisbenner (2000) and Fenn and Liang (2001) provide evidence that managerial option holdings are strongly related to payout methods. Higher managerial stock options are associated with lower dividend payouts and/or higher share repurchases. Since managerial option holdings and insiders' tax preferences could have similar effects on the choice of payout, it is important to examine whether our variables measuring insiders' tax preferences are simply manifestations of managerial option holdings. In this section, we constrain our sample to firms with available managerial option holdings and reexamine our hypotheses.

We obtain managerial stock and option holdings from ExecuComp that cover executive compensation data for firms in the S&P 500, Midcap 400, and Smallcap 600 indices. Executive stock holdings are shares held by executive officers as reported in company proxy statements while option holdings are shares underlying options held by officers. In this study, both stock and option holdings are scaled by total common shares outstanding. This sample is then matched with our initial sample from CRSP, Compustat, and Compact Disclosure. This procedure reduces

TABLE 6

## Regressions in Subsamples Predicting a Firm's Choice of Payout Based on Level of Payouts

Models 1 to 4 report regressions for firms with low payouts and Models 5 to 8 show regressions for firms with high payouts. High (low) payout firms are those in payout quintiles 4 and 5 (1 and 2). We sort all payout firms each year by their levels of payouts and assign them into one of the quintiles. The dependent variable is the percentage of  $(REPO - DIV)/(REPO + DIV)$ . We also run regressions with the dependent variable of  $(REPO - DIV)/(TotalAssets)$ . The main results, available upon request, are similar. DIV is the total amount of dividends declared on the common stock. REPO is the expenditure on the purchase of common and preferred stocks minus any reduction in redemption value of preferred stock. PayoutToInsiders is defined as total payout (DIV plus REPO) multiplied by the percentage of insider ownership. Insider ownership (IO) is defined as aggregate holdings of officers and directors. Institutional ownership (InsOwn) is obtained from SEC 13F filings recorded by Spectrum. Both ownership variables are normalized by the firm's total common shares outstanding. TaxPreference is the difference in individual tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ), which are the maximum marginal tax rates for individual shareholders under the Internal Revenue Code during the sample period (Table 1, Panel B, column 3). CASH is the book value of cash and short-term investments. DEBT is the sum of long-term and short-term debt. The market-to-book ratio (MBV) is defined as the ratio of the market value of assets to the book value of assets. PROFITABILITY is operating income before depreciation. NOPER is the non-operating income. CAPEX is the capital expenditures. CASH, DEBT, PROFITABILITY, NOPER, and CAPEX are scaled by the book value of the total assets. The standard deviation of operating income,  $\sigma(ROA)$ , is the standard deviation of the ratio of operating income to total assets measured over the five-year period. Year dummies from 1991 to 2000 are included in all regressions.  $p$ -values, in parentheses, are computed using the White standard error correction method.

	Sample: Low Payout Firms (payout quintiles 1 and 2)				Sample: High Payout Firms (payout quintiles 4 and 5)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.301 (0.573)	0.341 (0.522)	0.296 (0.580)	0.289 (0.590)	0.575 (0.000)	0.562 (0.000)	0.596 (0.000)	0.588 (0.000)
Insider Ownership (IO)	0.335 (0.495)	-3.846 (0.000)	-4.991 (0.000)	-3.759 (0.000)	0.855 (0.000)	-0.258 (0.319)	-0.288 (0.267)	-0.257 (0.321)
(IO)*(TaxPreference)		36.317 (0.000)	32.007 (0.000)	25.074 (0.000)		9.038 (0.000)	8.753 (0.000)	8.641 (0.000)
PayoutToInsiders			172.713 (0.000)				0.053 (0.022)	
(PayoutToInsiders)* (TaxPreference)				957.754 (0.000)				0.260 (0.058)
Payout	-1.436 (0.000)	-1.475 (0.000)	-1.743 (0.000)	-1.669 (0.000)	0.494 (0.000)	0.489 (0.000)	0.483 (0.000)	0.485 (0.000)
InsOwn	1.715 (0.005)	2.040 (0.001)	2.046 (0.001)	2.021 (0.001)	0.717 (0.000)	0.694 (0.000)	0.701 (0.000)	0.700 (0.000)
CASH	1.873 (0.008)	1.798 (0.010)	1.823 (0.009)	1.861 (0.008)	1.187 (0.000)	1.189 (0.000)	1.192 (0.000)	1.191 (0.000)
DEBT	0.856 (0.126)	0.839 (0.130)	0.936 (0.090)	0.918 (0.097)	-0.352 (0.008)	-0.360 (0.007)	-0.359 (0.007)	-0.359 (0.007)
MBV	-0.006 (0.946)	0.010 (0.910)	0.004 (0.969)	0.009 (0.919)	-0.072 (0.000)	-0.070 (0.000)	-0.074 (0.000)	-0.074 (0.000)
FS	-1.688 (0.000)	-1.772 (0.000)	-2.062 (0.000)	-1.980 (0.000)	0.034 (0.005)	0.033 (0.006)	0.026 (0.043)	0.028 (0.029)
PROFITABILITY	-3.253 (0.001)	-3.100 (0.001)	-3.032 (0.001)	-3.070 (0.001)	0.211 (0.464)	0.204 (0.476)	0.233 (0.417)	0.231 (0.423)
NOPER	-3.123 (0.272)	-2.930 (0.290)	-2.851 (0.307)	-3.177 (0.270)	-1.917 (0.139)	-1.597 (0.207)	-1.620 (0.201)	-1.606 (0.205)
CAPEX	-0.458 (0.758)	-0.688 (0.640)	-0.874 (0.553)	-0.799 (0.586)	0.717 (0.055)	0.705 (0.058)	0.703 (0.059)	0.704 (0.058)
$\sigma(ROA)$	15.195 (0.000)	15.015 (0.000)	14.836 (0.000)	14.754 (0.000)	2.498 (0.001)	2.610 (0.000)	2.611 (0.000)	2.613 (0.000)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3,310	3,310	3,310	3,310	4,626	4,626	4,626	4,626
Adjusted $R^2$	0.181	0.195	0.197	0.197	0.291	0.297	0.298	0.298

the sample size from 17,038 to 10,012 firm observations. When we include institutional ownership data from Spectrum, the sample size is further reduced to 7,009. It is noted that the ExecuComp database only contains executives' share holdings while Compact Disclosure reports share ownership from all executives

TABLE 7  
 Regressions in Subsamples Predicting a Firm's Choice of Payout Based on Firm Size

Models 1 to 4 report regressions for small firms and Models 5 to 8 show regressions for large firms. Large (small) firms are those with above (below) median firm size in the sample. Firm size (FS) is the logarithm of net sales. The dependent variable is the percentage of  $(REPO - DIV) / (REPO + DIV)$ . We also run regressions with the dependent variable of  $(REPO - DIV) / (TotalAssets)$ . The main results, available upon request, are similar. DIV is the total amount of dividends declared on the common stock. REPO is the expenditure on the purchase of common and preferred stocks minus any reduction in redemption value of preferred stock. PayoutToInsiders is defined as total payout (DIV plus REPO) multiplied by the percentage of insider ownership. Insider ownership (IO) is defined as aggregate holdings of officers and directors. Institutional ownership (InsOwn) is obtained from SEC 13F filings recorded by Spectrum. Both ownership variables are normalized by a firm's total common shares outstanding. TaxPreference is the difference in individual tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ), which are the maximum marginal tax rates for individual shareholders under the Internal Revenue Code during the sample period (Table 1, Panel B, column 3). CASH is the book value of cash and short-term investments. DEBT is the sum of long-term and short-term debt. The market-to-book ratio (MVBV) is defined as the ratio of the market value of assets to the book value of assets. PROFITABILITY is operating income before depreciation. NOPER is the non-operating income. CAPEX is the capital expenditures. CASH, DEBT, PROFITABILITY, NOPER, and CAPEX are scaled by the book value of the total assets. The standard deviation of operating income,  $\sigma(ROA)$ , is the standard deviation of the ratio of operating income to total assets measured over the five-year period. Year dummies from 1991 to 2000 are included in all regressions.  $p$ -values, in parentheses, are computed using the White standard error correction method.

	Sample: Small Firms with Payouts				Sample: Large Firms with Payouts			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	2.477 (0.000)	2.486 (0.000)	2.520 (0.000)	2.496 (0.000)	-0.274 (0.142)	-0.323 (0.080)	-0.202 (0.278)	-0.242 (0.193)
Insider Ownership (IO)	1.206 (0.000)	-2.992 (0.000)	-3.202 (0.000)	-3.024 (0.000)	1.042 (0.000)	-2.235 (0.000)	-2.363 (0.000)	-2.263 (0.000)
(IO)*(TaxPreference)		31.908 (0.000)	31.311 (0.000)	30.773 (0.001)		22.957 (0.000)	22.703 (0.000)	22.411 (0.000)
PayoutToInsiders			5.113 (0.096)				0.214 (0.000)	
(PayoutToInsiders)* (TaxPreference)				21.982 (0.177)				0.903 (0.000)
Payout	-0.461 (0.000)	-0.472 (0.000)	-0.518 (0.000)	-0.500 (0.000)	0.060 (0.001)	0.059 (0.001)	0.049 (0.006)	0.052 (0.003)
InsOwn	2.400 (0.000)	2.524 (0.000)	2.467 (0.000)	2.474 (0.000)	0.591 (0.000)	0.566 (0.000)	0.584 (0.000)	0.579 (0.000)
CASH	3.736 (0.000)	3.627 (0.000)	3.569 (0.000)	3.587 (0.000)	3.284 (0.000)	3.325 (0.000)	3.327 (0.000)	3.326 (0.000)
DEBT	1.537 (0.000)	1.542 (0.000)	1.430 (0.000)	1.455 (0.000)	0.380 (0.006)	0.357 (0.010)	0.356 (0.010)	0.355 (0.010)
MVBV	0.108 (0.032)	0.109 (0.027)	0.102 (0.036)	0.104 (0.033)	-0.045 (0.035)	-0.043 (0.041)	-0.055 (0.010)	-0.052 (0.014)
FS	-0.940 (0.000)	-0.983 (0.000)	-1.019 (0.000)	-1.001 (0.000)	-0.062 (0.000)	-0.062 (0.000)	-0.084 (0.000)	-0.076 (0.000)
PROFITABILITY	-4.510 (0.000)	-4.318 (0.000)	-4.312 (0.000)	-4.315 (0.000)	1.677 (0.000)	1.716 (0.000)	1.774 (0.000)	1.764 (0.000)
NOPER	-4.326 (0.001)	-3.781 (0.004)	-3.686 (0.005)	-3.710 (0.004)	0.993 (0.484)	1.089 (0.444)	1.040 (0.463)	1.093 (0.441)
CAPEX	2.055 (0.004)	1.868 (0.009)	1.901 (0.007)	1.879 (0.008)	-0.158 (0.686)	-0.136 (0.723)	-0.124 (0.746)	-0.129 (0.736)
$\sigma(ROA)$	-0.003 (0.963)	0.000 (0.999)	0.001 (0.990)	0.001 (0.992)	1.158 (0.004)	1.092 (0.004)	1.098 (0.004)	1.098 (0.004)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7,714	7,714	7,714	7,714	7,548	7,548	7,548	7,548
Adjusted $R^2$	0.156	0.171	0.175	0.174	0.162	0.179	0.183	0.181

and directors. This gives us an opportunity to test whether our results are robust to different definitions of “insiders.”

Table 8 displays summary statistics of stock and option holdings for the whole sample and four subsamples based on payout methods. On average, executive officers directly own 5.22% of shares in their firms. The median value is 1.02%. The average number of shares underlying their options account for 2.61%

of company total shares outstanding. The median value is 1.86%. Based on the percentile distributions and standard deviations (not reported), managerial stock holdings are more widespread than option holdings across our sample firms.

TABLE 8  
Sample Distribution of Executive Stock and Options Incentives

The sample consists of all firms on the CRSP, Compustat, Spectrum, and Compact Disclosure databases from the period 1991–2001. Utilities and financial firms are excluded. This sample is then matched with the Execucomp database, which includes executive compensation data for firms in the S&P 500, Midcap 400, and Smallcap 600 indices. There are 10,012 firm observations included in the final sample. Executive stock holdings are shares held by executive officers as reported in company proxy statements. Executive options holdings are shares underlying options held by executive officers. Both stock and options holdings are scaled by total common shares outstanding. DIV is the total amount of dividends (in millions) declared on the common stock. REPO is the expenditure (in millions) on the purchase of common and preferred stocks minus any redemption value of preferred stock. The first column reports the mean and median for all firms. The next four columns report figures based on payout methods. We test the difference between the whole sample and the subgroups in means and medians using the two-sided *t*-test and the Wilcoxon rank sum test. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

		All Firms	DIV = 0, REPO = 0	DIV > 0, REPO = 0	DIV = 0, REPO > 0	DIV > 0, REPO > 0
Stock Holdings/Shrout	Mean	0.0522	0.0598***	0.0495	0.0576**	0.0448***
	Median	0.0102	0.0157***	0.0082***	0.0147***	0.0077***
Options Holdings/Shrout	Mean	0.0261	0.0341***	0.0174***	0.0378***	0.0189***
	Median	0.0186	0.0283***	0.0117***	0.0310***	0.0129***
No. of observations		10,012	2,709	2,179	1,804	3,320

The next four columns of Table 8 provide means and medians of managerial stock and option holdings according to payout methods. There are 2,709 firm observations that do not have any payout; 2,179 (1,804) cases use only cash dividends (share repurchases) while 3,320 cases pay out cash in the form of dividends and repurchases. Furthermore, it reveals that repurchase-only and non-payout firms are associated with higher stock and option holdings. Dividend-paying firms with or without repurchases have lower stock and option holdings. This evidence is consistent with Fenn and Liang (2001). Again, since we examine corporate payout choices, we are careful to treat firms without payout. Although our main focus is on payout firms, including firms without payout in our regressions does not materially affect our results.

We repeat our previous multivariate analysis by including executive option holdings as an additional variable. As shown in Table 9, the relations between insiders' tax preferences and corporate payout choices remain statistically significant even after we control for executive option holdings. Regressions 1 and 5 indicate that insider ownership is positively correlated with management preference toward repurchases when the tax costs of dividends are high. Similarly, regressions 2 and 6 suggest that when the payout to insiders is high, managers are more likely to employ repurchases as the form of payout. For additional checks, we replace insider ownership (from Compact Disclosure) with executive stock holdings (from Execucomp). As shown in the remaining models, the results are not sensitive to the definition of insiders. Our variables of interest remain important in explaining payout choices. Again, our findings in this section strongly suggest that insiders' tax preferences are an important determinant of corporate payout decisions. This relation is not simply a manifestation of the option effect reported in Weisbenner (2000) and Fenn and Liang (2001).



TABLE 9

**Regressions Predicting a Firm's Choice of Payout with Variables of Executive Stock and Option Incentives**

The dependent variable in regressions 1 to 4 is  $(REPO - DIV) / (REPO + DIV)$ . The dependent variable in regressions 5 to 8 is the percentage of  $(REPO - DIV) / (TotalAssets)$ . Regressions 1 to 4 are censored regressions (Tobit) on both sides,  $(-1, +1)$  and regressions 5 to 8 are cross sectional. Year dummies from 1991 to 2000 are included in all regressions. DIV is the total amount of dividends declared on the common stock. REPO is the expenditure on the purchase of common and preferred stocks minus any reduction in redemption value of preferred stock. PayoutToInsiders is calculated as total payout (DIV plus REPO) multiplied by the percentage of insider ownership. Insider ownership (IO) is defined as aggregate holdings of officers and directors. Institutional ownership (InsOwn) is obtained from SEC 13F filings recorded by Spectrum. Executive stock holdings, from Execucomp, are equity shares held by executive officer. Executive option holdings are shares underlying options held by executive officers. All three ownership variables are scaled by the firm's total common shares outstanding. TaxPreference is the difference in individual tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ), which are the maximum marginal tax rates for individual shareholders under the Internal Revenue Code during the sample period (Table 1, Panel B, column 3). CASH is the book value of cash and short-term investments. DEBT is the sum of long-term and short-term debt. The market-to-book ratio (MVBV) is defined as the ratio of the market value of assets to the book value of assets. Firm size (FS) is the logarithm of net sales. PROFITABILITY is operating income before depreciation. NOPER is the non-operating income. CAPEX is the capital expenditures. CASH, DEBT, PROFITABILITY, NOPER, and CAPEX are scaled by the book value of the total assets. The standard deviation of operating income,  $\sigma(ROA)$ , is the standard deviation of the ratio of operating income to total assets measured over the five-year period.  $p$ -values, in parentheses, are computed using the Huber-White (for Tobit) or White (for cross-sectional) standard error correction method.

	Dep Var: (REPO - DIV)/(REPO + DIV)				Dep Var: (REPO - DIV)/(TotalAssets)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	-0.318 (0.133)	-0.182 (0.394)	-0.224 (0.280)	-0.168 (0.417)	1.094 (0.140)	2.217 (0.003)	1.858 (0.013)	2.498 (0.001)
Insider Ownership (IO)	-0.683 (0.129)	-0.777 (0.084)			-2.302 (0.161)	-3.658 (0.027)		
(IO)*(TaxPreference)	5.745 (0.052)	4.756 (0.107)			34.380 (0.001)	31.552 (0.003)		
Executive Stock Holdings (ESH)			-1.088 (0.060)	-1.125 (0.051)			-5.778 (0.002)	-6.126 (0.000)
(ESH)*(TaxPreference)			6.903 (0.075)	6.611 (0.088)			48.412 (0.000)	45.689 (0.000)
PayoutToInsiders		0.189 (0.000)		0.186 (0.000)		0.022 (0.000)		0.023 (0.000)
Payout	0.184 (0.000)	0.175 (0.000)	0.184 (0.000)	0.176 (0.000)	1.451 (0.000)	1.353 (0.000)	1.448 (0.000)	1.355 (0.000)
Executive Option Holdings	15.233 (0.000)	15.192 (0.000)	15.288 (0.000)	15.115 (0.000)	41.346 (0.000)	41.039 (0.000)	43.058 (0.000)	41.902 (0.000)
InsOwn	-0.106 (0.422)	-0.085 (0.518)	-0.164 (0.203)	-0.095 (0.465)	3.583 (0.000)	3.847 (0.000)	3.033 (0.000)	3.698 (0.000)
CASH	1.466 (0.000)	1.464 (0.000)	1.486 (0.000)	1.481 (0.000)	4.512 (0.000)	4.380 (0.000)	4.534 (0.000)	4.384 (0.000)
DEBT	-0.774 (0.000)	-0.784 (0.000)	-0.780 (0.000)	-0.781 (0.000)	4.923 (0.117)	4.850 (0.119)	5.001 (0.114)	4.898 (0.117)
MVBV	0.011 (0.563)	-0.002 (0.916)	0.010 (0.618)	-0.002 (0.906)	0.242 (0.005)	0.138 (0.108)	0.239 (0.006)	0.136 (0.113)
FS	0.052 (0.001)	0.031 (0.064)	0.048 (0.003)	0.031 (0.056)	-0.006 (0.935)	-0.215 (0.029)	-0.043 (0.605)	-0.231 (0.023)
PROFITABILITY	0.305 (0.300)	0.362 (0.218)	0.323 (0.272)	0.366 (0.213)	4.586 (0.016)	5.030 (0.009)	4.761 (0.014)	5.040 (0.010)
NOPER	1.905 (0.073)	1.794 (0.088)	1.840 (0.082)	1.769 (0.093)	10.618 (0.087)	10.322 (0.096)	10.264 (0.096)	10.105 (0.101)
CAPEX	1.213 (0.002)	1.218 (0.002)	1.216 (0.002)	1.224 (0.002)	-0.702 (0.644)	-0.824 (0.589)	-0.849 (0.580)	-0.885 (0.563)
$\sigma(ROA)$	2.651 (0.001)	2.621 (0.001)	2.597 (0.001)	2.606 (0.001)	0.156 (0.580)	0.168 (0.563)	0.169 (0.542)	0.174 (0.543)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5,223	5,223	5,223	5,223	7,009	7,009	7,009	7,009
Adjusted $R^2$	0.213	0.217	0.213	0.217	0.158	0.170	0.157	0.169

### C. More on the Endogeneity of Equity Ownership by Insiders and Corporate Payouts

As discussed in Section IV.D, studies that link share ownership by insiders to any research of interest such as market value or growth opportunities are often criticized for failing to recognize the potential endogeneity of ownership structure. For instance, Demsetz (1983) and Demsetz and Villalonga (2001) argue that external market pressures could drive both insider ownership and firm performance such that the observed positive relation between these two variables can be spurious. Since our independent variables are derived from share ownership by insiders, our study on the relation between insiders' tax preferences and payout choice could potentially be subject to such criticisms.

In this research, a major concern regarding the possibility of endogenous insider share ownership is that the direction of causality could be inverted between corporate payout choices and insiders' tax preferences through insider ownership. Although it is plausible that exogenous shocks to payouts increase firm value, which in turn increases the dollar value of payouts to insiders and the associated taxes, this concern is mitigated by the following three reasons. First, our dependent variables,  $(REPO - DIV)/(REPO + DIV)$  and  $(REPO - DIV)/(TotalAssets)$ , are constructed such that their value, reported as a ratio instead of a dollar value, is largely free from exogenous shocks. Thus, it is unlikely that an increase in firm value is correlated with a percentage change in insider ownership or a percentage change in payouts to insiders. Second, we study the relation between insiders' tax preferences and payout choices. It seems unlikely that the form of payout has any direct impact on insider ownership. Third, regarding the possibility that some variables could influence both forms of payout and the ownership level and subsequently generate the correlation we observe here, we consider various control variables in our tests. Our main results are robust to these control variables. Using changes in payouts and changes in insiders' tax preferences (as in Table 5) also mitigates this issue.

Another plausible endogeneity issue concerns the relation between firms' total payouts and insiders' tax preferences. It could be the case that management decides to employ share repurchases for reasons unrelated to managerial ownership, but the increased total payout also leads to an increased amount to insiders given the constant level of insider share holdings. For example, it is commonly believed that firms are more likely to announce repurchase programs when the firm value is low (see, e.g., Ikenberry, Lakonishok, and Vermaelen (1995)). In addition, Guay and Harford (2000) and Jagannathan et al. (2000) suggest that a temporary surge in cash flows is more likely to be paid out as repurchases than dividends. In either case, the payout to insiders would increase accordingly. As a result, if the temporary change in total payouts is driven mainly by the change in repurchases, this could generate a positive relation between our dependent variable and insiders' tax liabilities, both for the level and change specifications. The findings we present, however, indicate this is not the case. To control for firms' overall payout levels, we have included either the levels of or the changes in corporate total payouts in our regressions. As evident in Table 4, the relation between payout choices and corporate total payouts could be significantly negative or pos-

TABLE 10  
 Simultaneous Equation Analysis of Insider Ownership, Corporate Total Payouts,  
 and Payout Methods

Table 10 presents the results from the simultaneous equation estimation of the relation among insider ownership, corporate total payouts, and the payout methods. The systems are estimated using three-stage least squares (3SLS). The dependent variables are insider ownership in the first equation, the logarithm of total payout in the second, and  $(REPO - DIV)/(REPO + DIV)$  in the third. Year dummies are included in all equations. DIV is the total amount of dividends declared on the common stock. REPO is the expenditure on the purchase of common and preferred stocks minus any reduction in redemption value of preferred stock. PayoutToInsiders is calculated as total payout (DIV plus REPO) multiplied by the percentage of insider ownership. Insider ownership (IO) is defined as aggregate holdings of officers and directors. Institutional ownership (InsOwn) is obtained from SEC 13F filings recorded by Spectrum. Executive option holdings, from Execucomp, are shares underlying options held by executive officers. All three ownership variables are scaled by the firm's total common shares outstanding. TaxPreference is the difference in individual tax rates on dividends ( $T_D$ ) and capital gains ( $T_C$ ), which are the maximum marginal tax rates for individual shareholders under the Internal Revenue Code during the sample period (Table 1, Panel B, column 3). CASH is the book value of cash and short-term investments. DEBT is the sum of long-term and short-term debt. The market-to-book ratio (MVBV) is defined as the ratio of the market value of assets to the book value of assets. Firm size (FS) is the logarithm of net sales. PROFITABILITY is operating income before depreciation. NOPER is the non-operating income. CAPEX is the capital expenditures. CASH, DEBT, PROFITABILITY, NOPER, and CAPEX are scaled by the book value of the total assets. The standard deviation of operating income,  $\sigma(ROA)$ , is the standard deviation of the ratio of operating income to total assets measured over the five-year period. *p*-values are included in parentheses.

	First Equation	Second Equation	Third Equation			
	(1)	(2)	(3A)	(3B)	(3C)	(3D)
	Dependent Var.: Insider Ownership	Dependent Var.: Payout	Dependent Var.: $(REPO - DIV)/(REPO + DIV)$			
Intercept	0.473 (0.000)	0.151 (0.000)	0.181 (0.000)	0.177 (0.000)	0.271 (0.000)	0.254 (0.000)
Insider Ownership (IO)		-0.045 (0.251)	0.250 (0.000)	-0.309 (0.000)	-0.363 (0.000)	-0.334 (0.000)
Payout			0.023 (0.091)	0.021 (0.124)	0.021 (0.123)	0.021 (0.114)
$(REPO - DIV)/(REPO + DIV)$		0.013 (0.078)				
$(IO) * (TaxPreference)$				4.706 (0.000)	4.512 (0.000)	4.399 (0.000)
PayoutToInsiders					0.242 (0.000)	
$(PayoutToInsiders) * (TaxPreference)$						1.314 (0.000)
InsOwn		0.009 (0.806)	0.014 (0.769)	0.022 (0.649)	0.064 (0.195)	0.057 (0.243)
DIV/MVE	0.183 (0.001)					
Log(MVE)		0.013 (0.129)				
DEBT	0.040 (0.000)		0.052 (0.335)	0.050 (0.351)	0.061 (0.256)	0.058 (0.277)
CASH	-0.002 (0.878)	0.017 (0.743)	0.570 (0.000)	0.567 (0.000)	0.544 (0.000)	0.549 (0.000)
MVBV	-0.014 (0.000)	0.107 (0.000)	0.021 (0.002)	0.023 (0.001)	0.012 (0.069)	0.013 (0.055)
FS	-0.046 (0.000)	-0.028 (0.001)	-0.072 (0.000)	-0.073 (0.000)	-0.088 (0.000)	-0.085 (0.000)
PROFITABILITY	0.116 (0.000)	-0.833 (0.000)	-0.075 (0.354)	-0.069 (0.392)	-0.063 (0.431)	-0.063 (0.433)
NOPER	0.165 (0.002)	0.148 (0.451)	-0.222 (0.409)	-0.177 (0.509)	-0.209 (0.435)	-0.199 (0.457)
CAPEX	-0.046 (0.102)	-0.116 (0.273)	0.175 (0.216)	0.159 (0.261)	0.162 (0.251)	0.166 (0.238)
$\sigma(ROA)$	0.000 (0.989)	-0.246 (0.001)	0.635 (0.000)	0.671 (0.000)	0.672 (0.000)	0.674 (0.000)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
N	9,876	9,876	9,876	9,876	9,876	9,876
Adjusted $R^2$	0.250	0.073	0.111	0.117	0.124	0.123

itive depending on model specifications. More importantly, after controlling for the potential effect between payout choices and total payouts, insiders' tax preferences remain strongly related to corporate payout choices.

Nevertheless, we perform an additional test by estimating a simultaneous equation system of insider ownership, total payouts, and form of payout. The system is estimated using three-stage least squares (3SLS).<sup>22</sup> The dependent variable is insider ownership in the first equation, the logarithm of total payouts to all shareholders in the second equation, and the payout methods in the last.<sup>23</sup> We separately estimate three systems with different variables of insiders' tax preferences. Since the model specification in the first two equations is essentially identical with similar results, we only report the results from those two equations once. As shown in the third equation of Table 10 ((3A) to (3D)), our proxies for insiders' tax preferences remain significant, indicating corporate payout choices of repurchases over dividends are positively related to insiders' tax preferences. We also show that insider ownership can explain corporate payout choices especially when the tax costs of dividends are high. Finally, consistent with the previous results, the total payout is not consistently correlated with a firm's payout choice of a repurchase.

## VI. Conclusions

Despite the emphasized importance of taxation in explaining corporate payout policy (Miller and Modigliani (1961)), much remains unknown about how taxes affect corporate payout decisions. In particular, mixed evidence exists on whether and how different types of shareholders prefer different forms of payout due to their tax preferences. This study attempts to close this gap by examining whether insiders' tax preferences affect firms' decisions to distribute cash to shareholders.

Our methodology grants two advantages. One, by focusing on corporate insiders, we directly identify a set of shareholders who not only are significantly affected by the disparate tax treatments between dividends and capital gains, but also are the authority to instituting payout policies. Their tax status is also more homogeneous than other shareholders. Two, we study the relation between insiders' tax preferences and the form of payout. By focusing on the form of payout, we are able to isolate the impact of taxation from many other theoretical considerations in determining corporate payout policy. Thus, we can distinguish tax effects from non-tax-related determinants that are more connected with the decisions on whether and how much a firm should pay out.

Using a sample of 17,078 firm observations over the 1991–2001 period, we find that the tax preferences of executives and directors are strongly associated with corporate payout choices. We present evidence that insider ownership is an important determinant of corporate payout policy. This relation is even more evident when the tax costs of dividends are high. It is quite clear that when dividends are more tax disadvantaged, firms with higher insider ownership are more likely

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<sup>22</sup>Results from 2SLS are qualitatively similar.

<sup>23</sup>We broadly follow the existing studies for the choice of explanatory variables in each equation such as Cho (1998), Jensen, Solberg, Zorn (1992), Jagannathan et al. (2000), and Blouin et al. (2004).

to disburse cash flows via share repurchases. In addition, we show that higher payouts to insiders are positively related to firms' tendencies to utilize stock repurchases. The findings are robust to the inclusion of control variables also related to firms' payout decisions, among which are cash flows, growth opportunities, firm size, stock options held by executives, and institutional share holdings. We also find similar results with different definitions of insiders. Finally, we consider the case of whether the changes in insiders' tax preferences could provide sufficient incentives for firms to modify their payout policies. The evidence strongly suggests that changes in insiders' tax liabilities and firms' payouts through share repurchases are positively correlated.

Overall, we conclude that personal taxes affect corporate payout policies. Such an impact is at least partly determined by insiders' tax preferences. Given insiders' significant exposure to dividend taxes and the discretion they have in setting corporate payout policies, our findings indicate that insiders do consider their own tax situations when they determine payouts. The strong evidence documented here has significant implications in understanding the role of taxes in corporate payout policies.

Existing studies on tax clienteles have provided mixed results in identifying the types of shareholders whose tax preferences are likely to matter for corporate payouts and whether their tax preferences affect payout decisions. In a recent survey of corporate financial executives, Brav, Graham, Harvey, and Michaely (2005) find that corporate executives believe payout policies have little impact on their investor clienteles. Such beliefs are consistent with the implications in this study. The dispersed outside ownership and the heterogeneous shareholders' tax statuses could dictate that tax situations of various types of shareholders may only play a secondary role in determining corporate payouts, at least relative to the tax preferences of insiders.

## Appendix: Variable Description of Firm Characteristics

Existing literature has documented a number of variables likely to be related to firms' decisions to pay out cash flows. For instance, agency-cost explanations of corporate payout policy suggest that firms with more free cash flows will have higher levels of payouts. Further, Guay and Harford (2000) and Jagannathan et al. (2000) find that firms choose different methods to distribute cash according to cash flow permanence and flexibility. Following the previous studies, we use several variables as proxies for firms' cash flows: CASH (#1), PROFITABILITY (#13), and non-operating expense (NOPER, #61). Unless specified otherwise, all accounting variables are scaled by total assets (#6).

The Lintner model (1956) suggests that dividend-paying firms tend to be larger and retain more stable cash flows. Larger firms also are regarded as incurring less information asymmetries, thus reducing financing costs (Hovakimian, Opler, and Titman (2001)). We use the logarithm of net sales as our measure of firm size ( $\log(\#12)$ ). Additionally, when firms face more investment opportunities, they are less likely to pay out cash. We use the market-to-book ratio and capital expenditure (CAPEX, #128) as proxies for firms' investment opportunity sets. We also control for leverage measured as the ratio of total debt ( $\#9 + \#44$ ) to total assets.

Further, it is important to include volatility of operating income given the possibility that firms with higher income volatility are more likely to utilize share repurchases instead of dividends (see, e.g., Jagannathan et al. (2000)). We compute the standard deviation of return on assets,  $\sigma(\text{ROA})$ , from the standard deviation of the ratio of operating income

to total assets measured over the five-year period from year  $-4$  to  $0$ . Finally, we include institutional ownership, measured as the fraction of shares held by institutional investors relative to total number of shares outstanding, as a control variable. The institutional ownership data is obtained from SEC 13F filings recorded by CDA/Spectrum. Allen et al. (2000) argue that firms use different payout methods to attract various investor clienteles. Because institutional investors are relatively less taxed than individual investors, dividends could induce “ownership clientele” effects.

Table A.1 presents summary statistics of our control variables. Panel A presents results using firms with positive dividends or repurchases while the results in Panel B are from firms with no payout. We have 17,038 payout firm observations and 17,700 non-payout observations during our sample period 1991–2001. The logarithm of firm size, on average, is 5.85 (4.00) for payout (non-payout) firms. Payout firms in our sample also are more profitable and have higher levels of institutional stock holdings. Non-payout firms, in contrast, have higher insider ownership, debt ratio, market-to-book ratio, and volatile income. As discussed in the text, we are careful to infer our results to all sample firms (payout and non-payout). Our main results are similar after including non-payout firms in our regressions.

TABLE A.1  
Distribution of Firm Characteristics

The sample consists of all firms on the CRSP, Compustat, and Compact Disclosure databases from the period 1991–2001. Utilities and financial firms are excluded. We delete individual firm-years with missing values for total assets, DIV, REPO, MVE, and MVBV. DIV is the total amount of dividends (in millions) declared on the common stock. REPO is the expenditure (in millions) on the purchase of common and preferred stocks minus any reduction in redemption value of preferred stock. MVE is the market value of equity and MVBV is the market-to-book ratio. We obtain 17,700 firm observations with no payout and 17,038 firm observations with payout (dividend and/or repurchase). Panel A reports statistics for firms with payouts while Panel B shows the figures for firms without payout. Insider ownership (IO) is defined as aggregate holdings of officers and directors. Institutional ownership (InsOwn) is obtained from SEC 13F filings recorded by Spectrum. Both ownership variables are scaled by the firm's total common shares outstanding. CASH is the book value of cash and short-term investments (Compustat item #1). DEBT is the sum of long-term (#9) and short-term (#34) debt. The market-to-book ratio is defined as the ratio of the market value of assets to the book value of assets. Firm size (FS) is the logarithm of net sales (#12). PROFITABILITY is operating income before depreciation (#13). NOPER is the non-operating income (#61). CAPEX is the capital expenditures (#128). CASH, DEBT, PROFITABILITY, NOPER, and CAPEX are scaled by the book value of the total assets (#6). The standard deviation of operating income,  $\sigma(\text{ROA})$ , is the standard deviation of the ratio of operating income to total assets measured over the five-year period (from year  $-4$  to  $0$ ).

Variable	Mean	Median	Std. Dev.	Q1	Q3
<i>Panel A. Firms with Payouts (REPO &gt; 0 or DIV &gt; 0)</i>					
Insider Ownership (IO)	0.202	0.130	0.202	0.037	0.314
Institutional Ownership (InsOwn)	0.421	0.427	0.242	0.222	0.614
CASH	0.132	0.058	0.170	0.017	0.184
TotalDebt/TotalAssets (DEBT)	0.193	0.162	0.188	0.024	0.303
Market-to-Book Ratio (MVBV)	1.571	1.118	1.744	0.807	1.751
Log(FirmSize) (FS)	5.850	5.828	2.040	4.485	7.218
PROFITABILITY	0.126	0.140	0.171	0.088	0.193
Non-operating Income (NOPER)	0.010	0.006	0.032	0.001	0.015
Capital Expenditure (CAPEX)	0.070	0.052	0.067	0.030	0.087
Standard Deviation of Operating Income ( $\sigma(\text{ROA})$ )	0.085	0.035	0.740	0.020	0.066
<i>Panel B. Firms without Payouts (REPO = 0 and DIV = 0)</i>					
Insider Ownership (IO)	0.271	0.224	0.213	0.090	0.410
Institutional Ownership (InsOwn)	0.262	0.196	0.237	0.064	0.404
CASH	0.187	0.090	0.225	0.022	0.280
TotalDebt/TotalAssets (DEBT)	0.210	0.130	0.252	0.009	0.339
Market-to-Book Ratio (MVBV)	2.075	1.223	3.142	0.790	2.238
Log(FirmSize) (FS)	3.999	4.081	1.971	2.841	5.299
PROFITABILITY	-0.023	0.082	1.163	-0.048	0.150
Non-operating Income (NOPER)	0.010	0.006	0.077	0.001	0.018
Capital Expenditure (CAPEX)	0.072	0.044	0.090	0.021	0.086
Standard Deviation of Operating Income ( $\sigma(\text{ROA})$ )	0.219	0.078	1.313	0.040	0.167

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