NBER WORKING PAPER SERIES

DO DIVIDEND PAYMENTS RESPOND TO TAXES? PRELIMINARY EVIDENCE FROM THE 2003 DIVIDEND TAX CUT

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Working Paper 10572
http://www.nber.org/papers/w10572

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
June 2004

This paper offers preliminary evidence and will be extended and completed as soon as more data is available. We thank Alan Auerbach, Martin Feldstein, Day Manoli, Francisco Perez-Gonzalez, James Poterba, and Jesse Shapiro for very helpful comments and discussions, and Joe Rosenberg for outstanding research assistance. Financial support from NSF Grant SES-0134946 and the Sloan Foundation is gratefully acknowledged. The views expressed herein are those of the author(s) and not necessarily those of the National Bureau of Economic Research.

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NBER Working Paper No. 10572
June 2004
JEL No. G35, H2, H3

ABSTRACT

The individual income tax burden on dividends was lowered sharply in 2003 from a maximum rate of 35% to 15%, creating a unique opportunity to analyze the effects of dividend taxes on dividend payments by U.S. corporations. This paper uses data from the Center for Research in Security Prices (CRSP) spanning 1980 to 2004-Q1 to analyze this issue. We find a sharp and widespread surge in dividend distributions following the tax cut, along several dimensions. First, the fraction of publicly traded firms paying dividends began to increase precisely in 2003 after having declined continuously for more than two decades. Nearly 150 firms have initiated dividend payments after the tax cut, adding more than $1.5 billion to aggregate quarterly dividends. Most of these firms initiated regular, recurrent payments rather than one-time "special" distributions. Second, many firms that were already paying dividends prior to the reform raised regular dividend payments significantly after the tax cut. Third, special dividends also rose, but the magnitude of this effect is likely to be small relative to the increases in regular distributions in the long run. All three of these effects are significant among all company sizes, and are robust to controls for profits and other firm characteristics. The surge in regular dividend payments after the 2003 reform is unprecedented in recent years. The Tax Reform Act of 1986, which also reduced the top individual tax rate on dividends significantly, led to a temporary, concentrated rise in special dividend payments. However, the number of regular dividend payers did not rise much after the 1986 reform.

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1 Introduction

One of the key provisions of the Jobs and Growth Tax Relief Reconciliation Act of 2003 (hereafter, the "2003 tax reform") was to reduce the individual tax on dividend income substantially.[1] Historically, dividend income has been considered ordinary income for federal individual income tax purposes and hence taxed according to the regular, progressive income tax schedule. The 2003 tax reform introduced favored treatment for dividends, starting retroactively at the beginning of 2003, whereby dividends are taxed at a rate of 15% instead of facing the regular income tax schedule with a top rate of 35%.[2] This tax change effectively gave to dividend income the same favorable tax treatment accorded to capital gains income. Conservatives argued that such a change would greatly reduce the tax disadvantage of dividends and hence induce firms to pay more dividends, ultimately fostering more investment and business activity. Liberals countered that such a tax cut would benefit mostly wealthy taxpayers who own a disproportionate share of total dividends paid out to individuals in non-tax favored accounts, with little or no economic benefits for the wide majority of American families.[3]

Consistent with these predictions, Microsoft, the company with the largest accumulated cash holdings in the U.S. corporate sector, initiated a large annual dividend payment for the first time in 2003. These payments benefited wealthy taxpayers disproportionately. For example, Bill Gates, the founder and CEO of Microsoft, owns 10.44% of the company stock and is the richest person in the United States. Gates received a dividend payment of $270 million from Microsoft in 2003. Without the tax favored treatment of dividends, Gates would have paid $54 million more in income taxes.[4]

The goal of this paper is to use longitudinal data on dividend distributions by U.S. corporations to examine whether Microsoft's behavior was an anomaly unrelated to the tax change or whether the 2003 tax change was indeed successful in inducing many companies to pay more dividends. Since the tax change is very recent, the amount of post-reform data that is available is limited. Hence, the conclusions of this paper should be considered preliminary, and will be revised and extended in the near future as more data become available.

[1] The tax reform was signed by President Bush at the end of May 2003, but was first proposed by the Bush administration on January 7, 2003.

[2] More precisely, taxpayers in the bottom two income tax brackets (facing a regular marginal tax rate of 10% or 15%) face a new dividend tax rate of only 5%, while taxpayers in the top four brackets (facing marginal tax rates of 25, 28, 33, or 35%) face a new dividend tax rate is 15%. Taxpayers on the Alternative Minimum Tax schedule (flat rate of 28%) benefit as well from the reduced 15% tax rate on their dividend income.

[3] The Internal Revenue Service Statistics of Income show that about two thirds of taxable dividends are earned by the top 10% income taxpayers. More than half of American families now hold stock through pension or college funds (401(k)s, IRAs, etc.). However, dividends paid to these tax-favored accounts (all of which exempt accrued returns from income taxation) are not affected by the 2003 tax reform. The fraction of U.S. families owning stocks either directly or through non tax-favored mutual funds is much smaller according to the 2001 Survey of Consumer Finances.

[4] Gates paid a 15% tax rate instead of a 35% tax rate on his dividend income in 2003. This computation assumes of course that the income is not donated to charitable organizations.

The effects of dividend taxes on dividend payments and the investment behavior of corporations has generated much interest in the public economics literature. However, the academic debate on this topic remains controversial (see Auerbach (2003) and Allen and Michaely (2003) for recent surveys). The "old view" on this issue, implicit among supporters of the 2003 dividend tax cut, says that dividend taxes reduce the net return on investment and hence reduce the supply of investment. Therefore, when taxes on dividends are cut, individuals are more willing to save and invest their money in stocks, spurring business investment, profits, and dividend distributions. Poterba and Summers (1985), using time series evidence from the United Kingdom found that consistent with this view, dividend payments and investment were higher when the tax on dividends was lower. More recently, Poterba (2004) uses U.S. time series data since 1929 and finds a negative association between dividend payments and the dividend tax rates relative to taxes on capital gains.

In contrast, the "new view" on dividend taxation, implicit among critics of the 2003 tax reforms, assumes that marginal investments are entirely financed by retained earnings rather than new share issues (Auerbach (1979), King (1977), and Bradford (1981)). Under this assumption, the tax on dividends paid out does not affect investment decisions of firms, and profits and dividends paid out should not change either.[5] In this case, the dividend tax cut is irrelevant for corporate decisions and simply benefits individual investors by reducing their tax burden. As dividend income is very concentrated at the top of the income and wealth distributions, a tax cut on dividends should provide a tax break to the wealthy without expansion of investment and business activity. Using U.S. data from 1981 to 1998, Auerbach and Hassett (2003), show that consistent with the new view, dividend payments are sensitive to changes in investment at the firm level, suggesting that retained earnings are indeed the marginal source of investment funds.

The large change in the tax treatment of dividends in 2003 offers a unique opportunity to cast light on this debate. In this paper, we use CRSP data on dividend payments available through the first quarter of 2004 to test whether dividend payout policies changed significantly after the 2003 tax reform. Total regular dividends have surged by nearly 20% since the beginning of 2003, the point at which the lower tax rate was first proposed and ultimately retroactively applied. However, since the aggregate dividends series is very volatile and driven by outliers, it is difficult to make statistically robust inferences about the effects of the tax change without disaggregating the data further. We therefore divide our analysis of the response to the tax reform into three margins: (1) the extensive margin (initiations and terminations of regular dividend payments); (2) the intensive margin (increases or decreases in payment amounts by firms already paying); and (3) special dividends (one time distributions).

[5] However, as pointed out by Auerbach and Hassett (2003), if the tax reform not only changes dividend income taxation but also interest income taxation (as in the Tax Reform Act of 1986) or if the tax reform is not permanent but temporary (as might be the case with the 2003 tax reform – see below), then even under the "New View" dividend payments may change following a dividend tax change.

Our main findings are as follows.

First, the fraction of firms paying regular (monthly, quarterly, semi-annual, or annual) dividends started to increase precisely in 2003, after falling continuously for more than two decades. The secular decline in the fraction of publicly traded firms paying dividends has been documented by Fama and French (2001). The fraction of regular payers fell from approximately 60% in 1980 to a low of 20% in 2002 quarter 4, but has rebounded to nearly 25% in the past year. The fact that the decline in the fraction of dividend payers stops precisely in 2003 constitutes strong evidence that the 2003 tax reform induced more firms to start paying regular dividends.[6] Of the 3,813 firms that are listed in the 2004 CRSP, 113 initiated regular dividends in 2003, in comparison with 21 in 2002, and an average of 22 in prior years. This surge in dividend initiations occurs among companies of all sizes. Furthermore, most of this extensive-margin effect is due to corporations starting regular, recurrent dividend payments; the number of firms that stop paying dividends does not change significantly after the reform. The results imply that additional initiations of dividend payments induced by the reform have already raised aggregate quarterly dividend payments by approximately $1.7 billion (6% of aggregate dividends). Recent trends suggest that this effect is likely to grow even larger in subsequent quarters. Time series regression analysis shows that these conclusions are robust to controlling for a variety of potential confounding factors such as levels and lags of profits, assets, cash holdings, industry, and firm age.

Second, there is also evidence of dividend increases on the intensive margin. Statistical inference on the intensive margin is difficult due to the extreme concentration of dividend payments, which is described in detail in DeAngelo, DeAngelo, and Skinner (2003). For example, including or excluding a large new payer such as Microsoft makes a substantial difference in estimating the effect of the reform on total dividend *amounts* paid by U.S. corporations. Hence, we argue that mean effects – on which most previous studies have focused – cannot be estimated with reasonable confidence intervals, because mean dividend amounts are driven by a few large payers, creating a small sample problem.[7] Therefore, in analogy with our approach to analyzing the extensive margin, we examine the *number* of firms increasing (or decreasing) their payments by a significant margin, such as 10% or 20%. Regardless of the cutoff we choose, we find strong, robust evidence that firms were more likely to increase their regular payments after the reform both in means and with controls in our regression analysis. Again, these increases are widespread, occurring across all sizes of firms.

Third, consistent with the recent analysis of Blouin, Raedy, and Shackelford (2004), we

[6] Of course, this conclusion is predicated on the assumption that no other determinant of dividend behavior changed exactly in 2003. In future work, we plan to follow Perez-Gonzalez (2003) and test this identification assumption by examining the dividend payments of firms owned largely by institutional shareholders, who provide a "control group" that should in principle be unaffected by the reform.

[7] Estimation along the extensive margin (firms initiating or terminating dividend payments) does not generate this small sample problem because there are a large number of moderate-size dividend initiations.

find that special (i.e., one time, non-recurring) dividends also increased following the 2003 tax reform. Among firms that were active in the 2004 CRSP data, 69 made special payments in 2003, compared with 35 in 2002 and an average of 66 in prior years. The total amount of special dividends paid in 2003, $1.9 billion, greatly exceeded the $520 million paid in 2002 and the prior years average of $696 million, but 65% of this difference is due to three large special payments by telecommunications giant Southwestern Bell Corporation. The importance of this outlier again underscores the difficulty of making inferences about the effects of taxes on mean dividend amounts. Once we control for downward time trend in special dividends, we find a fairly large, statistically significant effect of the 2003 reform on the number and amount of special dividends. Nonetheless, since firms rarely reduce regular dividend payments, the cumulative effect of the extensive and intensive margin increases in regular dividends are likely to render the change in special payments a second-order effect in the long run.

The large increase in regular dividend payments following the 2003 tax reform is unprecedented in the recent history of the U.S. corporate sector. To emphasize this point, we compare our results to the dividend responses induced by the Tax Reform Act of 1986 (TRA-86). TRA-86 reduced the top individual tax rate on dividends (as well as other forms of income) from 50% to 28%. We find that this reform was not followed by an increase in the number of regular dividend payers, nor in the amounts paid. There was, however, a temporary surge in special dividend payments concentrated among a few large firms after TRA-86. The fact that the 2003 tax reform appears likely to have much more lasting effects on dividend payments of U.S. corporations than TRA-86 is particularly striking because the 2003 reform is legislated to expire in 2009, while TRA-86 was a permanent change. Understanding why these two reforms have had very different effects is left for future work.

Our findings are in contrast to the recent study of Blouin, Raedy, and Shackelford (2004), who examined dividend payments in the three months immediately after the tax reform was passed (May 23 to August 22, 2003). They compared dividend payments in this post-reform period with dividends in the same period in 2002 (May 23 to Aug. 22, 2002) and the three month period immediately preceding enactment of the reform. Blouin et. al. concluded that virtually all the increase in dividend payments after the tax reform was due solely to 17 firms who paid special dividends, and find no statistically significant changes in regular dividend amounts. Their results differ from our results for three reasons. First, and most importantly, they focus on total dividend amounts (and then separate regular and special dividends), rather than distinguishing the extensive and intensive margins. As emphasized above, analyzing the effect of the tax cut on regular dividend amounts on the intensive margin is a difficult statistical problem because of the large outliers that drive the means. Indeed, when analyzing our data at a monthly level, we find that the surge in the *number* of regular dividend initiations and increases began precisely in the post-reform period studied by Blouin et. al. Second, they do not look back at the historical data before 2002. Again, since aggregate regular dividends

are a noisy time series, it is difficult to assess the magnitude of the response induced by the tax change without making further historical comparisons. Finally, two more quarters of post-reform data have become available since their study. The additional data show that the rapid growth in regular dividend payments that began during the period examined by Blouin et. al. has continued in subsequent quarters.

In summary, the data available to date strongly suggest that the 2003 tax reform has induced a significant number of firms to initiate or raise regular dividend payments. This result is not consistent with the tax-irrelevance prediction of a basic "new view" model insofar as the tax is perceived as a permanent change. However, our findings do not necessarily imply that all the predictions of the "old view" theory will be observed either. For instance, it remains to be known whether the 2003 tax reform has spurred investment and business activity. More generally, we should reiterate that the present study should be interpreted as preliminary analysis because relatively little time has passed since the reform was enacted. In addition to studying investment responses, we are currently testing our empirical approach by examining the dividend behavior of firms controlled by non-taxpaying clientele, and analyzing the characteristics of firms who increased dividends along other dimensions such as profitability and corporate governance.

The paper is organized as follows. Section 2 describes the data and our empirical approach. Section 3 presents the results. Section 4 offers concluding remarks and describes avenues for future work.

2 Data

We use quarterly data from the CRSP, which reports dividend, stock price, and share information for all companies listed on the NYSE, AMEX, and NASDAQ stock exchanges. The data we use span 1980 to 2004-Q1, the last quarter for which data are currently available.[8] Following Fama and French (2001) and Auerbach and Hassett (2003), we exclude all firms whose most recent industry classification is in utilities (SIC codes between 4900 and 4949) or the financial sector (SIC code between 6000 and 6999) because these companies are regulated and often have legal distribution requirements. Their dividend payments may therefore be determined by law rather than by shareholder decisions. In addition, we consider only dividends declared on ordinary common shares (CRSP share codes 10 and 11). The sample of firms that satisfy the preceding criteria constitute our "core sample." For our regression analysis, we merge this core sample with the Compustat database, losing some firms because not all firms listed in CRSP are covered by Compustat, and because Compustat data is unavailable in 2004-Q1.

[8] CRSP quarterly data are generally available about 3 or 4 weeks after the end of a quarter. Data for 2004-Q2 should become available by the end of July 2004, etc.

The left half of Table 1 gives summary statistics for the core sample between 1981-Q3 and 2004-Q1.[9] All dollar amounts in this and subsequent tables and graphs are in real 2004 dollars. We define "regular" dividends as monthly, quarterly, semi-annual, and annual taxable dividends in the CRSP data.[10] As noted by Fama and French (2001), the fraction of firms making these regular dividend payments is fairly low in the recent past: only 23.5% of the firm-quarter pairs in the sample have positive regular dividends. It is common for firms to increase regular dividend payments – 11% of firms in any given quarter initiated or raised dividends in the average quarter. Decreases are much rarer (<2%), consistent with DeAngelo and DeAngelo's (1990) finding that only severely distressed firms lower dividend payments. Given the extremely high degree of persistence of dividend payments within firms over time, it is not surprising that movements along the extensive margin through initiations and terminations are rare.[11] Hence, an initiation of a regular payment (as by Microsoft in 2003) is a strong signal that the firm intends to maintain a dividend payment of equal or greater value permanently.

We define all other taxable dividends besides regular distributions as "special" dividends.[12] In contrast to regular dividends, special dividends are usually one-time, non-recurring events. Special payments are made by very few firms (0.8% of the sample). Special dividends are also of minor importance in terms of amounts, averaging $110,977 per firm per quarter, in contrast with an average of $4.62 million per quarter for regular dividends. Note that these means are for all firms (including non-payers).

The main feature of the data that makes statistical analysis of the relationship between tax rates and dividend payments difficult is the importance of a few firms in determining the aggregate level of dividends. As observed by DeAngelo, DeAngelo, and Skinner (2003), the distribution of dividend payments is highly concentrated, especially in recent years. In our core sample, the top 5% of payers accounting for approximately 85% of total payments. There are more than 100 instances where a single firm shifts aggregate quarterly dividends by more than 5%. Hence, idiosyncratic decisions by a few firms can be very influential, adding a substantial amount of noise to the time series of aggregate dividend amounts.

There are a total of 431,379 firm-quarter observations in our core sample. The number of firms varies greatly over time, peaking in the late 90s with around 6,000 firms, as shown in the lower half of Table 1, and falling to 3,813 in 2004-Q1. A total of 3,853 firms were delisted (either because they stopped trading on the three exchanges or because of a merger) between 1998-Q1 and 2004-Q1. Since firms cannot be tracked after they exit the CRSP sample,

[9] Lagged data requirements for our subsequent analysis force us to begin with 1981-Q3.

[10] Some forms of liquidation can generate non-taxable dividend events that we ignore in this study.

[11] Section 3.2 gives formal definitions of initiations and terminations.

[12] More precisely, we define special dividends as the sum of special, one-time, unspecified and other frequency dividends in the CRSP data. Virtually all payments in our broader definition of special dividends are accounted for by CRSP's "special dividend" category.

results based on the entire sample of listed firms could be biased by selective attrition in the years around the 2003 tax reform. The attrition problem in the core sample is described in greater detail in section 3.2 below. To address this issue, we also construct a second "selected sample" that contains only observations on the 3,813 firms that are listed in the 2004-Q1 CRSP database, yielding a total of 180,170 firm-quarter pairs from 1981-Q3 to 2004-Q1. The selected sample essentially reverses the direction of attrition relative to the core sample, as only firms who survive through the last quarter are kept in the dataset, making the sample grow over time. The advantage of this method is that we can easily show that the latter form of attrition is inconsequential using "placebo tests" that apply our selection method to earlier years, as described in section 3.5 below.

The characteristics of the selected sample differ from those of the core sample because this sample includes only the successful, stable firms that have survived through 2004. As a result, firms in the selected sample have much higher market capitalization, assets, cash reserves, and profits than those in the core sample. The propensity to pay dividends is also somewhat higher (31% vs 23%), as is the average dividend amount. However, all other characteristics are fairly similar across the two samples – the distribution of payments is highly concentrated, payments are very persistent, and movements on the extensive margin are rare.

3 Results

Our empirical analysis is organized as follows. The first subsection examines the change in aggregate dividend amounts following the 2003 tax change. We find that statistical inferences about the effect of the reform at the aggregate level hinge heavily on outliers and the specification of regression equations. Subsections 2-4 therefore examine the dividend response at a more disaggregated level along three margins: (1) the extensive margin (initiations and terminations of regular dividend payments); (2) the intensive margin (increases or decreases in payment amounts by firms already paying); and (3) special dividends. Throughout this analysis, we focus primarily on the "selected sample" described above. To show that our conclusions are not biased by this selection procedure, we demonstrate in subsection 5 that placebo tests using other years in the sample show no evidence of a surge in dividend payments at the end of the sample frame. Finally, we apply similar methods to evaluate the effect of TRA-86 on dividend distributions.

3.1 Aggregate Dividends

Figure 1 plots aggregate regular dividends for the core sample between 1981 and 2004 in real 2004 dollars. Total regular dividends rose from $26 billion in 2002-Q4 to a peak of $29.5 billion in 2003-Q4, and returned to $28.3 billion in 2004-Q1. The dip from the last quarter of 2003 to the first quarter of 2004 is caused exclusively by Microsoft's payment of $1.7 billion

in 2002-Q4; if Microsoft is excluded, there is a small increase of $75 million in dividends from 2002-Q4 to 2003-Q2 and a sharp spurt of $2.7 billion from 2003-Q2 to 2004-Q1. The sharper increase beginning in the second half of 2003 is to be expected given that the tax cut was signed into law only in July, 2003. Note, however, that increases in the first half of 2003 may also have been motivated by the tax cut, because the bill was first proposed in early January, and its provisions apply retroactively to the beginning of 2003.

If the post-2003 increases in aggregate dividends are due exclusively to the tax cut, these values suggest that the reform has raised regular aggregate dividends from the level in 2002-Q4 by an impressive 11% if Microsoft is excluded and 15% if it is included. Unfortunately, it is difficult to draw the conclusion that the tax cut was associated with increases in average dividend amounts under conventional criteria for statistical significance. The basic reason is that the time series of dividend amounts is very noisy, as shown by the large fluctuations in the years preceding 2003 in Figure 1.

To assess statistical significance, we estimate the effect of the tax change using a standard reduced-form model of dividends payments. We define two "treatment effect" dummies to capture the effect of the tax change: *post2003Q1*, which is an indicator variable that is positive in all quarters including and after the tax cut was officially proposed by the Bush administration (January 7, 2003), and *post2003Q3,* which is positive in all quarters after the tax cut was enacted (May 30, 2003). Formally, letting i index firms and t quarters, we define

$$post2003Q1_{i,t} = \begin{cases} 1 \text{ if } t \geq 2003\text{-}Q1 \\ 0 \text{ else} \end{cases}$$

$$post2003Q3_{i,t} = \begin{cases} 1 \text{ if } t \geq 2003\text{-}Q3 \\ 0 \text{ else} \end{cases}$$

Our statistical models of dividend payout, motivated by the partial-adjustment model of Lintner (1956), relate the level of quarterly regular dividend payments, $\$D_{i,t}$, to lagged dividends and profits, as well as other factors that may affect distribution decisions. We begin with a parsimonious specification in which the total amounts of dividends paid by firm i in quarter t, $\$D_{i,t}$ is modeled as linear function of (1) eight lags of quarterly dividends, $\$D_{i,t-1}, \$D_{i,t-2}, ..., \$D_{i,t-8}$; (2) a linear time trend, t; (3) quarter dummies $qtr^s_{i,t}$ that take on a value of 1 in quarter s of a calendar year; and (4) the *post2003Q1* and *post2003Q3* dummies to capture the effect of the tax change. The lagged dividend values are included in this specification to capture the high degree autocorrelation in most firms' dividend payments over time, and the remaining regressors net out seasonal effects and time trends in dividend

payments. This yields the following "few controls" estimating equation:

$$\$D_{i,t} = \alpha + \theta t + \sum_{s=1}^{3} \upsilon_s^q qtr_{i,t}^s + \sum_{s=1}^{8} \beta_s \$D_{i,t-s} + \gamma_1 post2003Q1_{i,t} + \gamma_2 post2003Q3_{i,t} + \varepsilon_{i,t} \quad (1)$$

The orthogonality condition required to obtain an unbiased estimate of the dividend response to the 2003 tax reform from OLS estimation of (1) is that there are no unobserved trends in dividend payments during the reform period. Under this identification assumption, the effect of the tax cut on dividend payments is given by the coefficients on the treatment dummies, γ_1 and γ_2. If enactment of the tax cut stimulated dividend payments, γ_2 should be positive. In addition, if some firms adjusted their dividend policies in anticipation of the passage of the tax cut in the first half of 2003, γ_1 should be positive as well.[13] In this case, the total effect of the tax cut on quarterly regular dividend payments per firm is given by $\gamma_1 + \gamma_2$.

Column 1 in Table 2 reports OLS estimates of (1) using the core sample of firms defined above. Though the point estimates of the treatment effects (γ_1 and γ_2) are positive, the coefficients are estimated imprecisely, and are not statistically significant at even the 15% level. To test whether controlling for other determinants of payout decisions can help improve precision, we estimate a model that includes several additional firm-level covariates: (1) total current assets, $a_{i,t}$; (2) the level and eight lags of quarterly post-tax earnings, $\pi_{i,t}$ and cash holdings, $c_{i,t}$; and (3) First-digit SIC industry dummies, $SIC_{i,t}^s$ that indicate whether the first digit of firm i's SIC code is s in 2004. This specification is motivated by Lintner's (1956) finding that the dividend decisions of firms are influenced heavily by current and lagged earnings. The "full controls" estimating equation is

$$\begin{aligned} \$D_{i,t} \quad = \quad & \alpha + \theta t + \sum_{s=1}^{3} \upsilon_s^q qtr_{i,t}^s + \sum_{s=1}^{8} \beta_s \$D_{i,t-s} + \gamma_1 post2003Q1_{i,t} + \gamma_2 post2003Q3_{i,t} \\ & + \mu^a a_{i,t} + \sum_{s=0}^{8} (\mu_s^\pi \pi_{i,t-s} + \mu_s^c c_{i,t-s}) + \sum_{s=0}^{8} \upsilon_s^S SIC_{i,t}^s + \varepsilon_{i,t} \end{aligned} \quad (2)$$

Column 2 in Table 2 reports OLS estimates of (2). While the standard error of the treatment effects does not fall, the point estimates rise, making the *post2003Q3* dummy becomes marginally significant (with a p-value of 0.12). The estimate of this coefficient implies that quarterly dividends rose by $0.20 million per firm between 2003-Q2 and 2004-Q1. Further analysis, however, reveals that these estimates are quite fragile. The third column in Table 2 replicates specification (2), but drops the five largest firms by market capitalization in 2004 from the sample. This small perturbation cuts the point estimate of the *post2003Q3* dummy

[13] If all firms anticipated the tax reform and adjusted their policies immediately in the beginning of 2003, it is possible that $\gamma_2 = 0$. However, the tax reform passed Congress narrowly, and adjustment to the new tax regime presumably takes time, so $\gamma_2 > 0$ should be expected if the tax cut had an effect on dividends.

by more than 60%, again making the estimate statistically indistinguishable from zero. The imprecision and fragility of the estimates persists across a wide set of specification checks with different lag structures, covariates, and higher-order time trends. It also remains in the "selected sample" of firms listed in the 2004 CRSP. Moreover, the standard errors in the specifications reported in the table are understated because they do not correct for potential autocorrelation in the error structure of dividend payments within firms, assuming instead that $cov(\varepsilon_{i,t}, \varepsilon_{i,s}) = 0 \ \forall s, t$. When this condition is relaxed, the standard errors become even larger.

The fundamental reason for the wide confidence intervals on the estimates of γ_1 and γ_2 is that changes in mean dividend amounts are driven by a handful of extreme values. For instance, the increase in aggregate dividends falls from 15% to 6% if the 10 largest increasers of the 3,813 firms in the sample are omitted. Since the overall means hinge on explaining the behavior of a few firms correctly, small changes in the specification or sample definition have large effects on the estimates. Hence, even though the point estimates suggest that dividend payments did rise relative to historical averages after the tax reform, this conclusion cannot be made with any reasonable level of confidence. We therefore turn to more disaggregated measures of the dividend response to obtain more credible evidence that the 2003 tax reform caused an increase in dividend payments.

3.2 Extensive Margin

One intuitive way of reducing the influence of extreme values is to examine a firm's decision to pay a positive amount of dividends rather than looking at the amount paid. This subsection analyzes this extensive (participation) margin by evaluating the effect of the tax cut on the fraction of dividend payers, the number of firms who initiated regular dividend payments, and the number of firms who terminated dividend payments.

3.2.1 Fraction of Payers

The solid line in Figure 2 plots the fraction of dividend payers in the core sample between 1981-Q3 and 2004-Q1. As discussed in Fama and French (2001), the fraction of dividend payers has declined steadily over the past two decades, from more than 40% in the early 1980s to less than 20% in 2000.[14] The fraction of dividend payers in the core sample rises sharply after the tax reform of 2003, but the increase actually appears to begin in late 2000, far before the reform was enacted. However, the increase between 2000 and 2003 is spurious; it arises purely from the selective attrition of firms from the CRSP sample during this time period.

[14] DeAngelo, DeAngelo, and Skinner (2003) emphasize that while the number of payers among publicly traded firms has fallen, dividends are not "disappearing" because total aggregate dividends have actually risen (as shown in Figure 1). This is because the distribution of dividend payments is far more concentrated now than it was in 1980.

As discussed above, nearly 4,000 firms are delisted between 1998 and 2004 from the major stock exchanges covered by the CRSP. Only 3% of the firms that were delisted during this time period were dividend payers in the quarter before they exited, in comparison with 17.8% for the firms who remained in the sample. It is thus not surprising that the average fraction of payers in the sample that remains rises during this period. To make this point clearer, Figure 2 also plots the fraction of payers for a subsample of the top 3,813 firms by market cap in each year. Note that the 2004-Q1 sample of 3,813 firms is the smallest since 1983-Q2, so the size of this sample is constant from 1983-Q2 onward. In this constant-size sample, the decline in the fraction of payers continuous precisely until the last quarter of 2002, at which point the fraction of payers begins to rise. This result provides strong evidence that attrition bias drives the increase in the fraction of payers between 2000 and 2003, and that the secular decline in the propensity to pay dividends actually stops only after the tax cut in 2003.

While restricting attention to the top 3,813 firms to obtain a constant-size sample mitigates the attrition problem, it does not eliminate it, as some firms still exit this sample before 2004. Given the apparent correlation between delisting and dividend behavior, we focus our attention from this point onward on a "selected" sample that completely eliminates delisted firms from the dataset. This selected sample contains only firms that are listed in the 2004-Q1 CRSP; by construction, no firm in this sample can leave the dataset before the sample frame ends. The problem with the selected sample is that it creates "reverse attrition," where the set of firms in the sample grows over time, because firms in later years are more likely to survive until 2004. This attrition is non-random because firms that exist early in this sample will be more stable and successful than the average firm that exists in later years. We address this issue in subsection 3.5 below using placebo tests to show that there is no evidence of bias in our results from this form of attrition.

Figure 3 replicates Figure 2 for the selected sample, which is the primary sample we analyze in the remainder of the paper. The results are essentially the same as those obtained for the constant-size sample, with an increase in the fraction of payers beginning precisely in 2003, and accelerating in the second half of 2003, after the tax cut had been officially signed into law. Figure 3 also plots the tax preference parameter computed by Poterba (2003), which equals the net return to investors from a dollar paid in dividends instead of capital gains. As expected, the only large, abrupt change in the tax preference parameter during the sample period occurs at the end of 2003, after which dividend payments become start to become more common.

To evaluate the statistical significance of the change in the fraction of payers after the tax cut, we estimate probit regressions for the probability of paying dividends.[15] The effects of the proposal and enactment of the tax cut are captured by the two treatment dummies,

[15] The probit specification is inconsequential for the results below; estimates of γ_1' and γ_2' from logistic and linear probability models are similar.

post2003Q1 and *post2003Q3*, defined above. As above, we assess the robustness of our results by estimating both a parsimonious specification with few controls and a specification that has a rich set of controls.

Let $d_{i,t}$ be an indicator variable for whether firm i pays regular dividends in quarter t (i.e., $d_{i,t} = 1$ iff $\$D_{i,t} > 0$ and 0 else). In the specification with few controls, we link $d_{i,t}$ to the treatment dummies and other covariates by the following equation:

$$\Pr(d_{i,t} = 1) = F\{\alpha + \theta t + \sum_{s=1}^{3} \upsilon_s^q qtr_{i,t}^s + \sum_{s=1}^{8} \beta_s d_{i,t-s} + \gamma_1' post2003Q1_{i,t} + \gamma_2' post2003Q3_{i,t}\} \quad (3)$$

where $F(x) = \Pr(N(0,1) < x)$ denotes the standard normal cdf. Besides the difference in the dependent variable, this specification differs from the dividend amounts Lintner specification given in (1) in two ways: it has lags for an indicator variable for dividend payments (d) instead of dividend amounts ($\$D$), and it uses a non-linear probit link function instead of a linear specification.

The specification with full controls adds assets, post-tax profits, cash, and industry codes to (3):

$$\begin{aligned}\Pr(d_{i,t} = 1) = F\{&\alpha + \theta t + \sum_{s=1}^{3} \upsilon_s^q qtr_{i,t}^s + \sum_{s=1}^{8} \beta_s d_{i,t-s} + \gamma_1' post2003Q1_{i,t} + \gamma_2' post2003Q3_{i,t} \\ &+ \mu^a a_{i,t} + \sum_{s=0}^{8} (\mu_s^\pi \pi_{i,t-s} + \mu_s^c c_{i,t-s}) + \sum_{s=0}^{8} \upsilon_s^S SIC_{i,t}^s\} \end{aligned} \quad (4)$$

Specifications 4-6 in Table 2 report maximum likelihood estimates of the probit models in (3) and (4). The coefficients reported in the table for these and all subsequent probit specifications are marginal probability effects evaluated at the sample means. Hence, the estimates reported for the two treatment dummies are transformations of γ_1' and γ_2' that give the change in the probability of paying dividends induced by the tax reform. The mean probability of paying dividends is listed at the bottom of each column to aid in interpreting the magnitude of these probability changes. These and all subsequent specifications report standard errors that are robust to arbitrary correlations in the error terms over time within firms.[16]

Column 4 reports estimates of equation (3) on the core sample. Despite attrition bias, the core sample exhibits a large, highly statistically significant increase in the fraction of payers after the tax reform. Specification (5) shows that these results become stronger in the selected sample where delistings are eliminated. Specification (6) reports estimates of equation (4), adding the full set of controls to the model. The estimates of the treatment

[16] More precisely, the estimating equations in (3) and (4) are modified to permit additive error terms $\varepsilon_{i,t}$ in the score function where $cov(\varepsilon_{i,t}, \varepsilon_{j,s}) = 0$ if $i \neq j$ but $cov(\varepsilon_{i,t}, \varepsilon_{i,s})$ is unrestricted $\forall s, t$.

effects become even stronger when these controls are added. According to the point estimates from this specification, the probability of becoming or remaining a dividend payer rose by 6.7 percentage points in the two quarters after the tax reform was announced, and a strikingly large 11.5% including and after 2003-Q3, when the law was officially enacted. The z-statistics for these estimates exceed 4 and 5, respectively.

These results constitute strong evidence that the 2003 tax reform has had a large effect on the number of firms paying dividends. Of course, this conclusion is predicated on the assumption that no other unobservable determinant of dividend payments changed contemporaneously with the tax reform. We are currently testing the validity of this identification assumption using firms whose primary shareholders are institutional investors as a control group.

3.2.2 Initiations and Terminations

We now explore the reason that the fraction of dividend payers increased sharply following the 2003 reform by examining the effect of the tax cut on initiations and terminations of regular dividend payments. Before discussing the results, "initiation" and "termination" of dividends must be defined formally. We define a firm as initiating dividend payments in quarter t if it pays positive regular dividends in quarter t and did not pay dividends in the previous four quarters ($t-1$, $t-2$, $t-3$, and $t-4$). If the firm pays annual dividends in quarter t (or paid such an annual dividend in quarter $t-5$ or $t-6$), we require in addition that the firm did not pay any dividends in quarters $t-5$ and $t-6$ as well.[17]

Similarly, we define a firm as terminating regular dividend payments in quarter t if it pays positive regular dividends in quarter $t-1$ and does not pay dividends in the next four quarters (t, $t+1$, $t+2$, and $t+3$). In the case of annual payers in quarter $t-1$ (or quarters $t+4$ or $t+5$), we impose in addition that the firm does not pay any dividends in quarters $t+4$ and $t+5$ as well, for the same reason as above. Because our data is censored after quarter 2004-Q1, we do not observe the full vector of future dividend payments for observations from 2003-Q2 to 2004-Q1. To describe how we handle these cases, let T denote the last quarter available in the data (2004-Q1). In those cases where $t \geq$ 2003-Q2, we define a firm as terminating regular dividends if one of the following three conditions hold: (1) the firm was a quarterly payer in quarter $t-1$ and paid dividends in all quarters $t-2$, $t-3$, $t-4$, but does not pay in quarters t to T; (2) the firm was a semi-annual payer in quarter $t-1$, but does not pay for at least two consecutive quarters starting in t; or (3) the firm was an annual payer in quarter $t-1$, but does not pay for at least four consecutive quarters starting in t. This definition of termination is the closest prediction we can obtain of actual terminations that would be observed if the

[17] We impose this condition to accommodate cases where annual dividend payers change the quarter in which they distribute their annual dividend payments, which can create 5 or 6 consecutive quarters with no payments but with no materially relevant interruption in regular dividend payments.

data were not censored.

Figure 4 plots the total number of initiations and terminations of dividend payments in the selected sample. The number of initiations rose in the first two quarters of 2003, and nearly doubled in the quarters following the enactment of the tax cut in 2003-Q3. The average number of initiations in the quarters including and after 2003-Q3 was 38, far above the average of 5 per quarter in 2002 and prior years. The number of terminations remained very low in 2003 and did not change appreciably after the tax reform. These two effects combine to generate the rise in the fraction of payers documented above.

Probit models for the probability of initiating dividends reveal that the evidence of a surge in dividend initiations is robust and highly statistically significant. In our parsimonious specification with limited controls, we control only for time trends and seasonal effects; it is not meaningful to include lags of dividend payments in this specification because these variables would predict initiation perfectly. Letting $Init_{i,t} = 1$ if firm i initiates dividend payments in quarter t, the "few controls" estimating equation is

$$\Pr(Init_{i,t} = 1) = F\{\alpha + \theta t + \sum_{s=1}^{3} \upsilon_s^q qtr_{i,t}^s + \gamma_1' post2003Q1_{i,t} + \gamma_2' post2003Q3_{i,t}\} \qquad (5)$$

The specification with full controls adds assets, post-tax profits, cash, and industry codes to (5):

$$\begin{aligned}\Pr(Init_{i,t} \;\; = \;\; 1) = F\{&\alpha + \theta t + \sum_{s=1}^{3} \upsilon_s^q qtr_{i,t}^s + \gamma_1' post2003Q1_{i,t} + \gamma_2' post2003Q3_{i,t} \\ &+ \mu^a a_{i,t} + \sum_{s=0}^{8} (\mu_s^\pi \pi_{i,t-s} + \mu_s^c c_{i,t-s}) + \sum_{s=0}^{8} \upsilon_s^S SIC_{i,t}^s\} \end{aligned} \qquad (6)$$

Columns 1 and 2 of Table 3 report estimates of (5) and (6). These and all subsequent models in the paper are estimated on the entire selected sample (including both payers and non-payers). Whether or not controls are included, the estimates reveal a very strong, statistically significant effect of $post2003Q1$ and $post2003Q3$ of the probability of initiating payments. In the specification with controls, the tax cut is estimated to increase the probability of initiation in a given quarter by a factor of 4 relative to the sample mean of 0.3%. Analogous probit models for termination of dividend payments (not reported) show no change in the probability of termination in 2003. The spike in initiations is a widespread phenomenon that occurs across firms of all sizes. This is illustrated in Table 5, which lists net initiations (initiations less terminations) for six different market cap groups. Net initiations rise across all the categories in a manner that is historically unprecedented.

How much did the extensive margin contribute to aggregate dividends after the tax reform? Figure 7 answers this question by plotting the cumulative amount of dividends raised through

initiations and lost via terminations over the sample. New dividend initiations raised more than $1.6 billion dollars from 2002-Q4 to 2004-Q1, an extremely large value relative to past changes, while the amount lost through terminations during this period was close to zero. Fifty percent of the $1.6 billion increase came from an initiation by Microsoft in 2003-Q1. To assess the statistical significance of the increase in dividend amounts from the extensive margin, columns 1 and 2 in Table 4 report OLS estimates of linear regressions with cumulative extensive amounts as the dependent variable. The cumulative extensive dividend amount for firm i in quarter t is defined as the cumulated sum (from the quarter than i enters the sample until quarter t) of dividends from initiations less the cumulated sum of dividends lost via terminations. These specifications are identical to equations (1) and (2), except that Microsoft is excluded from the sample here to obtain estimates that are not driven by a single outlier.

Irrespective of the controls that are included in the specification, the estimates of the treatment effects reveal an economically and statistically significant surge in dividend amounts from the extensive margin after enactment of the tax cut. The point estimate of the $post2003Q3$ coefficient shows that cumulative dividend amounts from the extensive margin rose by approximately 50% after the tax cut, even when Microsoft is excluded. Again, this surge occurs across firms of all sizes, as shown in the tabulations of net extensive margin dividend amounts (non-cumulated quarterly dividends from initiations less terminations) by market cap group given in Table 7. Note that we are able to make precise statistical inferences about the effect of the tax cut on amounts from the extensive margin (unlike any other margin) because the distribution of dividends from initiations is relatively dispersed. Dividend payments from initiations are not extremely concentrated because most large firms were already paying prior to the reform, putting them on the intensive margin.

Our finding that regular dividend payments rose sharply after the 2003 tax cut contrasts with the conclusions of an earlier study by Blouin, Raedy, and Shackelford (2004), who examined dividend payments in the three month period immediately after the reform (May 23 to Aug. 22, 2002). They document a surge in special dividends, but conclude that there is no increase in regular dividends during this period because the standard errors on the tax reform dummy in their dividend *amounts* regressions are too large to reject the null hypothesis of a zero effect. To identify the source of the difference in our conclusions, we examine the data at a monthly frequency in the months around the passage of the reform.[18] Figure 5 plots the number of initiations per month between 2001 and 2004. It is clear that the surge

[18] In general, there is little to be gained by examining the data at a monthly level instead of a quarterly level, because less than 1% of dividend paying firms pay dividends more than once per quarter. Hence, unless the timing of dividends within a quarter matters for the analysis, quarterly data on dividends contain essentially the same information as monthly data. However, the tax cut was enacted at the end of May 2003, which falls in the middle of 2003-Q2 in our data, so it is informative to examine dividend payments in the months around the passage of the reform.

in initiations occurred shortly after the reform was enacted, during the three month period examined by Blouin et. al. Indeed, even when we limit ourselves to the CRSP data available through 2003-Q3 (the data available for their study), our probit model estimates are virtually unchanged, and remain highly statistically significant. Hence, although the addition of two more quarters of data has made the increase in regular dividend payments after the tax cut clearer, the primary reason that our conclusions differ from those of Blouin et. al. is the difference in methodology. Changes in regular dividend amounts are difficult to detect because of the extreme values problem, but changes in the number of payers are much easier to see.

3.3 Intensive Margin

Given the extreme values problem that plagues the analysis of amounts, we begin our study of the intensive margin by examining the effect of the tax cut on the probability that a firm increases or decreases dividend payments. We consider several different cutoffs to define an increase or decrease, ranging from a minimum of 0 percent (where all changes are counted as either increases or decreases) to a maximum of 50%.[19] It turns out that the cutoffs used to define increases and decreases matter little for the results; we report results for the 20% cutoff because these changes are both relatively frequent and sufficiently large that they are likely to signal a substantial shift in a corporation's distribution policy.

We define a firm as increasing its regular dividend payment on the intensive margin by 20% in quarter t if two conditions are met: (1) the firm is *not* initiating payments in quarter t by the definition given in the preceding section; (2) regular dividends in quarter t exceed regular dividends in quarter $t-1$ *and* quarter $t-4$ by at least 20%. The requirement that dividends in quarter t exceed dividends in quarter $t-4$ ensures that annual or semi-annual payers are not artificially classified as increasers every time they make a dividend payment. The definition for decreasing dividends by 20% on the intensive margin is analogous. Note that terminations are not counted as decreases to avoid double counting, given their inclusion in the extensive analysis. Every firm is assigned a value of 0 for both the increase and decrease dummy variables in their first four quarters in the sample, since there is inadequate historical information to apply our definition in these cases. Firms not paying or initiating dividends in period t are always assigned a value of 0 for both dummy variables.

Figure 6 plots the fraction of firms in the sample that increased or decreased dividends by 20% or more along the intensive margin. There is a sharp surge in the number of firms that increase dividends when the tax cut is enacted in 2003-Q3.[20] An average of 65 firms

[19] Increases and decreases are defined using nominal rather than real values since we want these variables to reflect active decisions by firms rather than changes in the inflation rate.

[20] The downward trend in the number of increases is created by selection bias. As noted above, the average firm in the selected sample becomes larger, more profitable, and more stable as we go further back in time. Since these firms are more likely to increase dividends than others, the fraction of dividend increases in the sample trends downward in the selected sample.

raised dividends by 20% or more in each of the quarters following enactment, much greater than the average of 25.5 per quarter in 2002 and 31.7 in prior years. Analysis of the data at a monthly frequency (not reported) shows that the pattern of dividend increases coincides very closely with the pattern of dividend initiations: it began in the three month period immediately after the reform examined by Blouin et. al., and remains strong through the end of the sample period. Meanwhile, the frequency of dividend decreases remained small and essentially unchanged after the tax cut.

Columns 3 and 4 of Table 3 report estimates of probit equations for the probability of increasing dividends on the intensive margin. The specifications are analogous to those in (5) and (6) above, with the dependent variable replaced by a dummy for increasing dividends by more than 20%. Whether or not controls are included, the estimates reveal a very strong, statistically significant effect of the treatment dummies of the probability of increasing dividends. In the specification with controls, the tax cut is estimated to almost double the probability of an increase relative to the sample mean of 1.7%. Analogous probit models for decreasing dividends by 20% (not reported) show a small, statistically insignificant reduction in the probability of decreasing dividends in 2003. The spike in increases on the intensive margin is a widespread phenomenon that occurs across firms of all sizes. This is illustrated in Table 6, which lists net increases (increases less decreases) for the six different market cap groups.

While the data permit clear statistical inferences about the number of firms making large increases because of the tax reform, it is difficult to pin down the amount of dividends these increases brought in with any precision. Figure 7 plots total cumulated dividends from the intensive margin, which are defined as the residual when cumulative dividends from the extensive margin in quarter t are subtracted from aggregate dividends in quarter t. While there is a substantial increase in the total amount of dividends from the intensive margin after the reform, the time series is very volatile, suggesting that there is limited power to make statistical inferences. Columns 3 and 4 in Table 4 confirm that this is the case, replicating the dividend amounts regressions in (1) and (2) with cumulative intensive margin dividends as the dependent variable. Although the point estimate for the total treatment effect is positive when controls are included, the standard errors are very large, and the null hypothesis of a zero effect cannot be rejected. Table 7 presents the problem at a more disaggregated level by listing dividends from the intensive margin (non-cumulated) by market cap size group. While the rise in total dividends is evident across all size groups, the fluctuations in the historical series are always large relative to these changes. Thus, despite the strong evidence that the tax cut induced many firms to raise dividends sharply, the concentration of dividend payments makes it difficult to estimate the total amount of dividends contributed by these changes with any precision.

3.4 Special Dividends

The preceding analysis applies only to regular, recurring dividends. We now turn to special, one-time dividend distributions. Figure 2 plots the fraction of special dividend payers in the core sample alongside the fraction of regular dividend payers. There is a clear uptick in the fraction of special payers immediately after the reform. An average of 28 firms paid special dividends in each of the quarters following enactment, significantly greater than the average of 11 per quarter in 2002. However, there are an average of 40 special dividend payments per quarter in the entire sample between 1981 and 2003. Hence, while the number of special payments rose after the reform relative to the recent past, it does not exceed the level of special payments in earlier periods such as the late 80s and early 90s.[21]

To test the statistical significance of the increase in special payments, the last two columns of Table 3 report estimates of probit equations for the probability of paying special dividends. Once we control for a linear time trend to account for the decline in the number of special payments over the sample period, the *post2003Q3* dummy is consistently statistically significant, irrespective of the other controls included in the model. Hence, there is strong evidence that the frequency of special dividend payments rose after the tax cut was passed in 2003-Q3. In the specification with controls, the estimates imply that the tax cut nearly doubled the probability of a special payment relative to the sample mean of 0.8%. Table 6 shows that the increase in special payments after the reform is a widespread phenomenon that occurs across firms of all sizes.

Assessing the total amount of dividends raised by special payments is again a challenging statistical task. Figure 7 plots the total amount of special dividends paid by firms in the selected sample. On average, special payments are \$800 million per quarter higher in the quarters including and after 2003-Q3 relative to the four quarters in the 2002 pre-reform period. However, this increase is driven by a very small set of firms. More than 80% of the increase is accounted for by eight payers who made special dividend payments in excess of \$100 million in one of the quarters after the reform was enacted. More than 30% of the \$800 million increase after 2003-Q3 is driven by a single firm, Southwestern Bell Corporation (SBC), which made two special dividend payments of approximately \$335 million each in 2003-Q3 and 2003-Q4. To assess the robustness of the rise in special dividends, the last two columns of Table 4 report OLS estimates for special dividend amounts, dropping SBC from the analysis. In the "few controls" specification, the *post2003Q3* dummy is statistically significant at the 5% level, and implies that the enactment of the tax cut raised the average firm's special dividend payment by $\$80,000$. This estimate implies an aggregate increase of $3813 * 0.08 = \$305$ million per quarter. The inclusion of controls reduces the point estimate significantly, making the coefficient statistically indistinguishable from zero at conventional criteria. The fragility and

[21] This is consistent with the findings of DeAngelo, DeAngelo, and Skinner (2000), who document a decline in the frequency of small special dividend payments over the past two decades.

lack of precision in these results should not be surprising given the extreme concentration of special dividend amounts.

The magnitude of the increase in special dividends is likely to be dwarfed by the change in regular dividends in the long run. To see this, note that increases in regular dividends are very persistent over time: The coefficients on lagged total dividends are very large and statistically significant in the intensive amount specifications in Table 4, but are insignificant in the specifications for special dividends. Hence, regular dividend increases cumulate over time, adding up to a much larger effect after a few quarters than the rise in special payments. Figure 2 illustrates this point clearly for the number of payers. The rise in the fraction of special payments rivals that of regular payments in 2003-Q3, immediately after the reform, but is much smaller than the total increase in regular dividend participation by 2004-Q1.

The same results apply when comparing regular and special dividend amounts, although the amounts estimates must be interpreted with caution in view of our earlier discussion. By 2004-Q1, more than $1.6 billion was pulled in from the extensive margin, while the intensive margin contributed another $1-$1.5 billion. Special dividends contributed less than $1 billion in 2004-Q1. It should be noted that if one were examining the data up to 2003-Q3 – as do Blouin et. al. (2004) – one would correctly conclude that special payments had a much larger effect than changes in regular dividends on total amounts until that point. The large cumulative effect of the changes in regular dividend amounts is fully evident only with the data now available through 2004-Q1. If current trends on the intensive and extensive margins continue and regular dividend payments remain as persistent as they have historically, special dividend payments are likely to be a minor blip in the time series relative to the change in regular dividend amounts induced by the 2003 tax reform.

3.5 Placebo Tests

A natural concern with our approach of selecting only firms alive in the 2004 CRSP sample for our empirical analysis is that non-random selection into the sample over time may bias our results. Firms that are in this selected sample in early years must be highly successful and stable, since all firms that are closed or delisted prior to 2004 are eliminated. Hence, the characteristics of the firms in the sample changes systematically over time. For example, average real profits trend downward over time in our selected sample, whereas they are stable in the core sample.

One may worry that the changing characteristics lead to an increase in dividend payments at the end of the sample frame, leading to spurious estimates of a treatment effect related to the 2003 tax reform. To test this hypothesis, we replicate our analysis for 1998 and check for a (spurious) "treatment effect " at the end of this sample frame. More precisely, we discard all the CRSP data after 1998-Q1, and construct a selected sample from 1980-1998 of only those

firms that are listed in the 1998 CRSP database. We then run the battery of tests described in the preceding three sections on this 1998 selected sample, to test whether regular dividend payments increased along any margin in the final year of the sample frame. Figures 8 and 9 show that there is no evidence of a spurious treatment effect. Dividend initiations and terminations are essentially flat from 1996 to 1998, as is the cumulative amount of dividends accrued from the extensive margin. The intensive margin also shows no evidence of an increase in the last year.

The results for the 1998 placebo test are not unique. We repeat our placebo analysis for all years $y \in \{1985, 1986, ..., 2003\}$, selecting only those firms that were alive in the first quarter of year y of the data. None of these placebo tests show any evidence of an increase in regular dividends at the end of the sample frame. The mean increase in initiations in the final year of the sample is 2.15 with a standard error of 4.5, in contrast with an increase of 92 in the 2004 selected sample. The placebo tests thus concur that the treatment effect is not spurious: The increase in initiations following the 2003 tax reform is indeed unprecedented.

3.6 Comparison to TRA-86

To demonstrate the unusual efficacy of the 2003 reform in inducing dividend increases, we replicate our analysis for the time period around the other major reform in our sample period, the Tax Reform Act of 1986. TRA-86, which was phased in between 1986 and 1988, reduced the top individual tax rate on dividends (as well as other forms of income) from 50% to 28%.

To analyze the effects of TRA-86, we construct a selected sample of the firms alive in the 1990-Q1 CRSP listing.[22] Figure 10 shows that the fraction of firms paying regular or special dividends did not change appreciably after TRA-86. The number of intensive-margin increases and decreases did not change significantly either. However, TRA-86 does appear to have generated a temporary surge in the total *amount* of special dividends in the late 1980s, as shown in Figure 11. The increase in the amount of special dividend payments following TRA-86 was much larger than after the 2003 tax reform. These results are consistent with the analysis of dividend payments around TRA-86 by Perez-Gonzalez (2003), and with the large but short-term surge in dividend income reported on high income individual tax returns just after TRA-86, as documented in Piketty and Saez (2001).

Further research is required to determine why the 2003 reform had very different effects than TRA-86. Three candidate explanations are: (1) average cash holdings were unusually high before the 2003 reform relative to prior years, giving firms the resources necessary to raise dividends; (2) highly publicized cases of corporate mismanagement such as Enron may have raised the signal value of dividends, giving firms a strong reason to raise dividends as soon as the cost of doing so was lowered; and (3) since TRA-86 lowered the income tax rate on all

[22] This sample is the same as that used for the 1990 placebo test in the preceding subsection.

forms of income, it generated a large income effect among high taxpayers that suppressed the demand for extra dividend payments.

4 Conclusion and Future Research

Aggregate quarterly dividend payments surged by around $3 billion in 2003. Unfortunately, the time series of dividend amounts is too noisy to conclude that this sharp increase was a systematic change associated with the dividend tax cut of 2003 rather than a random event. However, the time series of dividend amounts masks several systematic, detectable changes in dividend behavior following the tax cut. The data available to date strongly suggest that the 2003 tax reform induced a large, widespread set of firms to initiate regular dividend payments or raise the payments they were already making. The sharp rise in regular dividend payments along both intensive and extensive margins is unprecedented in the record of publicly traded U.S. corporations in the last three decades, and offers perhaps the clearest evidence thus far in the literature that tax policy does matter for dividend payments by corporations.

These results are inconsistent with the basic tax-irrelevance prediction of a pure "new view" model, insofar as the increases in regular dividends are indeed permanent changes. Nonetheless, our findings do not necessarily imply that all the predictions of the "old view" theory will be observed. Most importantly, it remains to be known whether the 2003 tax spurred investment and business activity. It is possible that the tax reform induced some firms to switch from share repurchases to dividends as a means of distributing profits, without having any net effect on investment. We plan to explore the effects of the tax cut on other outcomes such as investment and share repurchases in subsequent research.

We also intend to complete and extend our analysis of the effects of dividend tax policy on dividend payout behavior in several ways. Our first goal is to test the key identification assumption underlying our time series analysis – that no other unobservable factor relevant for dividend behavior changed contemporaneously with the tax rate. This assumption can be tested by checking if the new payers have relatively higher individual ownership who stood to benefit from the dividend tax cut rather than institutional ownership (corporations, non-profit organizations, pensions, or college funds) that did not benefit from the tax cut.

Second, we also plan to examine the characteristics of firms that initiated or increased dividends across other dimensions by linking our dataset with data on executive compensation, insider ownership, and measures of corporate governance quality from Gompers, Ishii, and Metrick (2003). These datasets will permit analysis of many interesting questions: Do new payers hold large cash amounts relative to other companies? Do new payers have higher insider ownership, suggesting that corporate governance plays an important role in the determination of dividend payout policies?

More generally, we hope to exploit the dividend tax cut as an experiment to explore the ex-

tent to which agency problems cause large, cash-rich firms to undertake inefficient investments instead of returning the money to investors via dividends. A large literature in corporate finance has shown that the interest of management is not necessarily well aligned with the interest of stockholders when ownership is dispersed. As a result, it is possible that poorly governed corporations are more likely to dissipate profits into non-efficient investments or excessive executive compensation rather than distribute profits to stockholders (see LaPorta et. al., 2000 for a cross-country analysis). Testing whether the quality of corporate governance, the level and composition of executive compensation, and the reliance on stock options is systematically different in firms that took advantage of the tax reform by increasing dividends can shed further light on these issues. For instance, the value of outstanding stock options increases with capital gains following share repurchases, but does not change following dividend payments. If agency problems are rampant, companies with substantial stock-options outstanding among its executives or influential employees should be less likely to replace share repurchases with dividend payments (Lambert, Lanen, and Larcker, 1989).

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Figure 1

Aggregate Regular Dividends for Core CRSP Sample 1981-2004

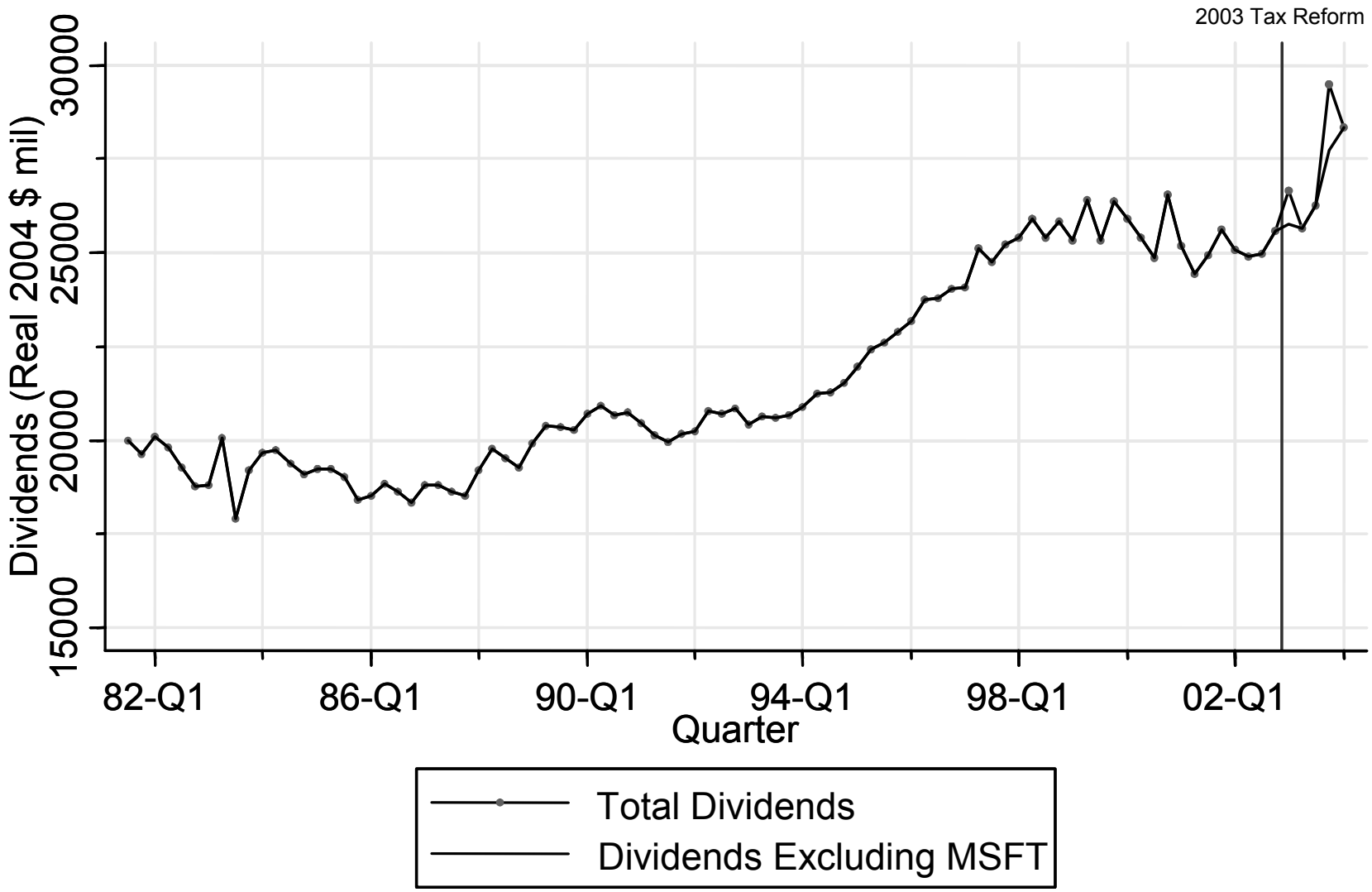

Figure 2

Fraction of CRSP Firms Paying Dividends 1981-2004

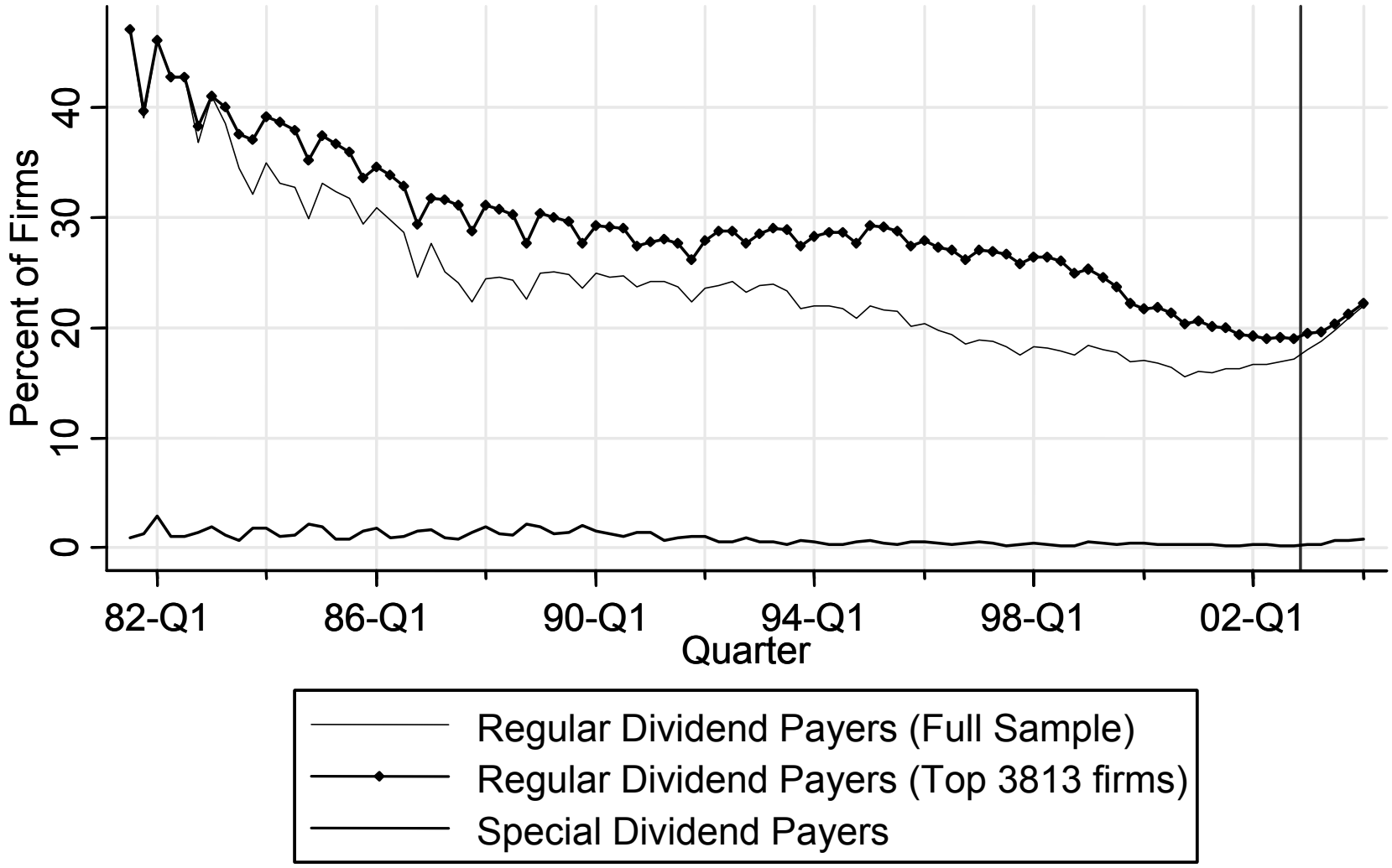

Figure 3

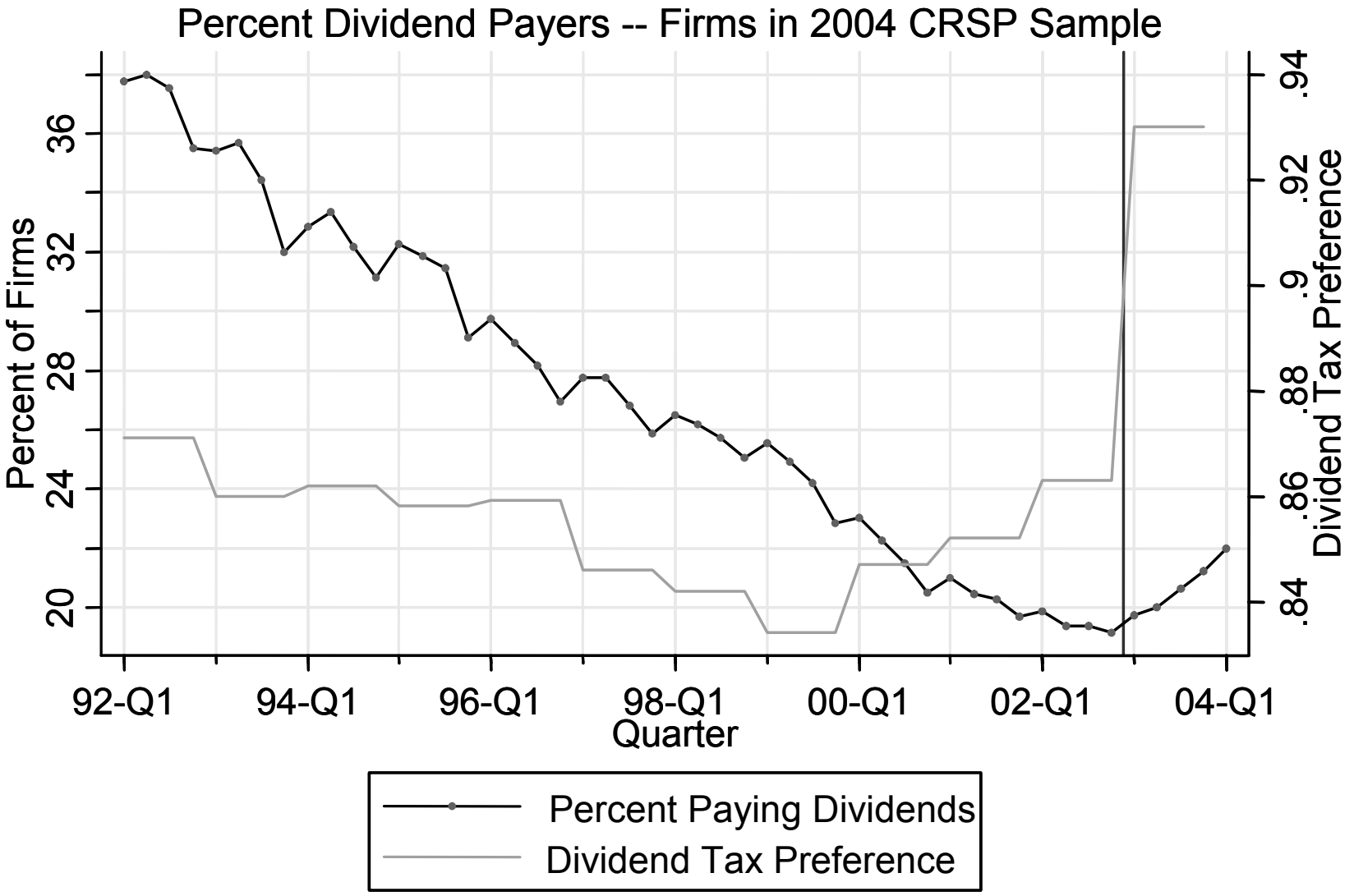
Percent Dividend Payers -- Firms in 2004 CRSP Sample
Percent of Firms
20
24
28
32
36
Dividend Tax Preference
.84
.86
.88
.9
.92
.94
92-Q1
94-Q1
96-Q1
98-Q1
00-Q1
02-Q1
04-Q1
Quarter
Percent Paying Dividends
Dividend Tax Preference

Figure 4

Dividend Initiation and Termination

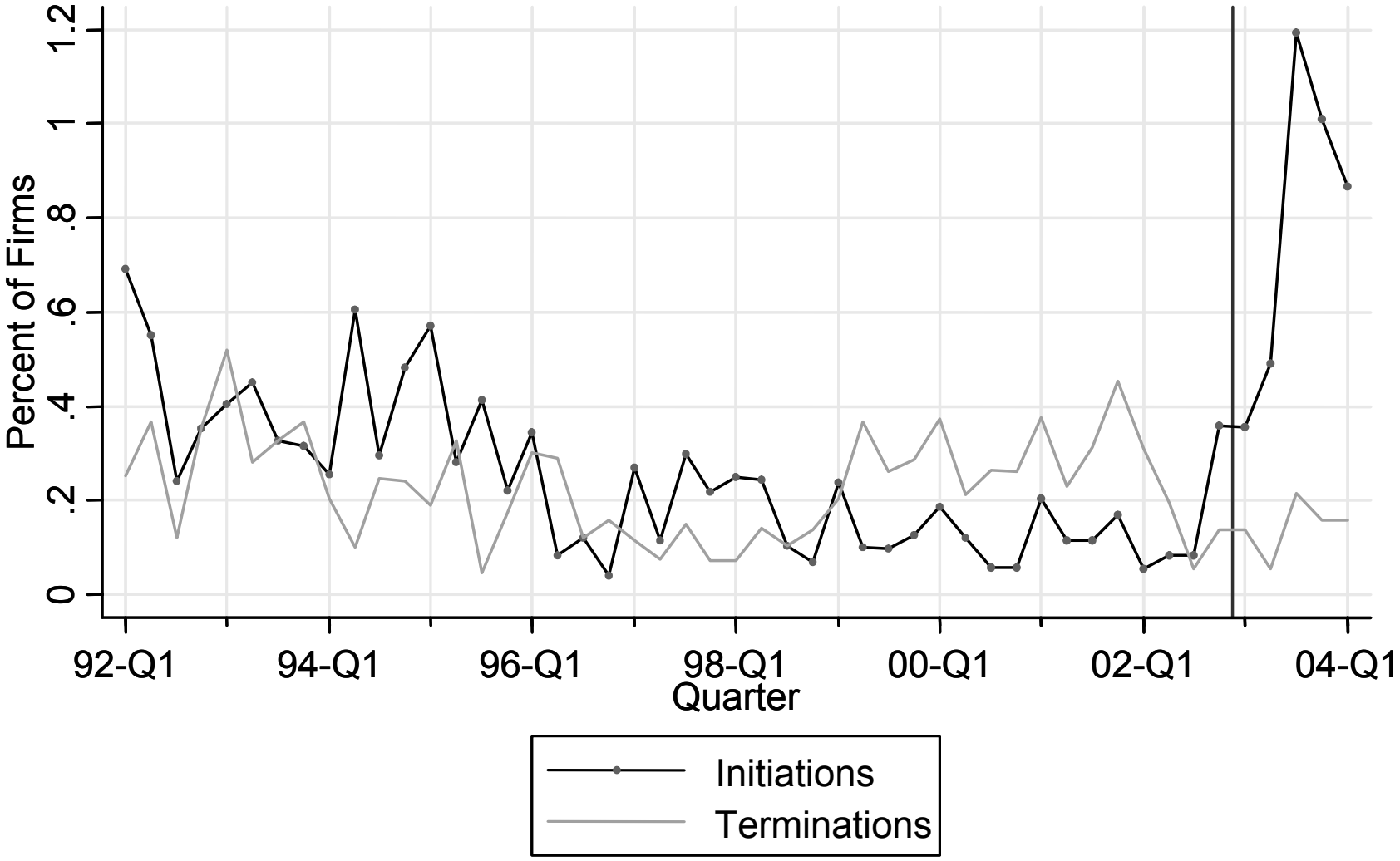

Figure 5

Regular Dividend Initiations by Month 2001-2004

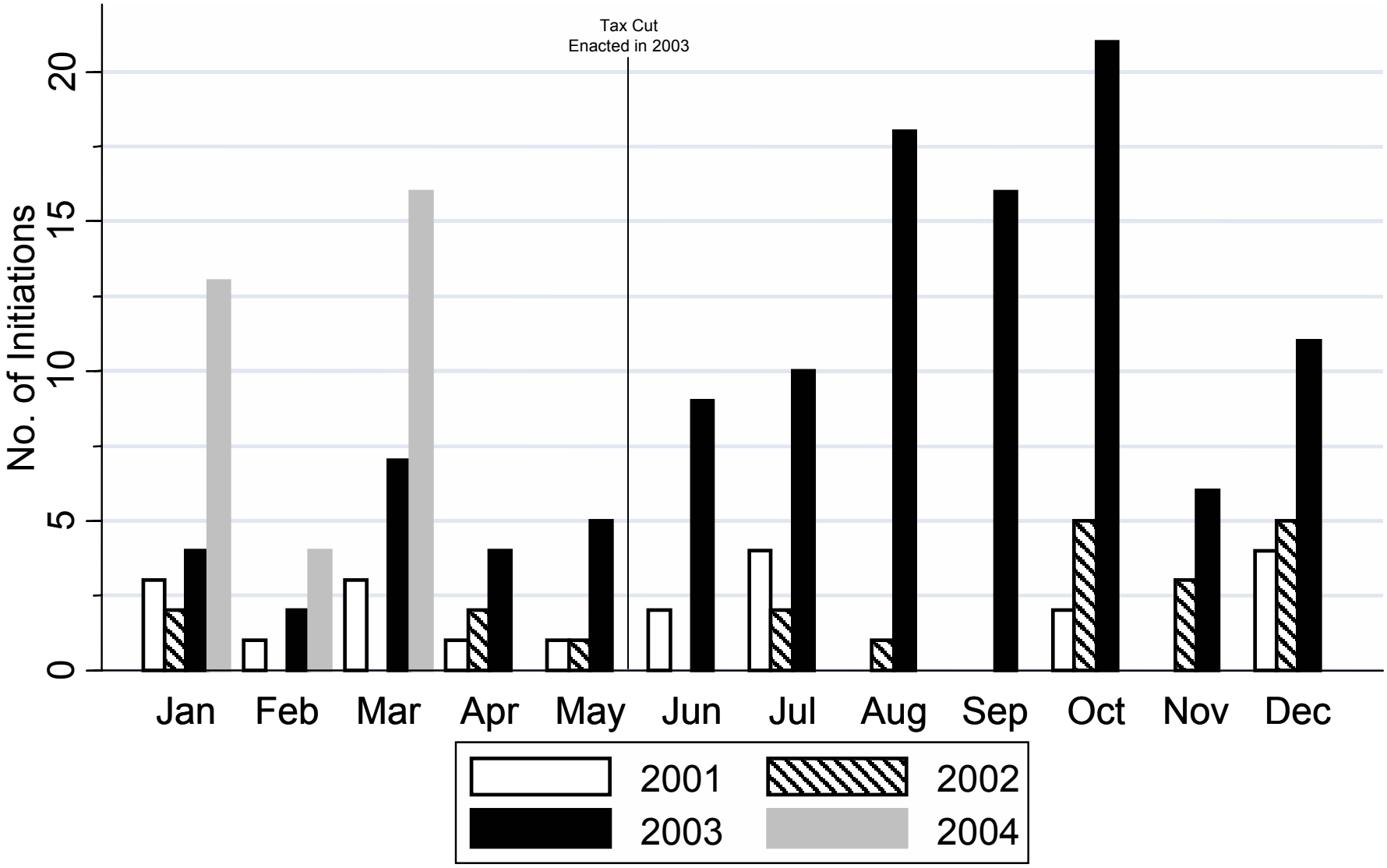

Figure 6

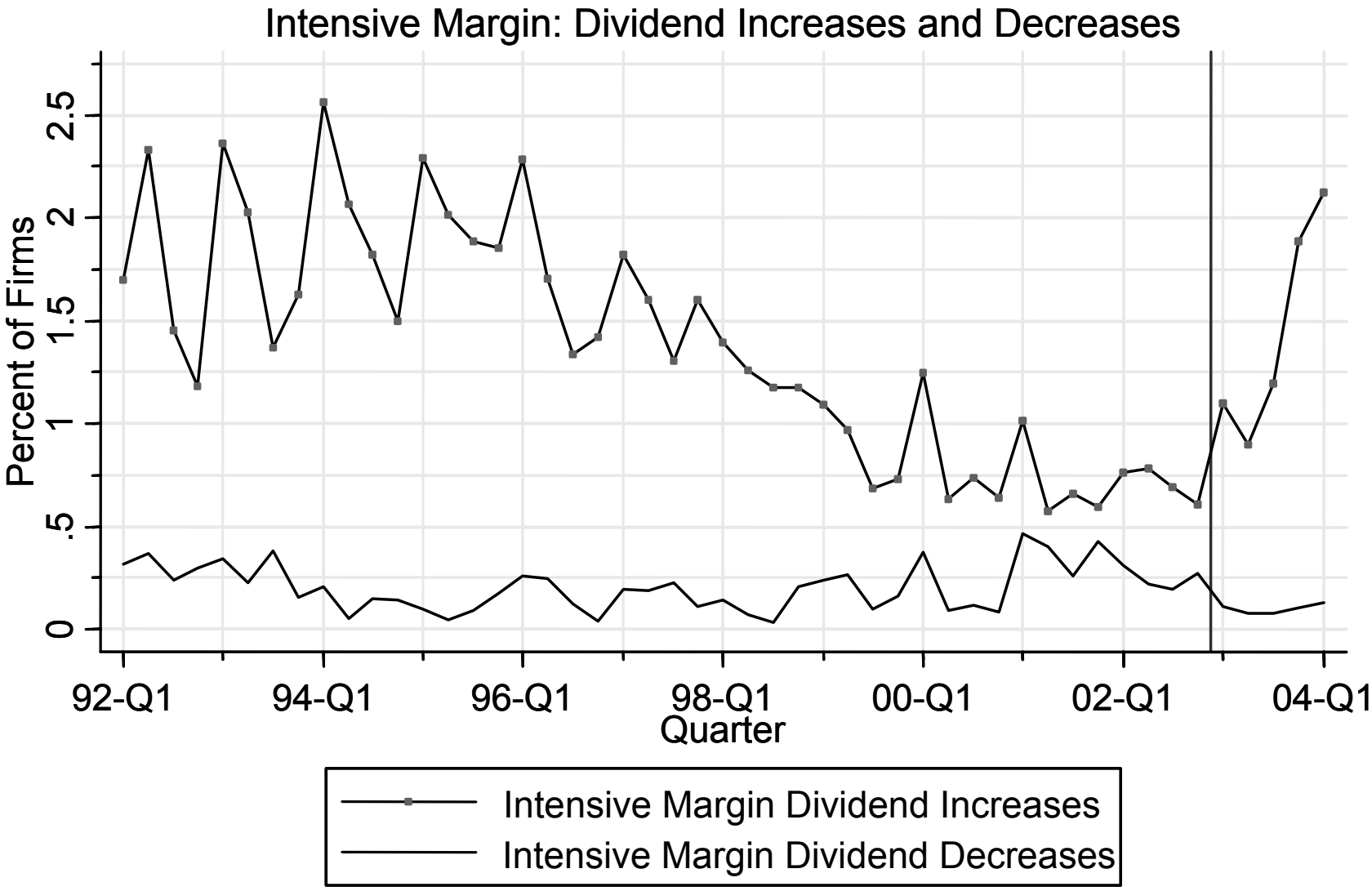
Intensive Margin: Dividend Increases and Decreases
Percent of Firms
0
.5
1
1.5
2
2.5
92-Q1
94-Q1
96-Q1
98-Q1
00-Q1
02-Q1
04-Q1
Quarter
Intensive Margin Dividend Increases
Intensive Margin Dividend Decreases

Figure 7

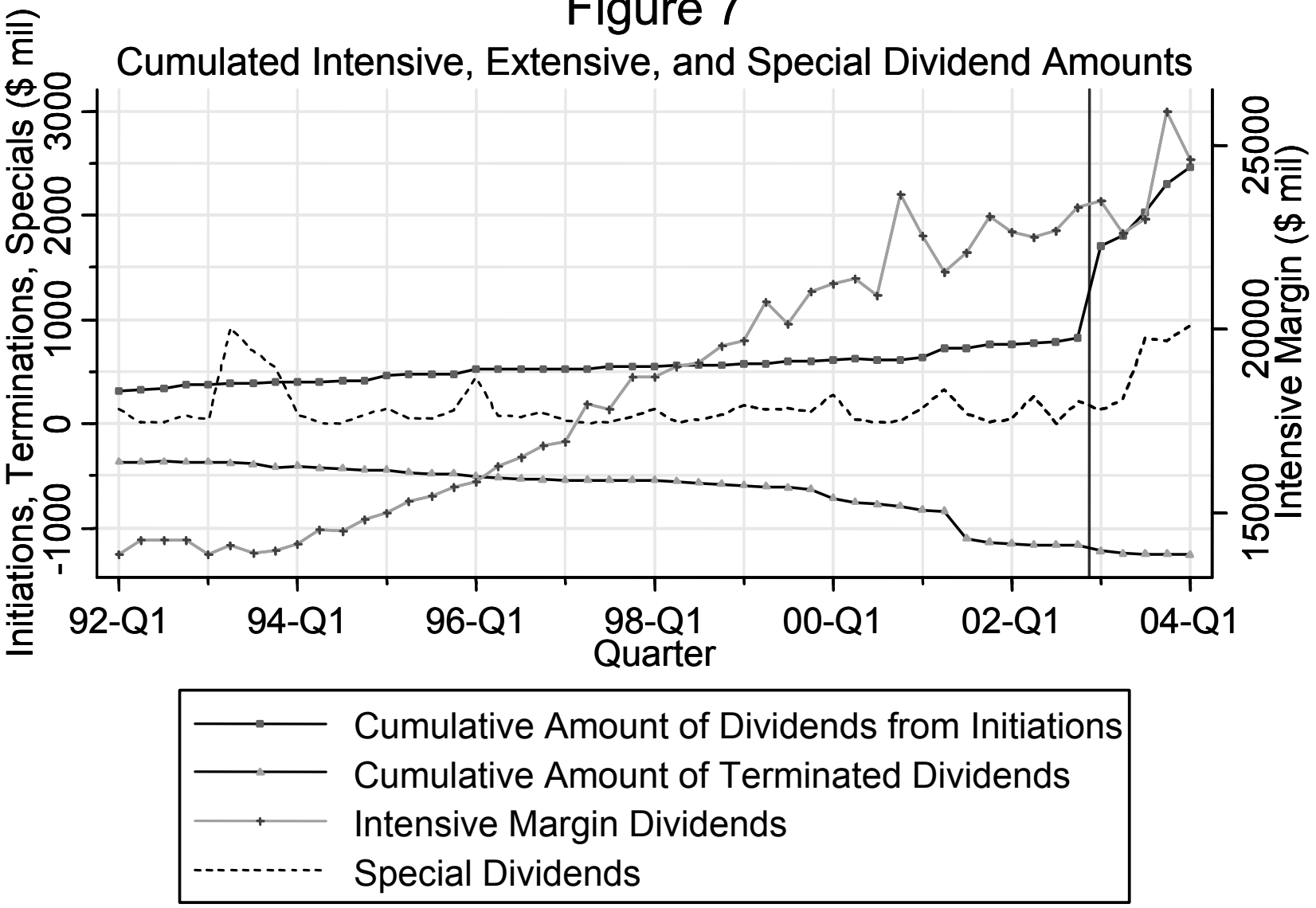
Cumulated Intensive, Extensive, and Special Dividend Amounts
Initiations, Terminations, Specials ($ mil)
-1000
0
1000
2000
3000
Intensive Margin ($ mil)
15000
20000
25000
92-Q1
94-Q1
96-Q1
98-Q1
00-Q1
02-Q1
04-Q1
Quarter
Cumulative Amount of Dividends from Initiations
Cumulative Amount of Terminated Dividends
Intensive Margin Dividends
Special Dividends

Figure 8

Dividend Initiation and Termination -- 1998 Placebo Test

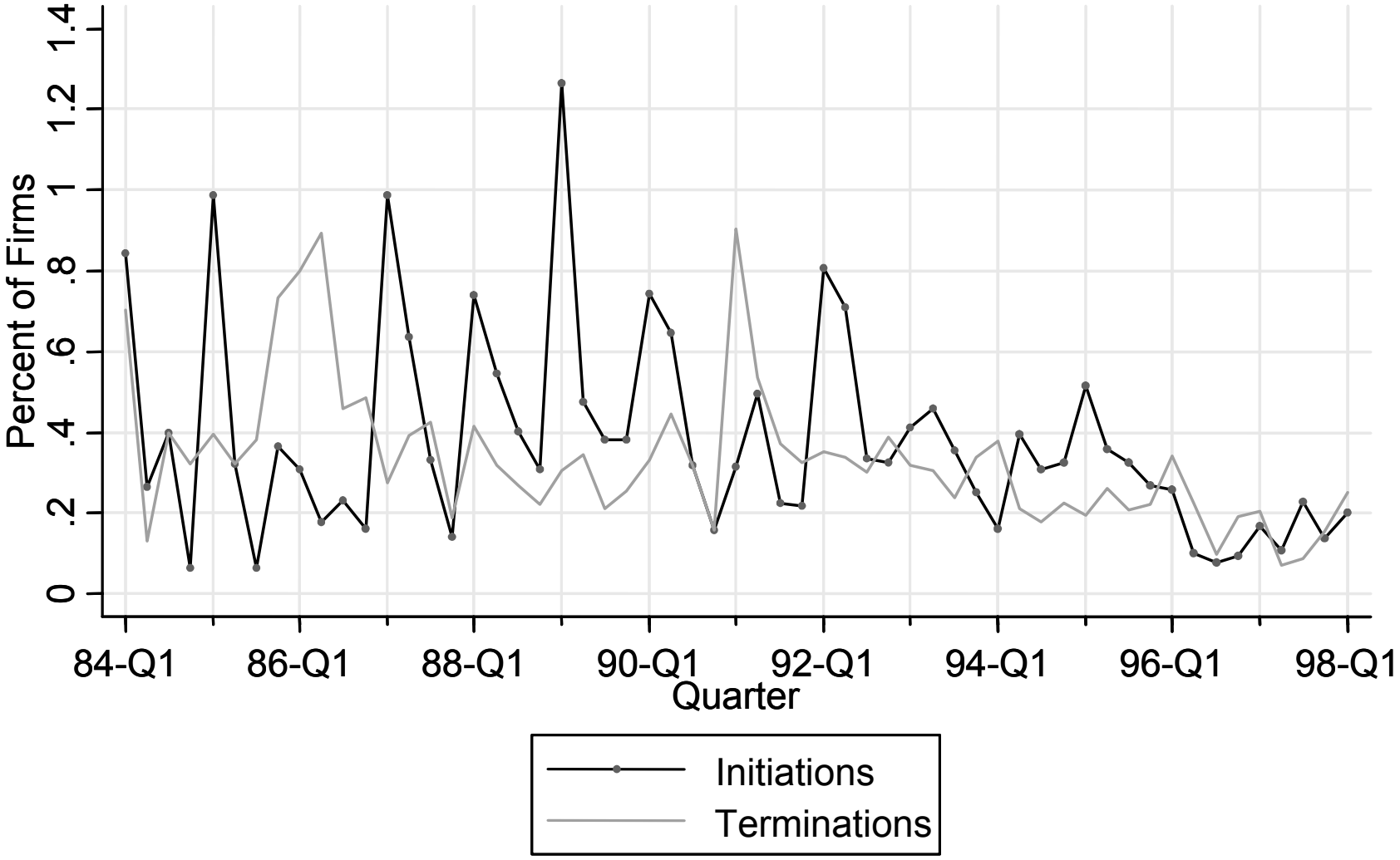

Figure 9

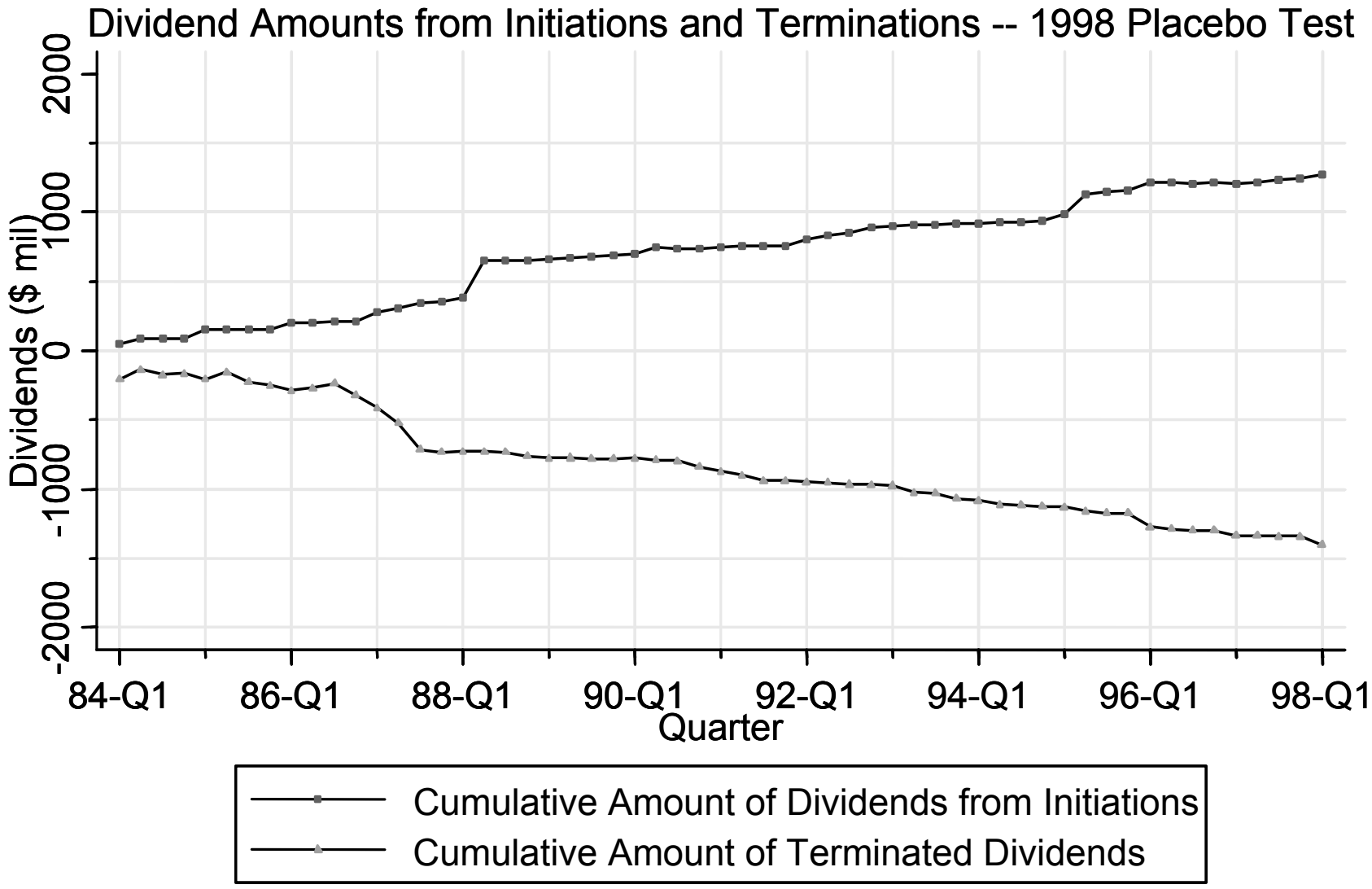
Dividend Amounts from Initiations and Terminations -- 1998 Placebo Test
Dividends ($ mil)
2000
1000
0
-1000
-2000
84-Q1
86-Q1
88-Q1
90-Q1
92-Q1
94-Q1
96-Q1
98-Q1
Quarter
Cumulative Amount of Dividends from Initiations
Cumulative Amount of Terminated Dividends

Figure 10

Regular Dividend Initiation vs Special Payments around TRA 86

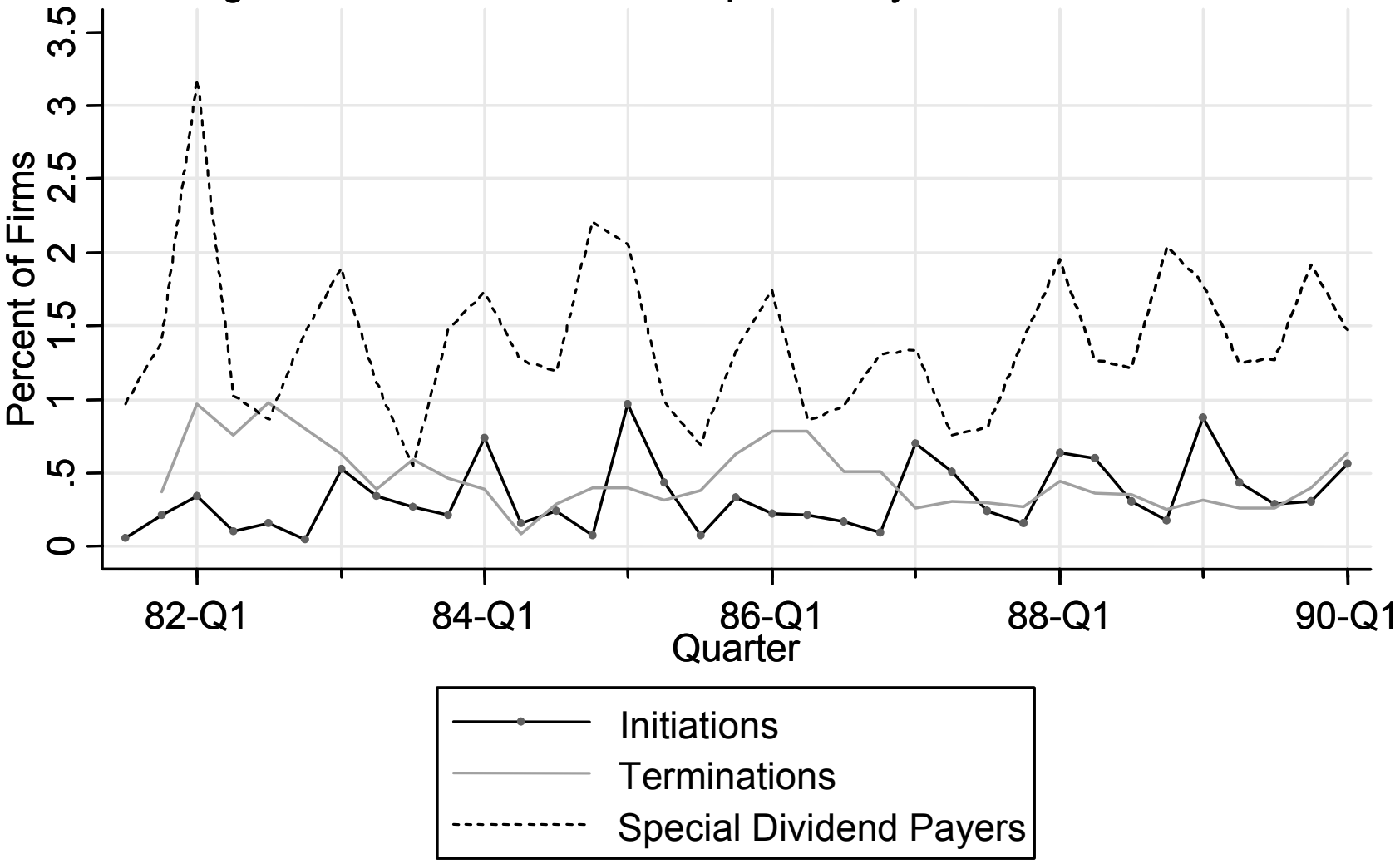

Figure 11

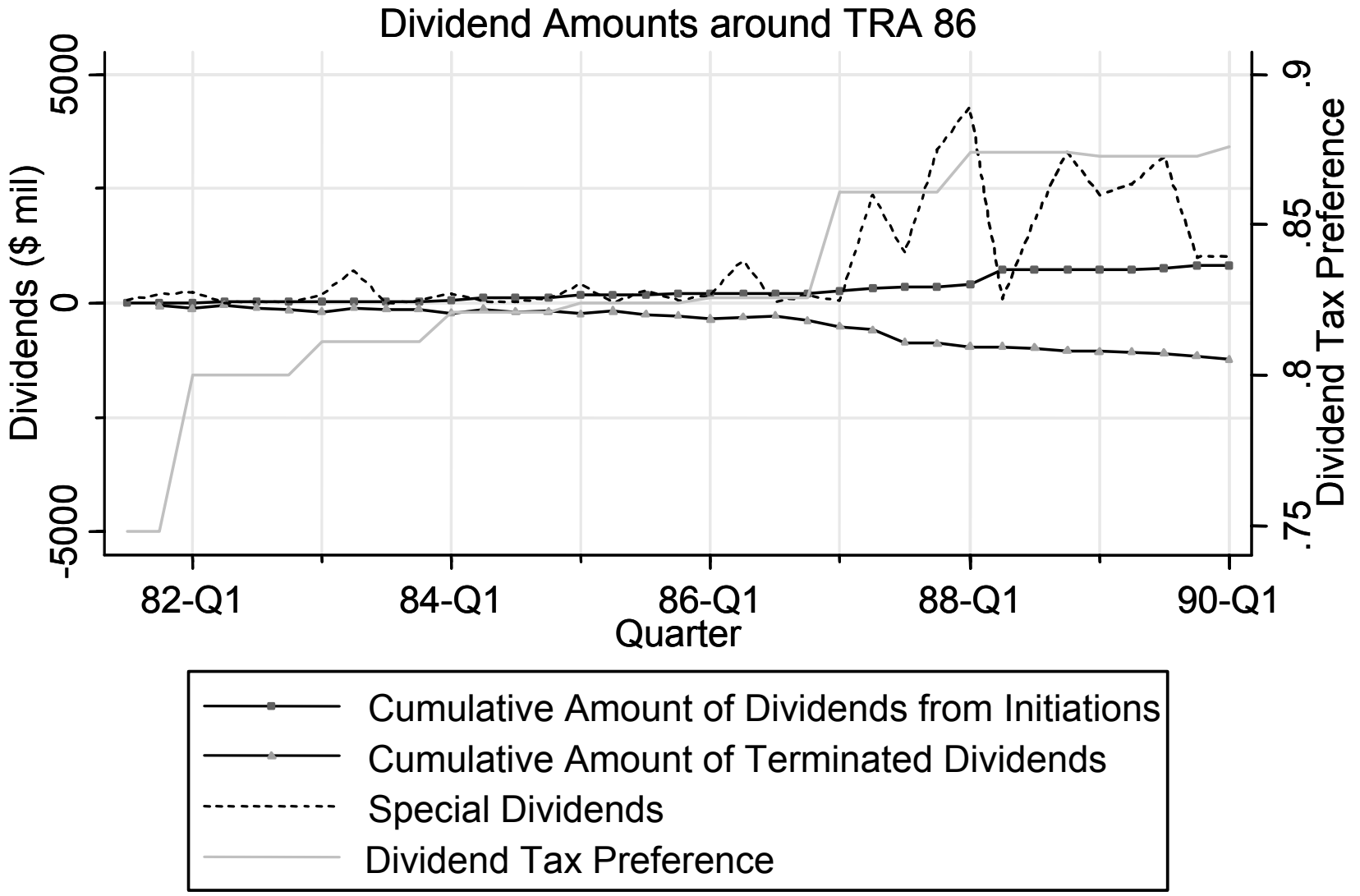
Dividend Amounts around TRA 86
Dividends ($ mil)
5000
0
-5000
.9
.85
.8
.75
Dividend Tax Preference
82-Q1
84-Q1
86-Q1
88-Q1
90-Q1
Quarter
Cumulative Amount of Dividends from Initiations
Cumulative Amount of Terminated Dividends
Special Dividends
Dividend Tax Preference

TABLE 1

SUMMARY STATISTICS

	Core Sample (All Firms in CRSP)		Selected Sample (Firms Listed in 2004 CRSP)	
Variable	Mean	St. Dev.	Mean	St. Dev.
Total Regular Dividends	4.6218	40.5972	8.3467	59.1348
Total Intensive Margin	4.6119	40.5718	8.3320	59.0995
Total Extensive Margin	0.0098	1.4675	0.0147	2.1025
Special Dividend Amounts	0.1110	10.8124	0.1208	9.9212
Fraction Paying Regular Divs	0.2345	0.4237	0.3107	0.4628
Fraction Initiations	0.0028	0.0527	0.0033	0.0570
Fraction Increases	0.1082	0.3106	0.1468	0.3539
Fraction Decreases	0.0188	0.1360	0.0270	0.1620
Fraction Terminations	0.0045	0.0672	0.0025	0.0504
Fraction Special Payers	0.0081	0.0896	0.0083	0.0907
Fraction Post-2003	0.0454	0.2082	0.1028	0.3036
Firm Age (quarters)	26.35	21.73	33.86	24.43
Market cap	1131.56	8263.04	2129.01	12391.11
Assets	1153.75	8108.62	1936.78	11634.88
Cash/liquid assets	79.97	558.11	132.63	781.29
After-Tax Profits	8.12	149.24	16.43	217.27
	CRSP	CRSP-COMP	CRSP	CRSP-COMP
Total Observations	431,379	381,486	180,710	169,754
Number of Firms				
Year/Qtr				
1983-Q1	3693	3118	759	720
1988-Q1	4818	4207	1260	1198
1993-Q1	4589	4215	1734	1666
1998-Q1	5975	5555	2791	2703
2004-Q1	3813	0	3813	0

NOTE-Core sample includes all firms in CRSP that have share codes 10 and 11 and SIC codes outside 4900-4949 and 6000-6999. Selected sample keeps firms in core sample listed in 2004 CRSP. All dollar amounts are in real 2004 millions of dollars. All variables are from CRSP sample except assets, cash, and profits, which are from COMPUSTAT.

TABLE 2

DIVIDEND AMOUNTS AND PERCENT PAYERS

	(1) OLS Few Controls	(2) OLS Full Controls	(3) OLS Full Controls Top 5 dropped	(4) Probit Few Controls Core Samp	(5) Probit Few Controls Selected Samp	(6) Probit Full Controls Selected Samp
Dependent var:	Div Amt	Div Amt	Div Amt	Div Payer	Div Payer	Div Payer
post2003Q1	0.081	0.127	0.103	0.034	0.057	0.067
	(0.100)	(0.095)	(0.080)	(0.008)	(0.015)	(0.016)
post2003Q3	0.154	0.201	0.080	0.065	0.095	0.115
	(0.125)	(0.131)	(0.111)	(0.012)	(0.019)	(0.024)
dividends (t-1)	0.412	0.377	0.386	0.606	0.698	0.688
	(0.002)	(0.002)	(0.002)	(0.012)	(0.017)	(0.019)
dividends (t-2)	0.287	0.210	0.263	0.339	0.428	0.421
	(0.002)	(0.002)	(0.002)	(0.012)	(0.019)	(0.020)
dividends (t-3)	0.191	0.199	0.079	0.006	-0.002	0.011
	(0.002)	(0.002)	(0.002)	(0.008)	(0.020)	(0.022)
dividends (t-4)	0.418	0.487	0.518	0.516	0.660	0.677
	(0.002)	(0.002)	(0.002)	(0.013)	(0.017)	(0.017)
dividends (t-5)	-0.265	-0.243	-0.231	-0.154	-0.300	-0.307
	(0.002)	(0.002)	(0.002)	(0.004)	(0.013)	(0.014)
dividends (t-6)	-0.105	-0.080	-0.118	-0.075	-0.151	-0.167
	(0.002)	(0.002)	(0.002)	(0.006)	(0.017)	(0.018)
dividends (t-7)	-0.193	-0.196	-0.123	-0.008	-0.012	-0.025
	(0.002)	(0.002)	(0.002)	(0.006)	(0.015)	(0.016)
dividends (t-8)	0.263	0.238	0.223	0.198	0.305	0.296
	(0.002)	(0.002)	(0.002)	(0.008)	(0.015)	(0.016)
year	0.007	0.004	0.004	-0.002	-0.006	-0.009
	(0.003)	(0.003)	(0.003)	(0.000)	(0.000)	(0.001)
age		-0.003	-0.001			0.001
		(0.001)	(0.001)			(0.000)
Mean of Dep Var	4.62	4.78	4.21	0.260	0.334	0.340
Sample size	328268	272173	271782	328268	151903	136740

NOTE-Dependent variable is total regular dividends in specs 1-3, and a dummy for paying dividends in 4-6. Estimates reported for probit specifications are marginal probability effects evaluated at sample means. Standard errors, reported in parentheses, are clustered by firm ID in specifications 4-6. In specs 1-3, dividends (t-X) is an X quarter lag of regular dividends; in specs 3-6, it is an X quarter lag of the payer dummy. All specifications include quarter dummies. Specifications 2, 5, and 6 (full controls) also include dummies for first-digit SIC code, assets, and levels and 8 lags of liquid cash holdings and after-tax profits. The independent variable post2003Q1 is 0 in quarters before 2003 and 1 from 2003-Q1 until the end of the sample; post2003Q3 is 0 before 2003-Q3 and 1 in 2003-Q3 until the end of the sample.

TABLE 3

PROBIT ESTIMATES - INITIATIONS, TERMINATIONS, AND SPECIAL PAYMENTS

	(1) Few Controls	(2) Full Controls	(3) Few Controls	(4) Full Controls	(5) Few Controls	(6) Full Controls
Dependent var:	Initiation	Initiation	Int. Increase	Int. Increase	Special	Special
post2003Q1	0.0034	0.0034	0.0021	0.0022	0.0007	0.0012
	(0.0011)	(0.0011)	(0.0018)	(0.0019)	(0.0014)	(0.0015)
post2003Q3	0.0056	0.0085	0.0140	0.0130	0.0083	0.0077
	(0.0016)	(0.0024)	(0.0030)	(0.0035)	(0.0028)	(0.0031)
Mean of Dep Var	0.0033	0.0034	0.0166	0.0172	0.0083	0.0082
Sample size	180710	136603	180710	136603	180710	136740

NOTE-Dep. var is a dummy for initiation in 1-2, 20% increase on intensive margin in 3-4, and special payment in 5-6. Estimates reported for all specifications are marginal probability effects evaluated at sample means. Standard errors, reported in parentheses, are clustered by firm ID in all specifications. All specifications include a linear year trend and quarter dummies. Specifications 2,4, and 6 (full controls) also include dummies for first-digit SIC code, assets, and levels and 8 lags of liquid cash holdings and after-tax profits. All specifications are estimated on the selected sample. The independent variable post2003Q1 is 0 in quarters before 2003 and 1 from 2003-Q1 until the end of the sample; post2003Q3 is 0 before 2003-Q3 and 1 in 2003-Q3 until the end of the sample.

TABLE 4

EXTENSIVE MARGIN, INTENSIVE MARGIN, AND SPECIAL DIVIDEND AMOUNTS

	(1) OLS Few Controls	(2) OLS Full Controls	(3) OLS Few Controls	(4) OLS Full Controls	(5) OLS Few Controls	(6) OLS Full Controls
Dependent var:	Extensive Margin Div	Extensive Margin Div	Intensive Margin Div	Intensive Margin Div	Special Dividends	Special Dividends
post2003Q1	-0.0455	-0.0185	-0.2381	0.0423	0.0565	0.0879
	(0.0300)	(0.0328)	(0.2004)	(0.1702)	(0.0597)	(0.0741)
post2003Q3	0.1524	0.1217	-0.0096	0.1387	0.1135	0.0244
	(0.0305)	(0.0289)	(0.1104)	(0.2041)	(0.0543)	(0.0859)
dividends (t-1)	0.0049	0.0022	0.3153	0.3456	-0.0000	0.0000
	(0.0022)	(0.0022)	(0.2286)	(0.0903)	(0.0007)	(0.0014)
dividends (t-2)	0.0013	0.0002	0.3208	0.1892	-0.0003	0.0026
	(0.0012)	(0.0013)	(0.0438)	(0.0691)	(0.0009)	(0.0038)
dividends (t-3)	0.0003	-0.0014	0.2036	0.1857	0.0006	-0.0030
	(0.0008)	(0.0012)	(0.1753)	(0.1156)	(0.0011)	(0.0046)
dividends (t-4)	0.0018	0.0001	0.4091	0.5276	0.0014	0.0012
	(0.0012)	(0.0012)	(0.1624)	(0.1148)	(0.0011)	(0.0013)
dividends (t-5)	-0.0033	-0.0021	-0.1922	-0.2218	0.0004	0.0004
	(0.0019)	(0.0014)	(0.1534)	(0.0714)	(0.0010)	(0.0018)
dividends (t-6)	-0.0006	-0.0007	-0.1245	-0.0724	0.0008	0.0005
	(0.0010)	(0.0008)	(0.0762)	(0.0586)	(0.0018)	(0.0029)
dividends (t-7)	-0.0012	-0.0004	-0.1981	-0.1840	-0.0016	0.0013
	(0.0009)	(0.0010)	(0.1028)	(0.0724)	(0.0018)	(0.0041)
dividends (t-8)	-0.0032	-0.0017	0.2748	0.2300	-0.0007	-0.0023
	(0.0016)	(0.0016)	(0.0950)	(0.0566)	(0.0016)	(0.0024)
year	-0.0055	0.0016	0.0032	0.0341	-0.0175	-0.0205
	(0.0027)	(0.0039)	(0.0101)	(0.0097)	(0.0077)	(0.0086)
age		-0.0043		-0.0231		0.0007
		(0.0018)		(0.0036)		(0.0006)
Mean of Dep Var	0.23	0.22	7.89	8.07	0.12	0.12
Sample Size	151662	136676	151727	136740	151654	136678

NOTE-Dependent var is cumulative extensive margin dividend amount in 1-2, cumulative intensive margin dividend amount in 3-4, and special dividend amount in 5-6. Standard errors, reported in parentheses, are clustered by firm ID. Dividends (t-X) is an X quarter lag of regular dividend amt. All specifications include quarter dummies. Specifications 2, 4, and 6 (full controls) also include dummies for first-digit SIC code, assets, and levels and 8 lags of liquid cash holdings and after-tax profits. All specifications are estimated on the selected sample. The independent variable post2003Q1 is 0 in all quarters before 2003 and 1 from 2003-Q1 until the end of the sample; post2003Q3 is 0 before 2003-Q3 and 1 in 2003-Q3 until the end of the sample.

TABLE 5

NET DIVIDEND INITIATIONS BY FIRM SIZE

2004 MARKET CAP RANK

Year/Qtr	1-100		100-250		250-500		500-1000		1000-2000		2000+	
	Net Init	Total	Net Init	Total	Net Init	Total	Net Init	Total	Net Init	Total	Net Init	Total
1992-Q1	0	81	0	109	2	147	1	223	1	348	3	708
1992-Q2	0	83	1	113	0	149	2	230	0	362	1	723
1992-Q3	0	83	1	114	0	150	1	231	0	368	0	733
1992-Q4	1	83	1	115	0	153	0	237	1	383	-3	755
1993-Q1	0	84	0	116	0	157	3	243	-2	394	-3	778
1993-Q2	0	84	2	117	1	160	0	249	1	403	-1	802
1993-Q3	0	84	1	117	0	162	-2	254	0	415	1	830
1993-Q4	1	84	0	119	0	165	-1	268	2	434	-3	866
1994-Q1	0	84	1	119	0	167	0	279	-1	447	1	890
1994-Q2	0	84	0	119	2	169	0	288	1	461	7	908
1994-Q3	0	84	0	120	1	170	1	292	1	471	-2	927
1994-Q4	0	85	-1	122	2	170	1	296	-1	478	5	956
1995-Q1	0	86	0	124	0	171	6	302	2	483	-1	968
1995-Q2	1	86	0	126	-1	172	-1	306	3	493	-3	991
1995-Q3	0	86	0	127	0	174	2	311	-1	500	7	1015
1995-Q4	0	86	0	129	0	184	1	318	0	526	0	1059
1996-Q1	1	86	-1	129	0	185	0	322	3	544	-2	1086
1996-Q2	0	88	-1	131	0	187	0	333	-3	564	-1	1131
1996-Q3	0	88	0	132	-1	190	-1	342	1	577	1	1166
1996-Q4	0	88	0	134	0	195	0	352	-2	602	-1	1198
1997-Q1	0	88	1	135	-1	197	-1	358	1	616	4	1217
1997-Q2	0	89	0	136	1	201	0	361	0	627	0	1237
1997-Q3	0	89	0	137	3	202	0	367	1	639	0	1274
1997-Q4	0	89	0	138	0	204	1	376	2	664	1	1305
1998-Q1	0	89	0	139	-1	207	1	380	2	679	3	1327
1998-Q2	-1	89	0	140	0	213	0	384	2	695	2	1368
1998-Q3	0	90	0	140	0	215	1	387	0	711	-1	1379
1998-Q4	0	90	1	142	-2	215	0	390	0	712	-1	1381
1999-Q1	-1	90	-1	143	0	221	0	398	0	724	3	1398
1999-Q2	0	90	-1	144	-1	222	0	409	0	740	-6	1432
1999-Q3	0	91	1	145	0	225	1	417	-3	764	-4	1468
1999-Q4	0	92	0	146	0	227	-1	423	-2	788	-2	1513
2000-Q1	0	92	1	146	-1	230	-3	425	-1	809	-2	1556
2000-Q2	0	92	-1	146	-1	232	0	436	-1	831	0	1598
2000-Q3	0	93	-1	146	-1	233	0	447	-2	855	-3	1649
2000-Q4	0	93	0	149	0	235	-1	449	-1	870	-5	1666
2001-Q1	1	93	0	149	0	236	0	453	-1	876	-6	1677
2001-Q2	0	94	1	149	0	236	-1	461	-2	880	-2	1686
2001-Q3	-1	97	-3	149	0	237	0	465	-1	886	-2	1694
2001-Q4	0	97	1	149	0	242	-2	470	-3	898	-6	1702
2002-Q1	0	97	0	149	0	242	-1	474	-2	906	-6	1710
2002-Q2	0	97	0	149	0	244	-1	483	-3	923	0	1719
2002-Q3	1	97	0	149	0	244	0	484	0	928	0	1726
2002-Q4	0	99	1	149	4	246	1	485	-3	936	5	1736
2003-Q1	1	99	-1	149	1	247	2	488	3	941	2	1740
2003-Q2	1	99	1	149	1	248	2	489	2	944	9	1750
2003-Q3	0	99	2	150	8	248	7	492	8	955	11	1761
2003-Q4	2	100	0	150	8	249	10	497	5	984	7	1787
2004-Q1	1	100	1	150	4	250	12	500	4	1000	5	1813

TABLE 6

NET INTENSIVE INCREASES AND SPECIAL PAYMENTS BY FIRM SIZE

	2004 MARKET CAP RANK											
Year/Qtr	**1-100**		**100-250**		**250-500**		**500-1000**		**1000-2000**		**2000+**	
	Net Incr	Spec Pay	Net Incr	Spec Pay	Net Incr	Spec Pay	Net Incr	Spec Pay	Net Incr	Spec Pay	Net Incr	Spec Pay
1992-Q1	1	4	4	4	2	0	5	2	4	3	6	10
1992-Q2	5	1	4	0	3	1	9	1	2	2	8	6
1992-Q3	2	1	1	0	3	0	3	3	6	3	5	4
1992-Q4	0	0	1	2	0	2	3	1	5	6	6	8
1993-Q1	1	1	4	2	4	0	8	1	13	3	5	8
1993-Q2	3	3	2	0	2	1	2	1	13	5	10	6
1993-Q3	2	1	2	1	0	0	5	2	6	1	3	6
1993-Q4	2	1	4	1	3	2	4	0	6	5	9	11
1994-Q1	3	1	2	1	6	0	13	1	9	2	13	7
1994-Q2	7	2	5	0	2	0	6	0	8	1	12	3
1994-Q3	6	1	2	0	0	0	4	3	9	0	13	5
1994-Q4	1	0	2	2	4	1	5	1	8	4	8	10
1995-Q1	3	1	6	2	4	1	9	3	13	4	11	9
1995-Q2	5	1	8	0	7	1	3	2	5	2	14	9
1995-Q3	5	0	0	0	0	0	7	4	13	1	14	4
1995-Q4	0	1	5	2	5	1	6	2	10	7	12	9
1996-Q1	5	2	-2	3	6	2	14	4	10	3	14	8
1996-Q2	3	1	2	2	6	0	7	3	12	2	5	7
1996-Q3	4	1	2	0	1	0	3	0	11	4	9	4
1996-Q4	0	1	5	3	4	1	5	0	9	5	12	9
1997-Q1	4	0	2	2	5	3	6	3	10	3	16	9
1997-Q2	4	0	2	0	1	0	7	3	9	1	14	6
1997-Q3	4	1	5	2	3	0	4	2	7	0	6	1
1997-Q4	2	0	4	1	6	0	6	0	8	1	15	6
1998-Q1	0	0	4	1	6	0	5	2	7	3	12	7
1998-Q2	2	1	3	1	2	0	11	2	9	2	7	8
1998-Q3	0	1	6	2	5	0	7	0	11	0	4	2
1998-Q4	4	1	6	1	3	0	3	1	4	1	8	2
1999-Q1	2	3	2	2	5	0	8	3	4	6	4	6
1999-Q2	7	1	4	0	3	0	4	3	-1	1	4	9
1999-Q3	1	1	3	0	2	0	4	2	4	1	4	4
1999-Q4	4	1	4	2	3	0	3	1	2	3	2	5
2000-Q1	2	1	4	1	2	2	9	2	5	3	6	8
2000-Q2	0	0	2	0	3	0	7	2	3	3	3	5
2000-Q3	1	0	1	0	3	1	4	1	9	2	3	4
2000-Q4	4	2	2	1	3	0	3	0	4	4	3	3
2001-Q1	4	1	0	2	0	0	3	1	5	1	7	4
2001-Q2	1	1	0	1	0	0	2	3	0	0	3	6
2001-Q3	5	1	0	0	4	0	0	1	3	2	2	3
2001-Q4	2	1	4	0	1	1	0	0	-2	2	1	2
2002-Q1	5	0	1	2	2	2	1	1	6	1	1	5
2002-Q2	1	0	6	0	1	0	3	3	5	2	4	5
2002-Q3	2	0	2	1	0	0	1	0	9	2	4	4
2002-Q4	1	1	2	0	4	0	2	2	4	1	-1	3
2003-Q1	7	1	4	1	5	2	7	0	8	1	5	6
2003-Q2	2	1	1	0	5	0	8	2	7	2	7	6
2003-Q3	3	1	2	0	9	0	10	5	11	4	6	14
2003-Q4	4	5	9	1	7	0	16	2	13	7	18	8
2004-Q1	6	3	15	4	8	1	20	3	13	5	14	15

TABLE 7

NET EXTENSIVE AND INTENSIVE DIVIDEND AMOUNTS BY FIRM SIZE

2004 MARKET CAP RANK

Year/Qtr	1-100		100-250		250-500		500-1000		1000-2000		2000+	
	Net Ext	Inten	Net Ext	Inten	Net Ext	Inten	Net Ext	Inten	Net Ext	Inten	Net Ext	Inten
1992-Q1	0	7165.4	0	2705.8	7.9855	766.15	0.2767	530.86	0.3365	305.54	2.895	89.774
1992-Q2	0	7526.7	4.7565	2719.4	0	765.24	7.7196	557.46	0.0932	302.97	0.478	96.97
1992-Q3	0	7579.6	8.858	2726.1	0	789.28	3.9208	567.77	0.3571	303.78	0.0176	94.765
1992-Q4	20.815	7691.5	3.516	2695.8	0	781.27	0	590.92	-2.2911	292.88	7.0504	106.65
1993-Q1	0	7305.2	0	2853.7	0	786.72	1.0188	593.1	-3.882	313.26	-0.061	96.924
1993-Q2	0	7560.7	4.4188	2838	1.3395	834.64	-5.6166	595.79	0.31	314.71	0.0662	100.59
1993-Q3	0	7447.2	2.2673	2883.1	0	820.51	-6.489	583.89	-0.4402	312.04	-0.6494	94.01
1993-Q4	4.4864	7572.3	0	2898.5	-19.318	795.49	-2.7834	592.16	0.6432	304.71	-1.9374	95.214
1994-Q1	0	7571.4	2.0053	2996.5	0	828.77	0	625.09	-11.083	325.96	0.3777	119.95
1994-Q2	0	7949.3	0	2987.6	4.9178	865.54	0	651.25	0.0802	319.03	1.8732	100.99
1994-Q3	0	8008.8	0	3021.8	-5.2401	843.4	0.7579	652.07	0.1137	325.01	-0.7513	100.41
1994-Q4	0	8304.9	-4.6481	3075.7	9.0924	835.71	0.5396	660.88	-0.8567	314.49	-2.3633	97.487
1995-Q1	0	8265.6	0	3195.6	0	913.53	26.987	696.48	4.0736	343.49	2.8892	117.41
1995-Q2	5.1683	8623.7	0	3233.3	-19.872	896.48	-2.4218	730.88	9.9338	341.14	-0.4125	110.3
1995-Q3	0	8801.3	0	3250	0	870.83	0.3139	728.32	-6.6049	357.38	1.8185	114.22
1995-Q4	0	9124.1	0	3247.5	0	882.15	0.2998	736.89	-1.7932	332.64	1.245	109.19
1996-Q1	4.366	9150.1	-14.751	3264.6	0	953.63	28.046	770.29	4.3963	382.74	-6.198	128.27
1996-Q2	0	9621.5	-10.322	3280.6	0	956.71	0.6284	831.38	-2.0691	371.31	-1.7836	106.41
1996-Q3	0	9817.7	0	3369.6	-6.0025	948.73	-5.2441	827.87	0.1527	370.53	1.0038	114.26
1996-Q4	0	10203	0	3322.4	0	978.56	0	839.71	-4.3358	380.13	-1.024	110.39
1997-Q1	0	9942.9	0.6476	3528.5	-1.456	1026.4	-4.2038	859.73	0.1509	490.67	2.0565	136.03
1997-Q2	0	10941	0	3498.9	0.7831	1013.9	0	879.41	0	484.08	0.2928	122.44
1997-Q3	0	10819	0	3529.6	14.695	1039.6	0	857.64	0.7352	482.43	-0.3663	118.82
1997-Q4	0	11706	0	3484	0	1079.7	0.1676	866.17	4.5561	462.39	2.0707	121.52
1998-Q1	0	11411	0	3610.2	-0.4062	1118.7	1.4847	912.44	0.3868	509.42	0.684	194.43
1998-Q2	-10.574	11832	0	3536.1	0	1102.5	0	930.72	-2.9294	503.46	2.3128	138.48
1998-Q3	0	11903	0	3631.4	0	1123.7	2.3609	922.15	-1.9089	501.11	-9.3611	126.08
1998-Q4	0	12375	5.7179	3705.6	-7.1232	1098.1	0	903.84	0	508.19	-1.7761	123.38
1999-Q1	-1.883	12290	-5.3915	3825.5	0	1174.9	-5.2276	937.86	0	532.51	11.612	142.69
1999-Q2	0	12717	-3.2409	3798.8	-2.9729	1884.8	0	944.07	0.4182	537.51	-2.6015	138.49
1999-Q3	0	12754	15.784	4021.2	0	1196.4	0.2784	966.17	-5.1477	523.68	-5.1466	126.06
1999-Q4	0	13723	0	4042.5	0	1339.7	-13.763	932.65	-0.9552	441.58	-1.8798	125.5
2000-Q1	0	14044	22.754	4165.3	-29.774	1261.1	-36.317	930.93	-4.849	473.22	-12.402	132.72
2000-Q2	0	14417	-22.754	4080.6	-5.6704	1258.8	3.0256	959.95	-4.421	449.47	-0.1193	112.9
2000-Q3	0	14029	-7.9858	4253.9	-5.5032	1242.9	0	912.83	-3.4881	447.02	-5.798	103.73
2000-Q4	0	16890	0	4159.9	0	1228.7	-8.5758	893.3	-7.0774	435.4	-3.7247	108.11
2001-Q1	15.614	16597	0	3515.3	0	1296	-29.942	874.95	-2.5844	437.45	-2.2955	111.1
2001-Q2	0	16309	83.063	3343.9	0	1239.8	-0.5959	883.92	-1.7547	418.45	-3.211	92.68
2001-Q3	-68.072	17035	-172.24	3289.1	0	1268.6	0	866.16	-11.318	407.76	-2.3692	87.9
2001-Q4	0	18099	27.668	3357.7	0	1221.8	-21.503	770.78	-2.8836	405.29	-3.1914	91.53
2002-Q1	0	17811	0	3201.6	0	1316.1	-6.2758	806.66	-1.287	412.41	-4.5452	85.805
2002-Q2	0	17842	0	3225.3	-2.6641	1259.6	-5.252	828.86	-3.5051	404.34	-0.0971	79.459
2002-Q3	14.918	17941	0	3538.8	0	1145.5	0	806.05	-1.9525	415.68	-0.1913	77.128
2002-Q4	0	18734	6.4071	3483.7	22.907	1224.1	12.662	810.67	-7.0061	383.3	1.7945	84.107
2003-Q1	856.11	19206	-36.636	3372.3	4.2304	1247	-16.826	818.31	3.3755	401.97	1.1536	89.295
2003-Q2	40.46	19343	13.085	3231.9	10.22	1220	5.9118	887.34	1.6649	401.04	2.8629	84.205
2003-Q3	0	19545	48.793	3633.3	125.25	1232.6	32.799	871.38	9.3212	405.01	6.1951	78.354
2003-Q4	158.77	22201	0	3778.7	48.683	1472.9	40.681	999.18	9.6453	427.4	9.5098	104.06
2004-Q1	14.951	21060	15.593	3946.8	57.892	1546.4	68.191	1035.1	-2.6866	458.2	8.6185	110.21