# The Effects of the 2003 Dividend Tax Cut on Corporate Behavior: Interpreting the Evidence

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The 2003 dividend tax reform has generated renewed interest in understanding the economic effects of dividend taxation. The reform introduced favorable tax treatment of individual dividend income, whereby dividends are taxed at a rate of 15 percent instead of facing the regular progressive individual income tax schedule with a top rate of 35 percent. Several recent studies have used the 2003 tax cut as a "natural experiment" to learn about the effects of dividend taxation on corporate behavior. These studies have obtained divergent, empirical results, despite using the same underlying data.

The goal of this paper is to reexamine the evidence using newly available data and reconcile some of the contradictory results in this recent literature. We focus on three questions: (a) Did the tax cut cause the surge in dividends or were other factors responsible?; (b) Did the tax cut induce substitution of repurchases for dividends, or did total payouts rise?; and (c) Did the tax cut induce more efficient distribution of investment funds across firms?

## I. Data and Basic Analysis of Dividend Payouts

We extend the series reported in our earlier study (Chetty and Saez, 2005) to include newly available data through 2005-Q2. We use data from the Center for Research in Security Prices (CRSP) for dividend variables, supplemented with Compustat data for other variables such as share repurchases.[1] We focus on the sample of all CRSP firms excluding foreign firms, financial firms, and utility firms. We call this sample, which contains about 5,000 firms in each quarter, the "core" sample.

We classify dividends into regular and special dividends. Regular dividends are periodic and recurrent (in general quarterly), and tend to be very smooth. Special dividends are one-time, nonrecurring events.

Three events are particularly relevant for our analysis. First, the reform was initially proposed on January 7, 2003. Second, the tax cut was officially signed into law on May 28, 2003, made retroactive to the beginning of 2003, and set to expire at the end of 2008. Finally, after the reelection of President George W. Bush in 2004, it became almost certain that the reform would last until 2008.

Figure 1 plots aggregate regular dividends for the core sample at a quarterly frequency between 1981-Q3 and 2005-Q2, in real 2004 dollars. Total regular dividends stagnated around $25 billion from 1998 to 2002 and then rose to about $33 billion by 2005. A large fraction of the increase took place in the last two quarters of 2003, after the tax cut was signed into law. Dividends surged again by approximately $2 billion in the first two quarters of 2005, just after Bush was reelected. Hence, the dividend tax cut appears to have induced a fairly long-term shift in policy, as opposed to a one-time surge in distributions. If the post-2003 increases are due to the tax cut, the reform appears to have raised aggregate regular dividends by roughly 30 percent relative to the level in 2002-Q4. These increases may not be due entirely to the tax cut, however, because dividends also increase gradually over time (though never as fast) in earlier periods. Figure 1 plots the total

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[1] CRSP contains financial data on all companies listed on the NYSE, AMEX, and NASDAQ, the main stock exchanges in the United States.

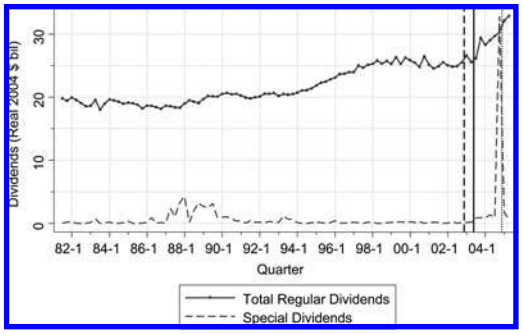


FIGURE 1. TOTAL REGULAR AND SPECIAL DIVIDENDS

*Notes:* Sample consists of all firm-quarters in the CRSP database which are nonfinancial, nonutility, and nonforeign in their last quarter (the "core" sample). Dashed vertical line denotes the retrospective start date for the dividend tax cut (January 1, 2003). Solid vertical line denotes enactment date (end of May 2003). Dotted line denotes George W. Bush's reelection date (November 2004).

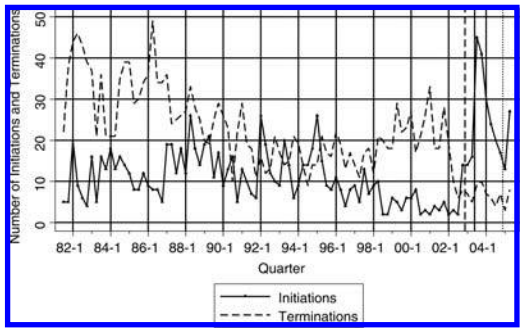


FIGURE 2. DIVIDEND INITIATION AND TERMINATION

*Notes:* Initiation is defined as starting to pay regular dividends after having been in the sample, and not paying regular dividends for at least four quarters. Termination is defined as stopping regular dividend payments for at least four quarters.

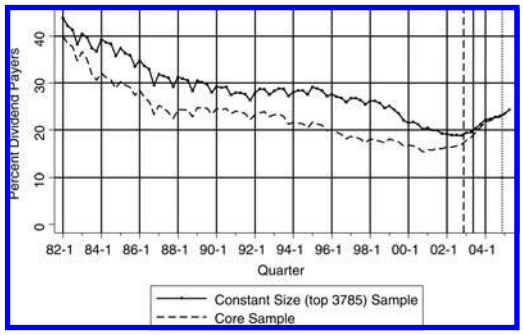


FIGURE 3. FRACTION PAYING REGULAR DIVIDENDS IN CORE AND CONSTANT-SIZE SAMPLES

amount of special dividends, which also increased substantially after the 2003 tax cut. The spike in 2004-Q4 is due entirely to a $32 billion special payment by Microsoft.

It is difficult to make precise inferences about the effect of the dividend tax cut on aggregate amounts because of entry and exit effects and the concentration of the dividend payments distribution. Clearer evidence comes from the time series of regular dividend initiations and terminations, which are unaffected by these econometric issues. Figure 2 shows that initiations surged after the law was enacted. The number of initiations in the three quarters immediately following enactment (2003-Q3, 2003-Q4, and 2004-Q1) are the three highest among the 80 quarters we consider. The spike in initiations dies down rapidly after the tax cut, until Bush's reelection.

## II. Disappearing Dividends and the Causality of the Tax Cut

In an influential study, Eugene F. Fama and Kenneth R. French (2001) observed that the fraction of publicly traded firms paying dividends has declined steadily from 1980 to 2000, a trend they term "disappearing dividends." Brandon Julio and David Ikenberry (2004) extend the Fama and French analysis and document "reappearing dividends" in the core CRSP sample starting in late 2000. This result is reproduced in the dashed line in Figure 3. Because the trend reversal began before the reform, Julio and Ikenberry conclude that the 2003 tax cut could not be fully responsible for the recent increase in dividend payments.

The discrepancy between this result and our earlier findings on the timing of the dividend policy changes arises from changes in sample size and composition in the Julio and Ikenberry analysis. Suppose we restrict attention to a constant-size sample of firms that includes the top 3,785 (ranked by market capitalization) in each quarter.[2] The solid line in Figure 3 shows

[2] The CRSP data contain at least 3,785 firms in every quarter from 1981-Q1 to 2005-Q2.

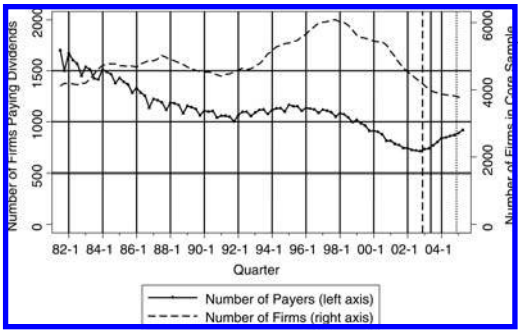


FIGURE 4. NUMBER OF FIRMS AND NUMBER OF REGULAR DIVIDEND-PAYERS IN CORE SAMPLE

that the trend of "disappearing dividends" stops precisely in the last quarter of 2002 in this constant-size sample, at which point the fraction of payers begins to rise.

The results in the constant-size and core samples differ because of large variations in the size and composition of the core sample over time. To clarify this, Figure 4 displays the time series of the number of firms and number of regular dividend payers in the core sample. The number of dividend payers does not start to increase (after a secular decline) until 2003-Q1, exactly when the tax reform takes place, and accelerates after enactment. During the dot-com bust, however, the number of firms in the core CRSP sample falls precipitously, going from 5,429 in 2000-Q3 to 3,785 in 2005-Q2. Only 2 percent of the 2,000 firms which exit the core CRSP sample from 2000-Q4 to 2005-Q2 are dividend payers. This is because most of the firms that exited the sample during this period are young, high-tech firms which never paid dividends. Thus, what drives the pre-2003 reversal in the fraction of payers in the core sample is a fall in the denominator (total number of firms) and not an increase in the numerator (number of payers).

Julio and Ikenberry (2004) also document "reappearing dividends" prior to 2003 in a constant-size sample of the top 1,000 firms by market capitalization. This result is also due to sample composition effects—a large set of non-dividend-paying technology firms dropped out of the top 1,000 sample in the early 2000s as their market values fell during the dot-com bust, mechanically raising the number of dividend payers in the top 1,000 during this period. Controlling for such entry and exit effects (Chetty and Saez, 2005) shows that the increase in dividends starts precisely at the time of the reform, once these effects are netted out in any of the samples (core sample, top 3,785, or top 1,000). Therefore, the pre-reform, "reappearing dividends" results of Julio and Ikenberry are due to composition effects, while the post-reform dividend increases are due to active behavioral changes in corporate payout policy.

Two other pieces of evidence (described in Chetty and Saez, 2005) also suggest that the tax reform played a significant role in the recent increase in dividend payouts. First, controlling for observables such as profits, forecasted earnings, and industry composition does not affect the results. Second, there is no change in dividend initiations for a "control group" of firms for which primary shareholders are large non-taxable institutions unaffected by the tax cut. The magnitude of the response to the tax cut may have been accentuated by other factors, however, such as distrust arising from the corporate scandals that occurred in the early 2000s.

### III. Substitution with Share Repurchases

The efficiency effects of the dividend tax cut depend heavily on whether corporations increased total payout or simply substituted dividends for share repurchases. The most direct and credible way to shed light on the issue of dividend–repurchases substitution is to examine the effect of the tax cut on total payout (dividends plus repurchases). Figure 5 plots the time series of aggregate share repurchases alongside aggregate dividends. Share repurchases have increased sharply since the tax cut, consistent with no substitution. In light of the high volatility in aggregate share repurchases over time, however, it is clearly possible that repurchases could have increased even more, absent the tax change. The lack of a stable counterfactual for repurchases makes it impossible to draw any reliable conclusions about the effect of the reform on total payout in the aggregate sample. Controlling for observable variables, removing the largest share repurchasers, or examining other moments of the distribution does not smooth the time series of share repurchases and, hence, does generate sharper conclusions (see Chetty and Saez, 2005).

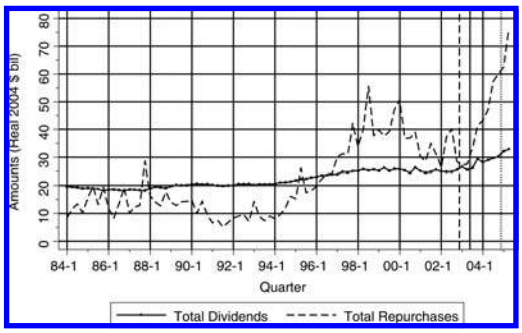


FIGURE 5. AGGREGATE DIVIDEND AND SHARE REPURCHASE AMOUNTS

*Notes:* Sample for dividends is defined as in Figure 1. For share repurchases, sample is limited to those firms that appear in the quarterly Compustat database with nonmissing share repurchase information (item data93L).

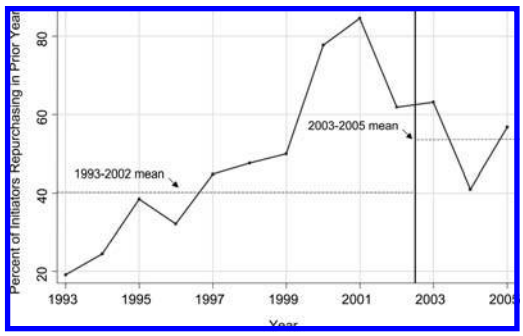


FIGURE 6. PRIOR-YEAR SHARE REPURCHASES AMONG DIVIDEND INITIATORS

Jeffrey Brown et al. (2004) attempt to circumvent this basic identification problem using alternative methods. They first observe that only 66 percent of post-reform dividend initiators raised total payout in the year they initiated dividends. Second, they find that firms increasing dividends after the reform (in 2003) were less likely to raise total payout and more likely to have repurchased shares prior to increasing dividends than pre-reform dividend increasers (average from 1993–2002). Brown et al. (2004) argue that these results "indicate clearly that, for many firms, the increase in dividends came at the expense of repurchases."

There are three concerns with this analysis. First, the presumption that "if no substitution had occurred, 100 percent of the firms that initiated dividends would have increased total payouts" is not necessarily correct. For example, suppose that repurchases are used only to pay for exercised stock options and are unrelated to dividend policy. In this case, there is no substitution between dividends and repurchases. However, a fraction of dividend-initiating firms might simultaneously experience sufficient reductions in repurchase levels so that total payout would fall. Thus, the finding that only 66 percent of post-reform initiators raised total payout is uninformative regarding the substitution issue.

Second, comparisons of post-reform dividend increasers with pre-reform increasers in Brown et al. (2004) are also problematic. Consider a setting where dividend and total payout behavior are determined by two variables: a firm's taste to pay out its earnings ($\theta$) and the dividend tax rate ($\tau$). Firms that initiated dividends pre-reform presumably did so because they experienced an increase in $\theta$; firms that initiated dividends post-reform did so because $\tau$ fell. Given that firms that experience a rise in $\theta$ presumably have a greater taste to raise repurchases as well, they are inherently more likely to raise total payout than post-reform initiators, even with zero repurchase substitution. Put differently, the relevant counterfactual here is how total payout by post-reform initiators would have changed had the tax reform not occurred. Brown et al. (2004) proxy for this counterfactual using the behavior of pre-reform initiators. This proxy is problematic because pre-reform initiators are an endogenously selected set of firms that are quite different because they chose to change their dividend policy without a tax cut incentive.

Finally, even ignoring the endogenous sample selection concern, the Brown et al. (2004) analysis may be biased by sharp trends in repurchasing behavior over the period they examine (1993 to 2003). One of their key findings is that in 2003 68 percent of initiators (post-reform) repurchased shares in the year prior to initiation, whereas between 1993 and 2002 only 38 percent of initiators repurchased shares in the year prior to initiation. This appears to suggest that post-reform initiators were more likely to replace repurchases with dividends. In Figure 6, we examine the data underlying this comparison of means more closely by plotting the time

series of the fraction of firms that repurchased shares from 1993 to 2004. While the mean level of prior-year repurchases is indeed higher post-reform than pre-reform, there is a strong upward time trend in this measure, as share repurchases became more prevalent across all firms in the 1990s. Controlling for this time trend, post-reform initiators appear to be, if anything, *less likely* to have repurchased shares in the prior year.[3]

In view of these issues, we conclude that existing data and methods are inadequate to answer the substitution question. Additional work on understanding the determinants of aggregate repurchases—in particular the surge from 2003 to 2005—is required to make precise statements about the effect of the tax cut on total payout.

## IV. Evidence on Allocation Efficiency

While it is difficult to make inferences about changes in total payout, it is possible to shed some light on the effect of the tax cut on allocation efficiency (the efficiency of distribution of investment funds across firms) by examining the cross-sectional heterogeneity in the dividend response. To do so, we divide firms into quintiles of forecasted earnings growth.[4] Figure 7 shows the frequency of regular dividend initiations in these five groups before the tax reform (1998-Q1 to 2002-Q4) and after the tax reform (2003-Q1 to 2004-Q2). The nonlinear pattern is consistent with the hypothesis that firms that have less need for cash responded more to the tax cut by distributing their cash holdings. The firms in quintile 1 are in distress, as their earnings are expected to fall sharply, and respond less on average than those in quintile 2, which have more moderate earnings forecasts. Firms with the best growth prospects (quintile 5) responded very little to the tax cut.

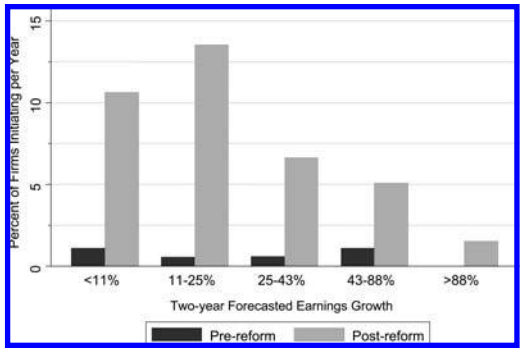


FIGURE 7. EFFECT OF TAX CUT ON INITIATIONS: BREAKDOWN BY EXPECTED EARNINGS GROWTH

*Notes:* This figure depicts the percentage of firms initiating dividends at an annualized rate prereform (from 1998-Q1 to 2002-Q4) and post reform (from 2003-Q1 to 2004-Q2) by quintiles of expected earnings growth. The horizontal axis shows the percentage range of earnings growth forecast for each quintile. See Figure 16 in Chetty and Saez (2004).

These results suggest that the dividend tax cut made the capital market reshuffle funds out of lower-growth firms. Several studies in the corporate finance literature have argued that free cash flow within such firms is not always put toward value-maximizing ventures because of principal-agent problems. Since the reduction in dividend taxes reduced executives' incentives to hoard earnings, the funds released from these lower-growth firms might have been redirected through the external capital market toward other ventures with greater expected value.

The importance of principal-agent issues in understanding the effects of taxation on corporate behavior is further underscored by evidence that the dividend response was concentrated among firms where the key players (top executives and other large taxable shareholders) were affected by the reform (Chetty and Saez, 2005; Brown et al., 2005). Motivated by this evidence, in ongoing work (Chetty and Saez, 2006), we develop a model where executives determine payout policy and have objectives beyond pure profit maximization. We show that dividend taxes affect payout behavior and efficiency in this environment even if the marginal source of funds is retained earnings (as in "new view" models of dividend payments). The analysis of such models of corporate behavior, which depart from neoclassical profit maximization, may

[3] Brown et al.'s (2005) cross-sectional evidence on the effect of executive shareownership on total payout is also inconclusive because of large standard errors. In particular, the possibility that total payouts rose more than dividends in firms with high executive shareownership cannot be ruled out.

[4] We use I/B/E/S data on analysts' earnings forecasts. We define earnings growth as the average forecasted change in total earnings over two years divided by current assets. See Chetty and Saez (2004).

shed further light on the efficiency costs of corporate taxation.

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