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Effects of the 2003 Dividend Tax Cut: Evidence from Real Estate Investment Trusts

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Abstract

Recent literature has estimated that the 2003 dividend tax cut caused a large increase in aggregate dividend payouts, which would imply that dividend taxation creates large efficiency costs relative to the amount of revenue raised. I document that dividend payouts by real estate investment trusts also rose sharply following the tax cut, even though REIT dividends did not qualify for the cut. Using REITs as a control group in a simple difference-in-differences framework produces small and statistically insignificant estimates of the effect of the tax cut on aggregate dividend payouts. I further document that the ratio of dividend payouts to corporate earnings changed little after the tax cut, and that the ratio of dividend payouts to share repurchases fell dramatically. These facts suggest that contemporaneous increases in earnings and investor demand for payouts drove the observed increases in aggregate dividend payouts, with at most a modest role for the tax cut.

JEL Codes: H24, G35.
Keywords: Payout policy, dividends, share repurchases, taxes.

1 Introduction

The effects of taxing dividend income have long been a focus of research in economics. With the dividend tax cuts enacted under President Bush scheduled to expire at the end of 2010, these issues are also likely to return to the forefront of public debate over tax policy. The taxation of income from capital, of which dividend payments are one example, presents a particularly stark version of the familiar tradeoff between equity and efficiency that confronts tax policy makers. Dividends are paid disproportionately to high-income households, so one might wish to tax them heavily in order to redistribute from high-income households to low-income households. On the other hand, seminal theoretical results like those in Chamley [1986] and Judd [1985] suggest that distortions from taxing capital income can be so large that efficiency concerns require a zero tax rate on income from capital under an optimal tax system.

Under the traditional, or "old view," of dividend taxation, these efficiency arguments are relevant for understanding the effects of dividend taxes. Under the "new view" of dividend taxation, however, they do not apply. The new view, which dates at least to King [1977] and Auerbach [1979], posits that the funds needed to finance marginal investments are already held by firms in the form of retained earnings. Dividend taxes would be collected if the firm immediately paid out its retained earnings, and they would also be collected if the firm invested these earnings and paid out subsequent returns to shareholders. Thus there is no distortion to the investment decision imposed by the dividend tax and no efficiency cost imposed by a dividend tax change. Under the old view, however, marginal investments must be financed by funds from outside investors. When proceeds from these investments are returned to investors, they face the dividend tax rate. Thus the dividend tax distorts investment decisions, with potentially adverse welfare consequences.

Recent literature, for example, DeAngelo, DeAngelo, and Skinner [2004] and Denis and Osobov [2008], has stressed the view that aggregate dividend behavior is driven by agency concerns—that is, dividend payouts provide a means of preventing managers from misusing

funds by distributing these funds to shareholders.[1] These authors point out that the vast majority of aggregate dividends are paid by a relatively small number of large, mature firms. These firms generate large amounts of free cash flow and thus have much to gain by preventing managers from misusing these funds. Given their age, size, and prominent position in any well-diversified portfolio, however, these firms are unlikely to use dividend payments primarily to signal their quality to outsiders or to appeal to narrow clienteles that favor dividends. Although these other motivations for dividend payouts have featured prominently in prior literature and may drive behavior in some smaller firms, they are unlikely to be first-order determinants of aggregate dividend payouts.

Gordon and Dietz [2006] and Chetty and Saez [2007] model the effects of dividend taxes in settings that feature an agency problem between owners and managers. They show that dividend taxes can create large efficiency costs in such a setting by exacerbating pre-existing distortions to investment from the conflict of interest between managers and diffuse shareholders. That is, when firms use dividend payouts to remove money from the hands of managers who might otherwise spend it wastefully, discouraging dividend payments through the tax system can have large adverse effects on welfare.

The response of dividend payouts to changes in tax rates can provide evidence on which view of dividend taxation is most relevant for understanding the impact of dividend taxes on welfare. Under the new view, we need not expect any change in dividend payouts in response to a dividend tax cut. Under the old or agency views, however, a tax cut would cause an increase in dividend payouts.[2] The larger the observed increase, the larger is the

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[1]This view is consistent with the old view as presented by Poterba and Summers [1985], but is distinct from the narrower version of the old view presented by Chetty and Saez [2007].

[2]Under the new view, it must be assumed that share repurchases are unavailable as a means of distributing marginal internal funds. All funds remaining after financing investment are thus distributed as dividends, despite the tax penalty. An unanticipated and permanent change in the dividend tax rate does not alter this situation, and there is no reason to expect a change in dividend payouts in response to a tax change. Under the old view as presented by Poterba and Summers [1985], however, distributing funds through repurchases may be an option, but firms derive some unspecified benefit from paying dividends. The tax cost of paying dividends is weighed against this benefit, and thus changes in the dividend tax rate may cause firms to reoptimize their dividend payments. These arguments are presented in detail in Auerbach [2003] and further developed by Auerbach and Hassett [2003]. Caveats arise if dividend tax changes are believed to be temporary. Korinek and Stiglitz [2009] study this case in detail.

implied welfare cost of dividend taxation.

Several recent papers, notably Blouin, Raedy, and Shackelford [2004] and Chetty and Saez [2005], have documented a large increase in dividend payouts following a cut in the dividend tax rate in 2003. These and related papers are surveyed in Dharmapala [2009]. Chetty and Saez [2005] estimate that the tax cut caused total regular dividend payouts to rise by 20% within 1.5 years of the reform.[3] This effect is far larger than would have been predicted by prior estimates in the literature, for example, those in Poterba [2004]. Such a large effect of the tax cut on dividend payouts imply that dividend tax rate increases would raise far less revenue than they would if payouts did not respond to the tax rate. It also implies that dividend taxation imposes large welfare costs under either the old or agency views of dividend taxation. In their subsequent paper, Chetty and Saez [2007] argue that their earlier estimates imply that the efficiency cost of raising the dividend tax rate from its current level would be extremely large—of the same order of magnitude as the amount of revenue raised. Such an increase in dividend taxes was included in the health care legislation signed by President Obama in March 2010, and even larger increases will occur in 2011 if the 2003 tax cuts expire as scheduled under current law. Estimates of the effects of the 2003 legislation thus remain quite relevant for current policy debates.

There are at least two reasons to believe that previous authors' estimates of responses to the tax cut might have been confounded by events contemporaneous with the tax cut. The first is that the recovery of the U.S. economy from the 2001 recession began in earnest in early 2003, just as the tax cut legislation was debated and passed. The second is that a series of accounting scandals at firms like Enron and Worldcom played out from 2001 through 2003. It may be that the investing public developed a stronger taste for cash payouts as it realized that firms' reported earnings were a less reliable guide to income than had previously been

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[3]Chetty and Saez [2005], p. 793, write, "Aggregating the changes in amounts along the extensive and intensive margins, we estimate that the tax cut raised total regular dividend payments by about $5 billion per quarter (20 percent), a change that is statistically significant at the 1 percent level. This implies an elasticity of regular dividend payments with respect to the marginal tax rate on dividend income of -0.5. All of these results 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."

believed.

This paper provides new evidence on the response of dividend payouts to dividend tax changes by comparing the dividend behavior of the majority of U.S. firms who benefited from the 2003 tax cut to a smaller control group of firms—real estate investment trusts (REITs)—that did not benefit from the tax cut. I provide clear graphical evidence that REIT dividend payouts rose sharply following the tax cut even though their dividends did not qualify for the cut. I then estimate simple difference-in-differences models of the effects of the tax cut on aggregate regular dividend payouts and the probability that firms pay dividends. Most estimates of the effects of the tax cut in these specifications range from zero to one-fifth the size of naive estimates that attribute all changes to the tax cut. In many specifications, standard errors are small enough to reject the estimate of a 20 percent increase in aggregate payouts from Chetty and Saez [2005].

One might worry, however, that a tax-induced increase in dividend payouts by non-REITs could induce REITs to increase their dividend payments in order to compete with nonREITs for investor clienteles that favor dividend payouts. This story has a clear testable implication—dividend payouts by nonREITs should have an independent causal effect on dividend payouts by REITs. I test this hypothesis by running simple regressions of aggregate dividend payouts by REITs on aggregate dividend payouts by nonREITs and controls for REIT income and asset variables. Coefficients on nonREIT dividends in these regressions are small, negative, and statistically insignificant. There is thus no evidence that the increase in REIT dividend payouts was driven by a reaction to the increase in nonREIT payouts.

I then discuss the non-tax factors that appear to have driven firms to increase their dividend payouts shortly after the tax cut. I document a large increase in corporate earnings whose beginning coincided with the tax cut. In fact, there was no increase in the ratio of dividend payouts to earnings after the cut. The increase in aggregate dividend payouts documented by previous authors can thus be explained entirely by this increase in earnings.

I also document a large increase in the "dividend premium" originally proposed by Baker

and Wurgler [2004] around the time of the tax cut. This dividend premium intends to measure investor sentiment in such a way that it is high when "investors are seeking firms that exhibit salient characteristics of safety, including dividend payment." Baker and Wurgler [2004] find that this variable can explain 60% of the variation in annual dividend initiation rates from 1963 to 2000. Thus it appears likely that the corporate scandals of 2001 and 2002 created investor demand for payouts that may have driven much of the increase in dividend initiations documented by other authors.

More importantly, however, I point out the amount of dividends paid by firms near the margin of initiation is likely to be tiny compared to aggregate payouts. It is the response of aggregate payouts that matters for determining the effects of tax rate changes on tax revenues. For example, the estimate from Chetty and Saez [2005] of an elasticity of aggregate dividend payouts with respect to the dividend tax rate of -0.5 would suggest that the rate increases currently scheduled for 2011 would raise only half the revenue that they would if dividend payouts did not respond to the tax rate. Further, in an agency model of dividend payouts, it is the aggregate amount of cash distributed to shareholders that determines the amount of wasteful spending by managers prevented by the payouts. It is thus the reaction of aggregate payouts to the tax cut that matters most for understanding both the revenue and welfare effects of dividend tax changes, not the number of small firms that decide to initiate small dividends. It seems that previous authors, particularly Chetty and Saez [2005], have improperly pointed to results on initiations, which are driven by smaller firms, to claim that the tax cut caused the entire observed increase in aggregate payouts.

As a final piece of evidence on the tax cut's role in aggregate payout amounts, I discuss recent data on share repurchases. I have claimed that dividend payout increases were caused primarily by increases in corporate earnings, with perhaps an additional role for increased investor demand for payouts in the wake of corporate scandals. Both of these factors would suggest that repurchases should rise along with dividends. If the dividend tax cut were the driving factor behind aggregate dividend payout increases, however, one would expect to see

an increase in dividends relative to repurchases. That is, even if repurchases rose following the tax cut, we would expect to see dividends rise as a fraction of dividends plus repurchases, given the improvement in their relative tax treatment. It is clear in the data, however, that repurchases surged much more rapidly than did dividends in the years following the tax cut, such that the ratio of dividend payments to share repurchases fell dramatically.

Considering all of this evidence, I conclude that there is little reason to believe that the 2003 dividend tax cut had much effect on aggregate dividend payouts in the years immediately following the cut. Dividend tax changes may have important effects on aggregate payouts over longer horizons—for example, when small firms that have initiated dividends become large—but the existing literature has been too eager to claim that these effects appeared immediately.

The following section of the paper discusses the legislation governing REITs and the 2003 tax cut in more detail. Section 3 discusses the data used in this paper. Section 4 contains results involving REITs, and Section 5 explores alternative explanations for the increases in nonREIT dividend payouts. Section 6 concludes.

2 Background

2.1 Real Estate Investment Trusts

This paper uses REITs as a control group to study the dividend behavior of the rest of the industrial firms in the United States. This section present background information on REITs and their dividend behavior to argue that this comparison is reasonable. I do not claim that REIT dividend payouts always move in lockstep with the payouts of other firms; I do claim that REIT payouts can fluctuate with REIT income and with investor demand for dividends just like payouts by other firms.

Real estate investment trusts are corporations that invest in real estate assets, primarily office and apartment buildings, malls, hotels, and big-box stores. REITs are essentially "C"

corporations under the corporate income tax code, but their dividend payouts are deductible from their taxable income as long as certain requirements on their activities, payouts, and ownership are met. Chief among these requirements are that at least 90% of their otherwise-taxable income be paid out as dividends and that at least 75% of their income come in the form of rental income, mortgage interest payments, or other passive real estate investment income. REITs must also have at least 100 shareholders, with no more than 50% of shares owned by any 5 shareholders. When a REIT meets these requirements it can avoid taxation at the corporate level. Essentially, REITs are intended to resemble mutual funds that invest in real estate related assets.
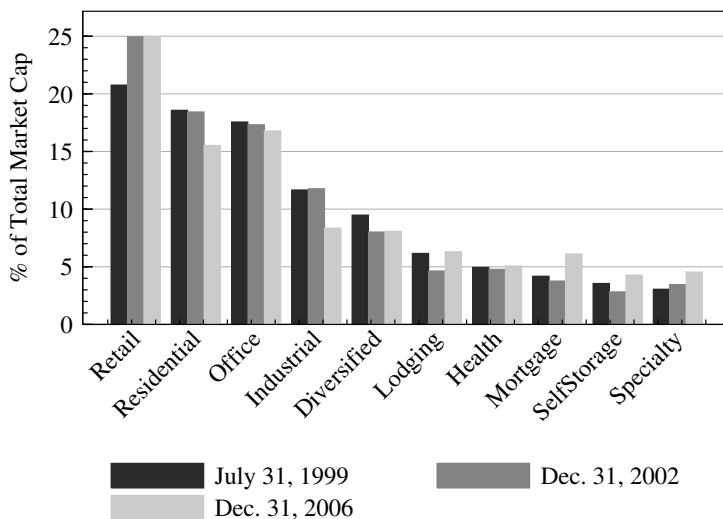
The REIT structure was first established by Congress in 1960, but REITs did not reach their current level of prominence until further legislative changes in the 1980s and 1990s prompted a large flow of capital into REITs during the mid-1990s.[4] The market capitalization of publicly-traded REITs swelled from less than $9 billion at the end of 1990 to $140 billion at the beginning of 1998. Dozens of REITs have grown large enough to appear in major market indices like the S&P 500, and these REITs are thus widely held by all types of investors, just like other firms. This paper will focus on data beginning in 1998, when REITs had essentially assumed their modern form.

REITs own a wide variety of forms of real estate that are used by firms in many different industries, suggesting that their performance will often track that of the aggregate economy. Figure 1 displays the fraction of total REIT market capitalization accounted for by REITs in different real estate sectors based on data from the National Association of Real Estate Investment Trusts (NAREIT). The retail sector, consisting primarily of REITs that own malls,

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[4]The Tax Reform Act of 1986 allowed REITs to play a more active role in operating their properties and providing services for tenants, mitigating agency problems that may have arisen when REITs were required to hire third parties to manage their assets. The Act also made other arrangements for owning real estate relatively less attractive by lengthening depreciation schedules and tightening passive loss rules. A budget bill in 1993 dropped the rule that an institutional investor representing many individuals be considered a single investor when calculating the fraction of shares owned by the five largest shareholders. This permitted more institutional investors to purchase larger blocks of REIT shares. Finally, in the early 1990s, the creation of umbrella partnership REITs, or UPREITs, permitted REITs to acquire existing properties without triggering a taxable capital gain for the seller. See Block [2006], Chan, Erickson, and Wang [2003], and Imperiale [2002] for more information.

Figure 1: Market Capitalization of Publicly-Traded REITs by Sector

shopping centers, and big-box stores, comprised about 25% of REIT market capitalization at the end of 2002. Residential REITs, which primarily own apartment buildings, were next at 18%, followed by office and industrial REITs at 17% and 12%, respectively. Less than 5% of REIT market capitalization was accounted for by each of health REITs (which own primarily nursing homes and assisted-living facilities), lodging REITs (hotels and resorts), specialty REITs (golf courses, timber investments, etc.), and self-storage facility REITs. Mortgage REITs, which hold mortgage-related loans and securities rather than physical properties, also comprised around 5% of market capitalization. Figure 1 also presents the sector shares of REIT market capitalization at year-end 2006, near the peak of REIT market cap. The shares of REIT market cap in different sectors are little changed from the period before the boom.

One might suspect that dividend payouts by REITs are determined by one of two potential corner solutions. REITs are required to pay at least 90% of their taxable income as dividends each year to maintain their REIT status. One might thus conjecture that REITs would pay out the minimum required 90% of income and retain the rest to fund future operations or investments. This strategy would entail that REITs pay corporate-level tax on

the remaining 10% of income not paid as dividends. One might also conjecture that REITs would pay exactly 100% of taxable income as dividends, minimizing their tax liability at zero and retaining the remainder of their cash flows.

In fact, it appears that REITs regularly pay dividends in excess of 100% of taxable income. It is feasible for REITs to make cash payouts in excess of taxable income when non-cash deductions from taxable income make cash flows higher than taxable income. REITs, of course, often have very large non-cash depreciation deductions on the properties they own. When REITs make payouts in excess of taxable income (or of accumulated taxable income, if they have paid dividends lower than taxable income in previous years), these payments are not considered ordinary dividend income for their recipient, but "return of capital," which lowers the recipient's basis in her REIT shares. REITs may also distribute income from the sale of property as a long-term capital gain, rather than a dividend. Data from NAREIT suggest that these types of non-ordinary dividends constitute more than 20% of REIT dividend payouts and have increased in importance over time. The vast majority of REITs for which data are available report paying both return of capital and long-term capital gain as part of their cash dividend payouts, in addition to ordinary dividends.

Thus it appears that REITs usually choose an interior solution to their dividend payout decision where payouts exceed 100% of taxable income. That is, they balance the perceived costs and benefits of paying dividends, just like other firms. Benefits of payment could include the transmission of a signal of quality to outsiders or the resolution of agency concerns. Costs could include the disadvantages of being required to raise external funds for future activities. In any case, these are concerns similar to those faced by other firms deciding their level of dividend payouts.

In this paper, I use REITs as a control group to study the dividend behavior of the rest of the firms in the United States from 1998 to 2007. The data presented in this section suggest this comparison is quite reasonable. After a period of rapid growth and change in the mid-1990s, REITs had largely assumed their modern form by the beginning of 1998. Since then,

REITs have participated in a relatively stable set of investment activities whose performance depends on the health of many different parts of the economy. REIT dividend payouts are not governed by a tax-induced corner solution, but can fluctuate as REITs perceive changes in the costs and benefits of paying dividends.

2.2 The 2003 Dividend Tax Cut

Prior to the 2003 tax legislation, dividend income was considered ordinary income under the U.S. income tax code for individuals, and thus it was taxed at ordinary individual income tax rates. The top federal marginal tax rate declined from 39.6% in 2000 to 35% in 2003, and Poterba [2004] estimates that the weighted average marginal tax rate on dividends collected by U.S. households was about 32% over this period.

The Jobs and Growth Tax Relief Reconciliation Act of 2003 reduced tax rates on "qualified" dividends to the rates applying to capital gains, and it reduced the top tax rate on capital gains to 15%. Unqualified dividends include those paid by foreign corporations and by REITs. Because these entities are essentially untaxed by the U.S. at the corporate level, they were not thought to be unduly burdened by the double taxation of corporate income that the Act intended to alleviate. Thus the vast majority of dividends paid by U.S. corporations faced a far lower tax rate at the individual level after the 2003 tax cut, while dividends paid by REITs did not.[5] Amromin, Harrison, and Sharpe [2008] also make use of this exception for REITs in their study of the effects of the tax cut on stock prices. I refer to all firms that are not REITs as "nonREITs."

In fact, I argued above that marginal payout decisions for the vast majority of REITs would involve marginal changes to return of capital, rather than ordinary dividend payouts. Thus the tax rate on ordinary dividend income may have been irrelevant for marginal REIT

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[5]An exception to this exception applies to dividends paid by so-called "taxable REIT subsidiaries," which are regular C corporations that REITs have been allowed to own since January 2001, when the REIT Modernization Act took effect. REITs are limited to holding 20% of their assets in taxable REIT subsidiaries. Data from NAREIT indicate that qualified dividends paid by TRSs constitute a neglible portion of total REIT dividend payouts.

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dividend payouts both before and after the tax cut. In any case, the role of individual-level dividend taxes in the REIT dividend payout decision was not changed by the tax cut. Changes in REIT payout decisions surrounding the tax cut must have been driven by other perceived changes in the costs or benefits of paying dividends.

The dividend tax cut was mentioned as a possibility in a Wall Street Journal article on December 4, 2002, first proposed by President Bush on January 7, 2003, eventually passed by Congress on May 23, 2003, and signed by the president on May 28, 2003. The special tax treatment of qualified dividends applied retroactively to dividends paid after January 1, 2003. Thus, firms that paid qualified dividends between January 1 and May 28 may have inferred that those dividends would have a nontrivial probability of receiving newly favorable tax treatment. Firms paying dividends after May 28 could be certain that those dividends would receive this treatment. Both Brown, Liang, and Weisbenner [2007] and Chetty and Saez [2005] argue that the cut came as a surprise when first announced, so market participants are unlikely to have taken any actions in 2002 or earlier in anticipation of its passage.

3 Data

I use the same data from the Center for Research in Securities Prices (CRSP) that are used by Blouin, Raedy, and Shackelford [2004], Chetty and Saez [2005], and Brown, Liang, and Weisbenner [2007]. The CRSP sample is the universe of firms whose stocks are traded on the New York Stock Exchange, American Stock Exchange, and the Nasdaq, and I follow the other authors by excluding financial firms and utilities. The CRSP data include information on each firm's REIT status, stock price, shares outstanding, and dividends payments per share, along with the announcement, ex-day, and payment dates for each dividend payment.[6]

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[6]REITs can be identified in CRSP either by a Share Code that ends in 8 or by an SIC code equal to 6798. However, these two variables sometimes disagree on a firm's status in a given month. By comparing observations with disagreement to firm 10-Ks and other documents, I concluded that the Share Code variable correctly indicates REIT status, while the SIC code variable often contains errors. Thus, I identify REITs

Table 1: Descriptive Statistics

	All NonREITs	Largest 180 NonREITs	All REITs	Largest 180 REITs
Unique Firms	8,663	351	335	317
Firm-Quarter Observations	175,614	7200	8,078	7,174
Market Cap: Mean	2,361	36,775	1,173	1,313
Market Cap: Std. Dev.	13,941	57,546	2,072	2,154
Market Cap: Median	194	16,745	463	593
Assets: Mean	2,216	35,776	2,634	2,954
Assets: Std. Dev.	14,745	62,658	4,327	4,491
Assets: Median	205	19,659	1,201	1,448
Percent with Regular Dividend Payment	20.5%	70.2%	85.8%	88.7%
Regular Dividend Payment: Mean	7.3	142.5	17.7	19.9
Regular Dividend Payment: Std. Dev.	67.6	301.4	27.4	28.4
Regular Dividend Payment: Median	0.0	42.8	9.1	11.2
Payment Among Payers: Mean	35.6	203.4	20.6	22.4
Payment Among Payers: Std. Dev.	146	341.7	28.5	29.2
Payment Among Payers: Median	3.8	80.8	11.7	13.5

Market cap, assets, and dividend payment figures are in millions of 2006 dollars. Sample is from 1998Q1 to 2007Q4. The "Largest 180 NonREITs" sample consists of the largest 180 nonREITs by assets in each quarter. The "Largest 180 REITs" is constructed similarly, except in 2007Q2, Q3, and Q4, when there are 176, 169, and 160 REITs in the sample.
Source: CRSP, Compustat.

Where possible, I match the CRSP data to Compustat, a dataset of financial statement information gathered by Standard and Poors, which provides data on balance sheet and income statement items like assets, liabilities, and earnings.

The paper focuses on the period from 1998Q1 to 2007Q4. This period includes five years both before and after the tax cut, and it begins around the time when REITs had essentially assumed their current form. It was followed, of course, by crisis and recession years that produced large decreases in payouts by both REITs and nonREITs that were unrelated to the tax cut. It is worth noting, however, that REIT earnings and payouts declined considerably more steeply than those of nonREITs during 2008 and 2009, as real estate was hit particularly hard by the recession. Although I will show that REIT and nonREIT earnings and payouts

in this paper using the Share Code variable only.

moved together closely during the period studied in this paper, this need not always be the case.

Table 1 presents descriptive statistics on the samples of REITs and nonREITs during the 1998 to 2007 period. There are, of course, far more nonREITs than REITs. The mean market capitalization of nonREITS is about twice that of REITs, while the median market capitalization of REITs is about 2.5 times that of nonREITs. The sample of nonREITs includes many of the very largest firms in the world, which are far larger than any REIT, as well as a large number of small firms.

REITs and nonREITs do differ significantly in their dividend behavior as evidenced by the last seven lines of Table 1. Although REITs must make dividend payments in each year they are profitable to retain their REIT status, there is no requirement that they make a dividend payment in any given quarter. Table 1 shows that regular dividend payments are observed in 85.8% of the firm-quarter observations in the sample of REITs. In the sample of nonREITs, only 20.5% of observations feature a dividend payment. Limiting the sample of nonREITs to the 180 largest firms in each quarter by assets, however, raises this fraction to 70.2%. I will present some results related to the fraction of firms paying dividends in each quarter for this sample, because the baseline fraction of dividend payers is more comparable to that of REITs than in the entire sample of nonREITs. Despite the many differences between REITs and nonREITs evident in Table 1, the next section of the paper will show that aggregrate statistics on REIT and nonREIT dividend payouts were moving similarly in the early part of the sample and continued to move similarly after the tax cut.

Figure 2: Aggregate Regular Dividend Payouts, Full Sample
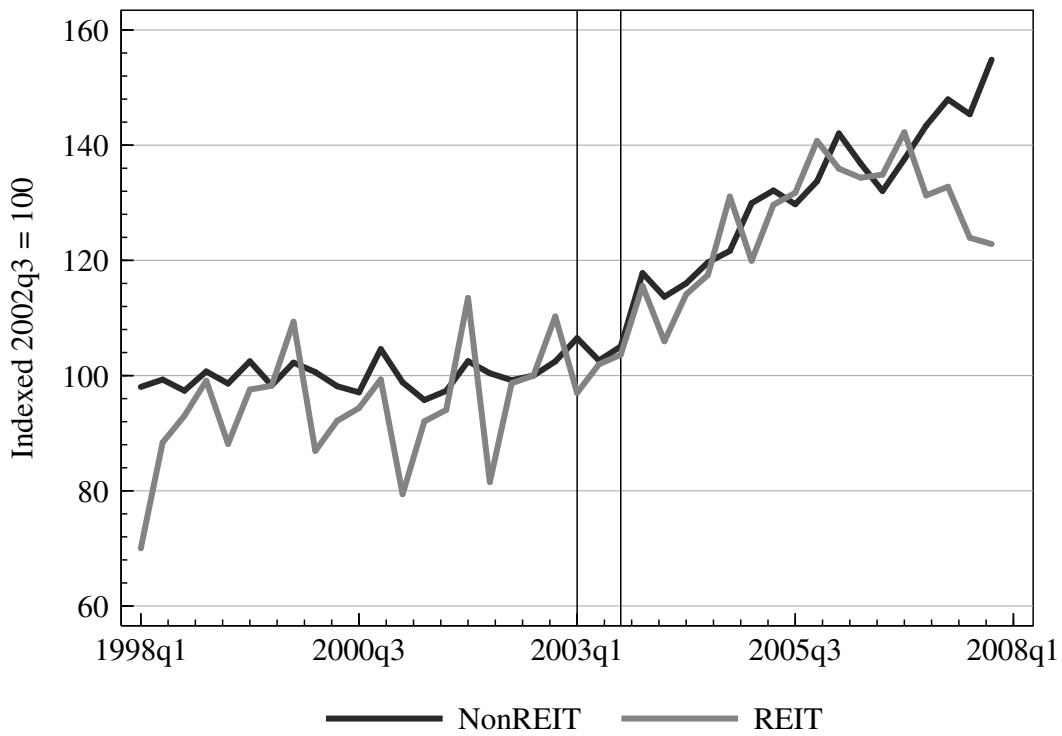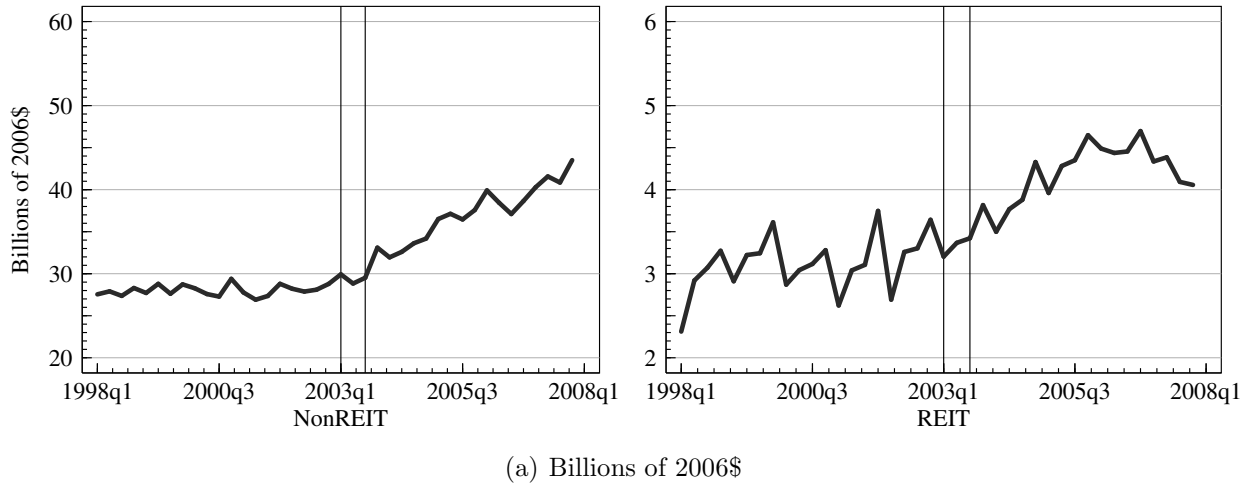
(a) Billions of 2006$

(b) Indexed 2002Q3 = 100

The first vertical line in each figure intersects the observation for 2003Q1, when firms might first have suspected that their dividend payments would qualify for more favorable tax treatment. The second vertical line intersects 2003Q3, after the tax cut was enacted.
Source: CRSP.

4 Evidence From REITs

4.1 Aggregate Regular Dividend Payouts

The left panel of Figure 2 graphs quarterly aggregate regular dividend payouts in the non-REIT sample from 1998 to 2007.[7] Similar data are presented in Figure 1 of Chetty and Saez [2005]. The first vertical line in the figure intersects the observation for 2003Q1, when firms might first have suspected that their dividend payments would qualify for more favorable tax treatment. The second vertical line intersects 2003Q3, after the tax cut was enacted. It is quite clear in the figure that aggregate regular dividend payouts began rising sharply soon after the tax cut was enacted and continued rising for more than three years afterward. The timing of the beginning of the increase certainly suggests a causal role for the tax cut, and the arguments in Chetty and Saez [2005] are based on the data through the second quarter of 2004. That dividends continued rising for an additional two years after this point already suggests that other factors may have been at work.

The top right panel of Figure 2 plots the series of aggregate regular dividend payouts by REITs. This series is visibly more volatile and seasonal than the nonREIT payout series, and the magnitude of aggregate REIT dividends is about one-tenth that of nonREIT payouts.[8] Still it seems quite clear in the figure that aggregate dividend payouts by REITs rose in a manner quite similar to payouts by nonREITs. The bottom panel of Figure 2 presents the same data with both the REIT and nonREIT series indexed to 100 at 2002Q2. It is strikingly clear that REIT and nonREIT dividends increased together after the tax cut, even though

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[7]I focus the paper on regular (as opposed to special) dividend payouts for comparability to the prior literature, particularly Chetty and Saez [2005]. Special dividends normally have negligible effects on aggregate payout amounts. An important exception occurred in the second half of 2004, when Microsoft announced and payed a $32 billion special dividend. It is difficult to assess the importance of the dividend tax rate on a single decision by a single firm.

[8]The visible seasonality in REIT payouts arises due to a somewhat interesting phenomenon. Particularly around the 2000 to 2002 period, there were a handful of large REITs that essentially paid a regular quarterly dividend, but always paid out their fourth quarter dividend just before the end of the calendar year. In other quarters, they paid their dividends a few weeks after the end of the quarter. They thus appear as paying a double dividend in the fourth quarter and zero in the first quarter. This phenomenon is not strictly limited to REITs—the Coca-Cola Company has been paying dividends on a similar schedule for decades.

REIT dividends did not benefit from the tax cut. By the end of 2005, REIT and nonREIT dividend payouts had both increased by about 40% from their level prior to the tax cut.

Table 2: Regressions of log aggregate regular dividend payouts on treatment status variables and controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Post	.247	.108	.085	.269	.114	.196	.060	.058	.064	.057	.059	.053
	(.047)***	(.070)	(.148)	(.054)***	(.073)	(.041)***	(.071)	(.054)	(.074)	(.058)	(.078)	(.058)
NonREIT				2.203	-.067	.654	-.130	.108	-.116	.116	-.061	.121
				(.021)***	(.552)	(.384)*	(.426)	(.251)	(.453)	(.254)	(.439)	(.246)
Post × NonREIT				-.022	-.012	-.113	.048	.029	.036	.025	.053	.036
				(.032)	(.048)	(.035)***	(.065)	(.069)	(.078)	(.070)	(.085)	(.089)
Log EBITDA		.642	.634		.665		.514		.526		.484	
		(.233)***	(.338)*		(.160)***		(.153)***		(.152)***		(.144)***	
Log EBIT						.482		.323		.328		.316
						(.117)***		(.104)***		(.108)***		(.101)***
Log Assets			.184				.188	.343	.121	.307	.103	.293
			(.585)				(.098)*	(.112)***	(.239)	(.141)**	(.227)	(.147)**
Log Cash			-.00008						.035	.020	.028	.012
			(.313)						(.123)	(.072)	(.125)	(.085)
Log Market Cap			-.032								.042	.026
			(.184)								(.119)	(.133)
Observations	40	40	40	80	68	80	68	80	68	80	68	80
R^2	.685	.851	.856	.992	.996	.996	.997	.997	.997	.997	.997	.997

The dependent variable is the log of aggregate quarterly regular dividend payouts. Columns 1, 2, and 3 present time-series regressions for nonREITs only of the form,

$$\ln(\text{DividendPayments})_t = \beta_1 \text{Post}_t + \beta_2' \mathbf{X}_t + \epsilon_t.$$

In columns 4 to 12, there are two observations for each quarter—the aggregate for REITs and the aggregate for nonREITs. These take the form,

$$\ln(\text{DividendPayments})_{it} = \beta_1 \text{Post}_t + \beta_2 \text{NonREIT}_i + \beta_3 (\text{Post} \times \text{NonREIT})_{it} + \beta_4' \mathbf{X}_{it} + \epsilon_{it},$$

where i indexes REIT status. The estimate of β_3 is the difference-in-differences estimate of the tax cut on nonREIT dividend payouts. Post takes the value of one in 2003Q1 and later. The EBITDA variable is not observed for REITs prior to 2001q1, so specifications including this variable include fewer observations. Standard errors are bootstrapped by repeatedly sampling clusters of observations from four consecutive quarters to create bootstrap samples of the appropriate size. Standard errors are thus robust to arbitrary correlation of errors in observations up to a year apart. These standard errors are roughly 50% larger than unreported OLS standard errors.
*** indicates statistical significance at the 1% level, ** at 5%, and * at 10%.
Source: CRSP, Compustat.

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Table 2 presents regression results that complement the graphical evidence in Figure 2. Columns 1 through 3 present aggregate time-series regressions of the form,

$$\ln(\text{DividendPayments})_t = \beta_1 \text{Post}_t + \beta_2' \mathbf{X}_t + \epsilon_t,$$

for the sample of NonREITs only. Post is a dummy variable taking the value of one in 2003Q1 and later.[9] The estimated coefficient in Column 1 indicates that aggregate dividend payouts averaged about 25% higher in quarters after the tax cut than in quarters prior to the tax cut.

Column 2 includes a control for the logarithm of aggregate corporate earnings. From Lintner [1956] through Feldstein [1970] and Fama and French [2002], empirical studies of dividend behavior have often modeled dividend payouts as targeting a particular payout ratio of dividends to earnings. In this paper, I will consider the relationship between dividends and two different measures of earnings—earnings before interest, taxes, depreciation, and amortization (EBITDA), and earnings before interest and taxes (EBIT). Measures of income that subtract additional items like interest and taxes become negative for nonREITs in some quarters immediately prior to the tax cut, making it impossible to compute their logarithms and inappropriate to use them as denominators in computing dividend payout ratios. See the Appendix for a detailed discussion of the construction and behavior of different measures of corporate income. Unfortunately, the data required to measure EBITDA for REITs were not collected by Compustat until 2001Q1, so REIT observations are missing EBITDA prior to that quarter.

The result in column 2 shows that including only a control for EBITDA in the regression for nonREITs is enough to reduce the estimated effect of the tax cut from 25% to 11%. In column 3, adding controls for assets, cash holdings, and market capitalization is enough to reduce the estimated effect to 8%, and these latter estimates are not statistically different

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[9]Results are very similar if Post is equal to one in 2003Q3 and later, or if observations from 2003Q1 and 2003Q2 are excluded from the sample.

from zero at conventional levels. Adding additional lags of EBITDA produces quite similar results.

Columns 4 through 12 present similar regressions with two observations in each quarter—one for REITs and one for nonREITs—of the form,

$$\ln(\text{DividendPayments})_{it} = \beta_1 \text{Post}_t + \beta_2 \text{NonREIT}_i + \beta_3 (\text{Post} \times \text{NonREIT})_{it} + \beta_4' \mathbf{X}_{it} + \epsilon_{it},$$

where i indexes REIT status and t indexes quarters. They include a dummy for NonREIT status and the interaction of this dummy with the Post dummy. The difference-in-differences estimate of the effect of the tax cut on aggregate NonREIT dividend payouts is β_3, the coefficient on this interaction term. In column 4, with no additional controls, the estimated coefficient is -2.2%, with a standard error of 3.2%. Thus, the point estimate would suggest that the tax cut had a small, negative effect on aggregate dividend payouts by nonREITs. The standard error cannot rule out small positive effects, but it can reject effects as large as the 20% estimated increase from Chetty and Saez [2005].

In column 5, which includes the NonREIT and Post × NonREIT variables as well as EBITDA, the estimated effect of the tax cut is -1.2%. Columns 7 through 12 include additional controls for aggregate assets, cash on hand, and market capitalization. In fact, capital disproportionally entered the REIT sector in the period after the tax cut, and adding these controls tends to raise the estimated effect of the tax cut on nonREITs. The estimate in column 12, which includes all control variables, suggests that the tax cut may have raised aggregate dividend payouts by 3.6%. This is a bit less than one-sixth of the naive estimate in column 1. The standard error of 8.9% is small enough to reject the estimate of a 20% increase from Chetty and Saez [2005] with 90% confidence.

4.2 Fraction of Firms Paying

After many years of decline, the percentage of publicly-traded firms paying a regular dividend began increasing in early 2001 and accelerated considerably in late 2002 and early 2003, too early to have been caused by the tax cut. Chetty and Saez [2005] argue that these facts give a misleading impression of the evolution of dividend behavior, because the denominator in this ratio was rapidly declining as dotcom flameouts delisted. They thus focus instead on a constant-number-of firms sample constructed by taking the sample of the largest n firms in each quarter, where n is the number of firms in the sample in the quarter with the smallest number of firms. In the nonREIT sample that I have constructed using data from 1998Q1 to 2007Q4, $n = 3639$. The first panel in Figure 3 graphs the fraction of firms in this constant-size sample of nonREITs paying a regular dividend in each quarter. Much like Figure 4 of Chetty and Saez [2005], the percentage of firm paying dividends declines from about 27% in 1998 to 21% in 2002. The percentage of firms paying dividends then rose steadily for two years, reaching 26% in 2005. One could argue that the turnaround in the downward trend in dividend payments begins a bit too early to have been caused by the tax cut, even when constructing the sample in this way.

Panel (b) in Figure 3 plots a similar series for a constant-size sample of 180 REITs.[10] Although REITs are required to pay dividends of at least 90% of taxable income on an annual basis, there is no requirement that they pay a dividend in any given quarter. We see in Figure 3 that the percentage of REITs paying a dividend is always far higher than the percentage of nonREITs paying a dividend. And again the REIT series is more volatile than

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[10]The number of REITs in the sample began to drop rapidly at the end of 2007, so there are only 176, 169, and 160 REITs in the sample in 2007Q2, Q3, and Q4, respectively. Limiting the constant-size sample to the number of REITs in the sample in 2007Q4 produces a similar U-shaped pattern in the percent of REITs paying a regular dividend, although the series is more volatile due to the smaller sample size. The disappearance of many REITs during 2007 appears to have been driven by two very different phenomenon. A number of REITs involved in subprime mortgage origination or servicing went bankrupt, including American Home Mortgage Investment, Homebanc, and New Century Financial. On the other hand, a number of other REITs were bought out as the commercial real estate market continued to heat up. For example, Equity Office Properties was purchased by the Blackstone Group in one of the largest leveraged buyouts of all time. Crescent Real Estate Equities was purchased by Morgan Stanley's real estate unit, and Archstone-Smith was purchased by a partnership formed by Tishman-Speyer and Lehman Brothers.

Figure 3: Percent of Firms Paying Regular Dividend
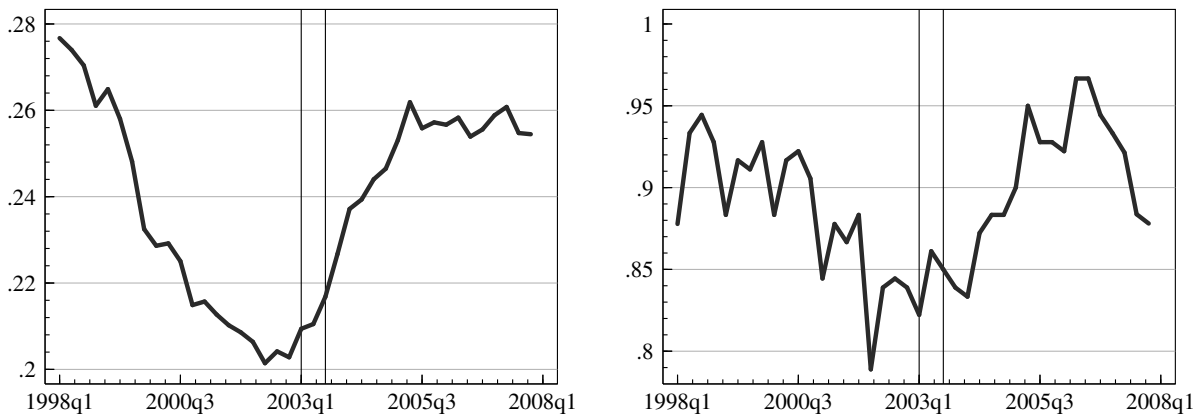
(a) Constant-size Sample of NonREITs

(b) Constant-size Sample of REITs
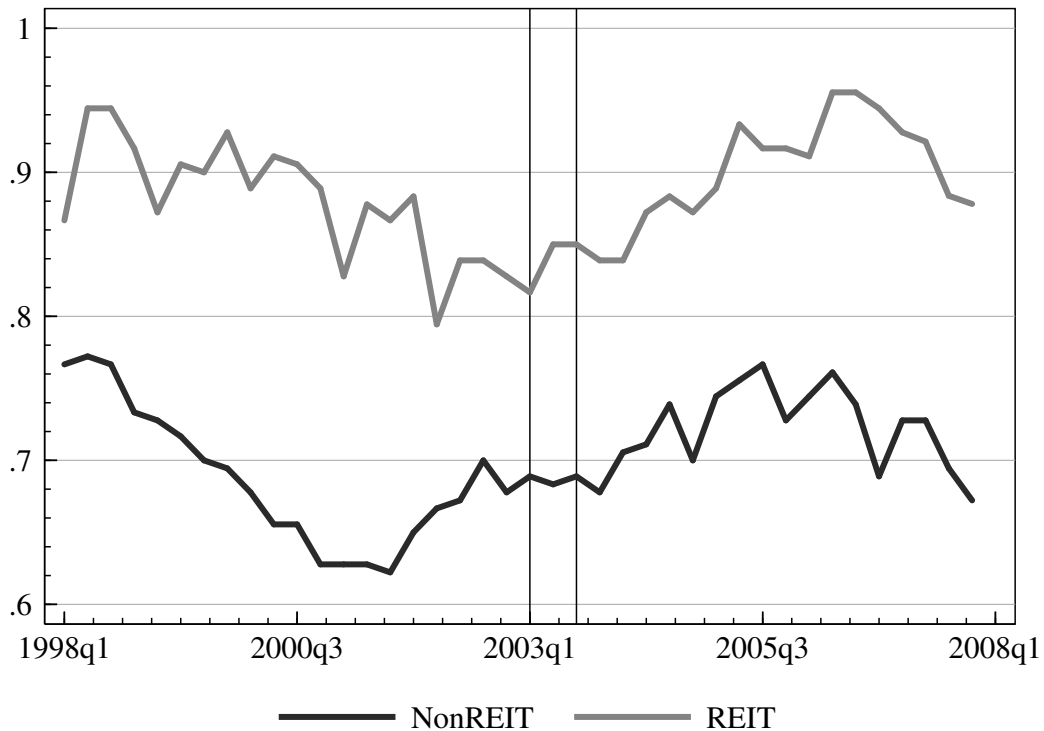
(c) 180 Largest Firms

The constant-size sample of NonREITS consists of the largest 3639 firms by market capitalization in each quarter, where 3639 is the number of observations in the quarter with the fewest observations from 1998Q1 to 2007Q3. The constant-size sample of REITS consists of the largest 180 REITs by market capitalization in every quarter, except for 2007Q2, Q3, and Q4, when there are 176, 169, and 160 REITs in the sample. The 180 largest firms samples consist of the 180 largest NonREITs and the 180 largest REITs by assets in each quarter, with the same exceptions for REITs.
Source: CRSP.

the nonREIT series due to the small sample of REITs. Nonetheless, it is quite clear that REIT dividend decisions moved similarly to nonREIT dividend decisions around the time of the tax cut, even though REIT dividends did not benefit from the tax cut.

Panel (c) of Figure 3 plots similar series constructed from the 180 largest NonREITs and the 180 largest REITs by assets in each quarter. The fraction of nonREITs paying dividends in this sample is far higher than for the sample of all nonREITs and comparable to the fraction of REITs paying dividends. This sample experienced a decline in the fraction of firms paying a dividend in the first part of the sample followed by a recovery during and after the tax cut, just like the full samples of nonREITs and REITs. In fact, the fraction of the 180 largest nonREITs paying a dividend begins to increase in 2001, too early to have been caused by the tax cut. The path of the fraction of REITs paying a dividend looks quite similar to that of the nonREITs, even though REIT dividends did not qualify for the tax cut.

Table 3: Regressions of percent of firms paying a regular dividend on treatment status and controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Post	.062	.046	.010	.048	.013	.021	-.017	-.009	-.011	-.003	-.002	.003
	(.021)***	(.037)	(.119)	(.020)**	(.019)	(.014)	(.030)	(.029)	(.038)	(.033)	(.026)	(.029)
NonREIT				-.189	-.706	-.622	-.733	-.713	-.700	-.671	-.788	-.718
				(.024)***	(.186)***	(.124)***	(.201)***	(.157)***	(.227)***	(.188)***	(.172)***	(.180)***
Post × NonREIT				.013	.006	-.015	.050	.027	.028	.007	-.0003	-.016
				(.026)	(.029)	(.023)	(.041)	(.037)	(.044)	(.038)	(.031)	(.029)
Log EBITDA		.063	.096		.173		.081		.095		.159	
		(.108)	(.154)		(.063)***		(.063)		(.057)*		(.058)***	
Log EBIT						.151		.098		.105		.136
						(.044)***		(.043)**		(.037)***		(.042)***
Log Assets			-.829				.109	.088	.020	.003	.111	.115
			(.706)				(.063)*	(.055)	(.108)	(.092)	(.121)	(.116)
Log Cash			.217						.045	.045	.060	.056
			(.154)						(.037)	(.033)	(.031)*	(.032)*
Log Market Cap			.047								-.113	-.109
			(.188)								(.086)	(.077)
Observations	28	28	28	56	56	56	56	56	56	56	56	56
R^2	.494	.516	.714	.889	.928	.935	.935	.941	.937	.944	.944	.951

The dependent variable is the percent of firms paying a regular dividend. The sample consists of the 180 largest REITs and NonREITs by assets in each quarter from 2001Q1 to 2007Q4. Columns 1 to 3 present time series regressions for nonREITs only of the form,

$$\text{PercentPayingDividend}_t = \beta_1 \text{Post}_t + \beta_2' \mathbf{X}_t + \epsilon_t.$$

In columns 4 to 12, there are two observations for each quarter—one for REITs and one for nonREITs. These take the form,

$$\text{PercentPayingDividend}_{it} = \beta_1 \text{Post}_t + \beta_2 \text{NonREIT}_i + \beta_3 (\text{Post} \times \text{NonREIT})_{it} + \beta_4' \mathbf{X}_{it} + \epsilon_{it},$$

where i indexes REIT status. The estimate of β_3 is the difference-in-differences estimate of the tax cut on nonREITs. Post takes the value of one in 2003Q1 and later. Standard errors are bootstrapped using the procedure described in Table 2.
*** indicates statistical significance at the 1% level, ** at 5%, and * at 10%.
Source: CRSP, Compustat.

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Table 4 presents regression results quantifying the visual evidence in Figure 3 using the 180 largest firms samples from panel (c) of Figure 3. I restrict the sample in the pre-period to begin in 2001Q1, when the percent of NonREITs paying dividends reached its bottom and when EBITDA becomes observed for REITs. Columns 1 through 3 present aggregate time series regressions of the form,

$$\text{PercentPayingDividend}_t = \beta_1\text{Post}_t + \beta_2'\mathbf{X}_t + \epsilon_t,$$

for the sample of NonREITs only. Column 1 presents a regression of the percent of firms paying dividends on a Post dummy. The coefficient indicates that NonREITs were 6.2 percentage points more likely to pay a regular dividend in quarters after the tax cut. Adding a control for EBITDA in column 2 reduces this estimate to 4.6 percentage points, and adding additional controls in column 3 reduces it to a statistically insignificant 1.0 percentage points.

Columns 4 through 12 include the Post and NonREIT dummies and their interaction in regressions of the form,

$$\text{PercentPayingDividend}_{it} = \beta_1\text{Post}_t + \beta_2\text{NonREIT}_i + \beta_3(\text{Post} \times \text{NonREIT})_{it} + \beta_4'\mathbf{X}_{it} + \epsilon_{it}.$$

In column 4, the coefficient of 1.3 percentage points on the interaction term is the difference-in-differences estimate of the effect of the tax cut. Columns 5 through 12 again include various controls for earnings and assets. Estimates of the effect of the tax cut in these specifications fluctuate considerably, ranging from -1.5 percentage points to 5 percentage points, and none are statistically different from zero at conventional levels. The estimate in column 11, which includes controls for EBITDA, assets, cash holdings, and market capitalization, suggests that the tax cut *lowered* the fraction of large NonREITs paying dividends by a statistically insignificant 0.03 percentage points on a base of 70%.

4.3   Testing for Clientele Effects

Evidence presented thus far has demonstrated that aggregate dividend payouts by REITs and the percent of REITs paying dividends both rose after the 2003 dividend tax cut, even though REIT dividends did not benefit from the tax cut. Using REITs as a control group in a simple difference-in-differences framework produces small and statistically insignificant estimates of the effect of the tax cut on aggregate dividend payouts. One might worry, however, that a tax-induced increase in dividend payouts by nonREITs could induce REITs to increase their dividend payments in order to compete with nonREITs for investor clienteles that favor dividend payouts. This story has a clear testable implication—dividend payouts by nonREITs should have an independent causal effect on dividend payouts by REITs.

Table 4 presents simple regressions that test this hypothesis. I regress the log of aggregate REIT dividend payouts on the same set of control variables from Table 2, adding an additional control for the log of aggregate nonREIT dividend payouts. If dividend increases by nonREITs induce dividend increases by REITs, we would expect a positive coefficient on this variable. In the first row of Table 4, however, we see that coefficient estimates are slightly negative and statistically insignificant. There is no evidence that dividend payouts by nonREITs induce payouts by REITs and thus no evidence that the increases in REIT payouts documented above are an artifact of clientele-based dividend behavior.

I thus conclude that the evidence presented thus far casts serious doubt on the conclusion that increases in nonREIT dividend payouts in and after 2003 were caused by the dividend tax cut. Similar behavior was observed in REITs even though their dividends did not benefit from the tax cut, and there is no evidence that these payout increases by REITs occurred in response to payouts by nonREITs. If the tax cut did not cause the increase in dividend payouts, it is natural to wonder what did. The next section of the paper turns to answering this question, which also helps to dispel any lingering concerns that the behavior of REITs may be a simple coincidence.

Table 4: Regressions of REIT dividend payouts on NonREIT dividend payouts and controls

	(1)	(2)	(3)	(4)
Log NonREIT Dividends	-.046	-.063	-.140	-.158
	(.269)	(.266)	(.232)	(.231)
Log REIT EBIT	.163	.126	.533	.261
	(.103)	(.121)	(.174)***	(.127)**
Log REIT Assets	.523	.704	.399	.521
	(.149)***	(.273)***	(.162)**	(.183)***
Log REIT Cash		.080		-.211
		(.104)		(.086)**
Log REIT Market Cap		-.204		.278
		(.220)		(.159)*
Observations	40	40	60	60
R^2	.843	.849	.981	.986

Columns 1 and 2 include quarterly observations from 1998 to 2007. Columns 3 and 4 include observations from 1993 to 2007. Standard errors are bootstrapped using the procedure described in Table 2.
*** indicates statistical significance at the 1% level, ** at 5%, and * at 10%.
*Source:* CRSP, Compustat.

5   What Did Cause the Increase in Dividend Payouts?

5.1   The Surge in Corporate Earnings

The results in Table 2 suggest that corporate earnings are the most important predictor of dividend payouts. In columns that include EBITDA, no other variable in the specification is statistically significant at conventional levels. Figure 4 presents striking evidence on the relationship between EBITDA and dividend payouts for the sample of nonREITs. From 1995 through the present, dividends and EBITDA have moved together quite closely, albeit with dividends more stable than EBITDA during the dotcom boom and the 2001 recession. Most striking, however, is the rapid increase in both EBITDA and dividends that began around the time of the tax cut. From 2002Q4 to 2007Q4, EBITDA increased by more than 40%, after remaining essentially flat, on net, over the prior five years.

The bottom panel of Figure 4 presents the same data in the form of the ratio of regular dividend payouts to EBITDA and EBIT. After falling steadily from the 1980s to early 1990s,

Figure 4: Relationship Between Regular Dividend Payouts and Earnings for NonREITs
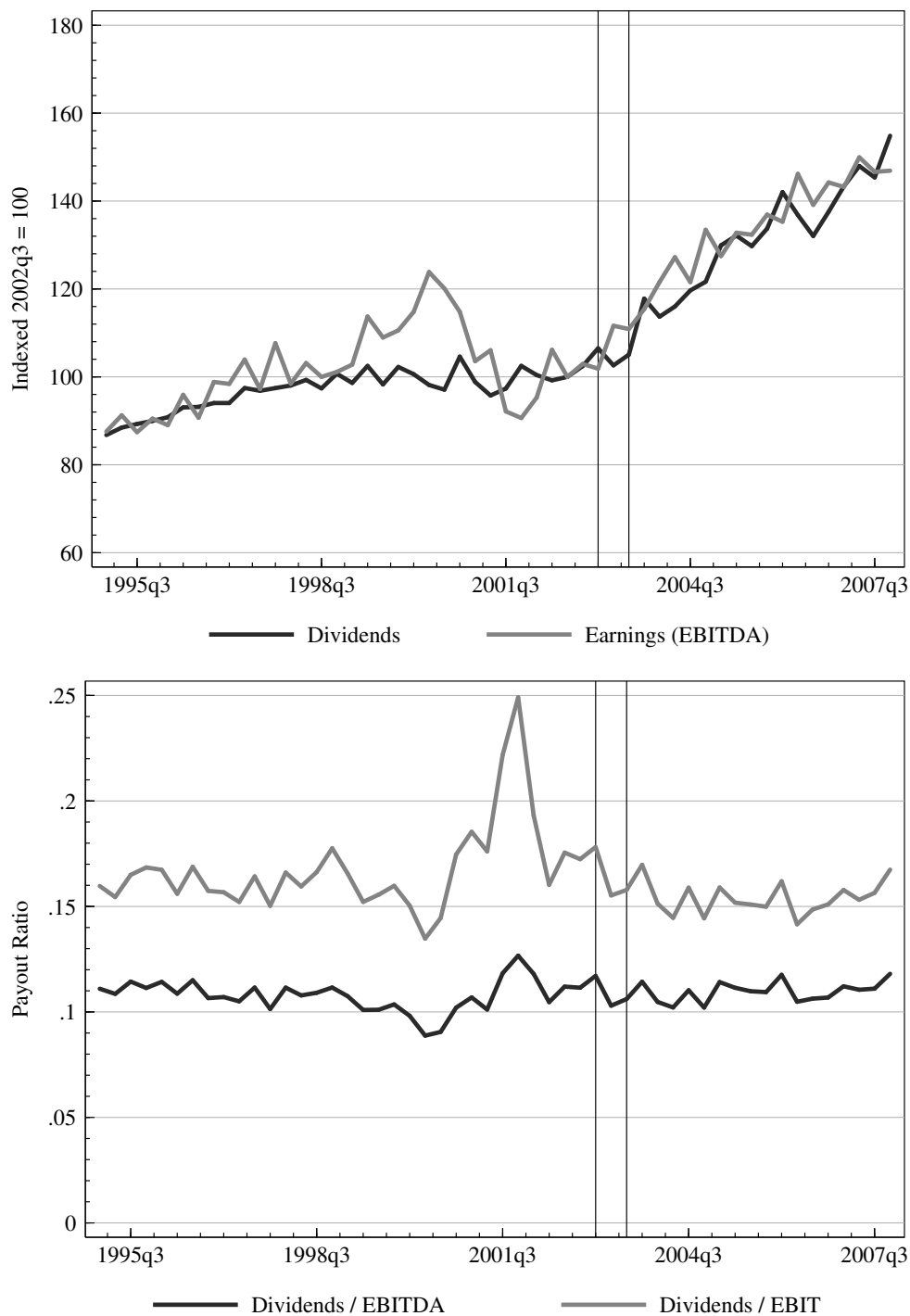
The first vertical line in each figure intersects the observation for 2003Q1, when firms might first have suspected that their dividend payments would qualify for more favorable tax treatment. The second vertical line intersects 2003Q3, after the tax cut was enacted.
Source: CRSP.

the ratio of dividends to earnings has been quite stable for more than 10 years. The ratio of dividends to earnings actually fell immediately after the tax cut due to strong growth in the denominator amidst recovery from recession. By 2004, the payout ratio had returned to its level in the mid-1990s. That is, *ceteris paribus*, the increase in earnings alone is enough to explain the increase in aggregate dividend payouts.

5.2 Investor Demand for Payouts

Chetty and Saez [2005] documented sharp increases in aggregate dividend payouts and the percentage of firms paying dividends in the quarters following the 2003 tax cut. I have replicated their results and shown that similar results hold for real estate investment trusts, whose dividends did not benefit from the tax cut. I have further shown that the striking increase in corporate earnings whose beginning coincided with the tax cut is enough to explain the entire increase in aggregate dividend payouts.

Chetty and Saez [2005] and Brown, Liang, and Weisbenner [2007] also present a great deal of evidence related to firms that initiated dividends after the tax cut, that is, to firms that began paying a regular dividend after not paying one for four or more quarters. Some of the most compelling evidence in these papers involves the relationship between the propensities of firms to initiate dividends and the fractions of their owernership comprised by insiders or institutions. Unfortunately, REITs must pay a dividend in every year that they are profitable, so there are very few REITs that initiate dividends by this definition. Thus, I cannot perform the same falsification exercises using REITs that I have performed for other measures of dividend behavior.

I make two points related to the evidence on initiations. First, I document that the tax cut coincided with large increases in a measure of investor demand for dividends that has been shown in prior literature to predict initiations. Second, I point out that the firms on the margin of dividend initiation would have only a small impact on aggregate dividend payouts. Even if previous authors' finding that a firm's propensity to initiate dividends varied with

Figure 5: Regular Dividend Initiation Announcements
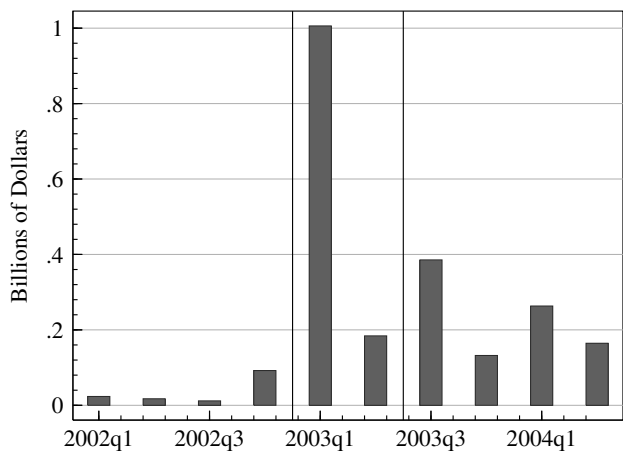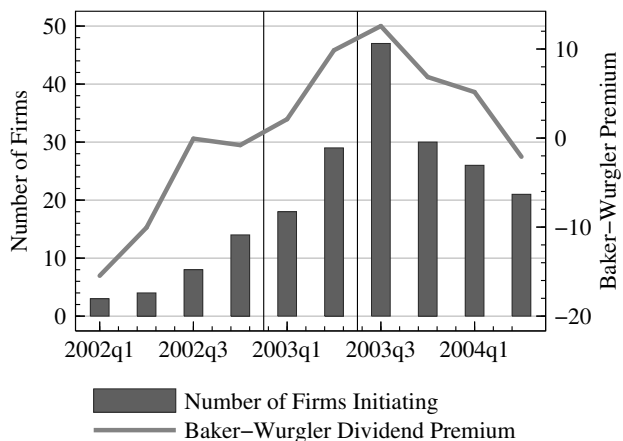
Source: CRSP, Wurgler personal website.

the taxable status of its owners is correct, the impact of this variation on aggregate dividend payouts could be tiny.

Figure 5 presents data on firms announcing a dividend initiation in the 10 quarters surrounding the tax cut.[11] It appears that the surge in dividend initiations began too early to be attributed entirely to the tax cut. Recall that the dividend tax cut was first proposed in early January 2003, before being enacted in late May. Thus it is feasible that firms initiating dividends in quarters one and two of 2003 may have believed that these dividends

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[11]Figure II of Chetty and Saez [2005] presents data on firms *paying* a dividend for the first time in more than a year, while here I present data on firms *announcing* a dividend initiation. As many firms announce dividend payments in the quarter before they are paid, the series presented by Chetty and Saez [2005] displays a more pronounced increase in 2003Q3.

would qualify for reduced taxation with some probability, but they would not have been certain until 2003Q3. Both Chetty and Saez [2005] and Brown, Liang, and Weisbenner [2007] argue that the introduction of the dividend tax cut legislation came as a surprise to market participants, so we should see no anticipatory effects of the legislation prior to 2003Q1. It is clear in Figure 5, however, that initiations had already begun to increase in 2002, and continued to increase sharply in quarters 1 and 2 of 2003, when the tax cut was only a possibility.

Further, this increase in dividend initiations coincided with a surge in the measure of the "dividend premium" proposed by Baker and Wurgler [2004]. This measure is constructed as the one-year lagged difference in the logarithms of the average market-to-book ratio of dividend payers and non-payers.[12] Baker and Wurgler [2004] find that this measure can explain 60% of the variation in annual dividend initiation rates from 1963 to 2000. They suggest that their dividend premium measure captures investor sentiment in such a way that it is high when "investors are seeking firms that exhibit salient characteristics of safety, including dividend payment." Thus it is quite plausible that the corporate scandals of 2001 and 2002 created investor demand for dividends that is reflected in this dividend premium.[13] Initiations clearly rise and fall with this dividend premium around the tax cut, although a noticeable spike in initiations remains in 2003Q3.

Finally, however, the amount of money involved in dividend initiations was quite small relative to aggregate dividend payouts. It is well-known that dividend payouts are highly concentrated among the very largest dividend payers. For example, DeAngelo, DeAngelo, and Skinner [2004] find that in the year 2000, the 100 largest payers paid 82 percent of aggregate dividends, and the 500 largest payers paid 99 percent! The more than 3000 other firms in CRSP could radically change their propensities to initiate or increase dividends with little consequence for aggregate dividend payouts in the short run.

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[12]These data were downloaded from http://pages.stern.nyu.edu/ jwurgler/.

[13]Because the measure is constructed from stock prices with a one-year lag, it is not possible that the tax cut affected the dividend premium measure if, as previous authors have argued, the tax cut was unanticipated. This observation highlights, however, the importance of the somewhat mysterious one-year lag.

The second panel of Figure 5 shows that firms announced dividend initiations in 2003Q3, immediately after enactment of the tax cut, of $386 million, or about 1.3% of aggregate dividend declarations.[14] Brown, Liang, and Weisbenner [2007] estimate that about 64% of the number of initiations in the second half of 2003 were unexplained by their set of controls for earnings, assets and the like. They do not control for the Baker-Wurgler premium or any similar measures. If we nonetheless assume that 64% of initiation amounts in 2003Q3 were caused by the tax cut, these initiations would account for 0.8% of aggregate dividend payouts. Thus, even if one believed that much of the increase in initiations was caused by the tax cut, one could still believe the central conclusion of this paper—that aggregate dividend payouts appear to have responded little to the tax cut.

It is worth noting that in an agency-based model of dividend payouts, it is the aggregate payout amounts that matter most for understanding the impact of dividend taxation on efficiency and welfare. In these models, dividend taxation reduces efficiency by increasing the amount of money that is retained and spent wastefully by management instead of being distributed to shareholders. Thus it is the effect of dividend taxation on aggregate payout amounts that matters, not the number of small dividends initiated by small firms. More obviously, changes in aggregate payout amounts are also what matters for understanding the effects of tax changes on the amount of tax revenue collected. If dividend payouts react strongly to the dividend tax rate, then the revenue raised from increasing dividend tax rates might be far smaller than otherwise anticipated. For example, the estimates from Chetty and Saez [2005] imply that the dividend tax increases currently scheduled for 2011 would only raise about half as much revenue as they would if aggregate dividend payouts did not respond to the tax rate at all.

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[14]It is interesting to note that the firm announcing the largest initiation by dollar amount in 2003Q3 was Harrah's Entertainment, whose CEO, Gary Loveman, holds a Ph.D. in economics and may be less prone to behavioral biases towards inertia than others. The biggest spike in the figure, however, is in 2003Q1, when Microsoft announced a $900 million dividend. This payment was announced on January 16, 2003, nine days after President Bush announced his intention to push for a dividend tax cut, 42 days *before* legislation including a dividend tax cut was introduced in the House of Representatives, and 132 days before it became law. It seems unlikely that the tax cut played a significant role in Microsoft's decision to begin paying regular dividends.

Chetty and Saez [2005] document large increases in aggregate dividend payouts after the tax cut, and then present evidence suggesting a causal effect of the tax cut on the number of dividend initiations. They imply that their evidence supporting a role for the tax cut in initiations proves that the entire increase in payouts was caused by the tax cut. The facts presented here lend little support to this line of reasoning. There could be large changes in initiations with almost no immediate effect on aggregate dividend payouts, and it is these aggregate amounts that matter most for understanding both the revenue and welfare effects of tax changes.

5.3 Corroborating Evidence from Share Repurchases

I have argued thus far that increases in aggregate dividend payouts and initiation rates around 2003 can largely be explained by contemporaneous increases in corporate earnings and investor demand for cash payouts. Both of these factors might lead firms to increase the amount of funds they pay out to investors through share repurchases, as well as through dividends. If the dividend tax cut were the driving factor behind aggregate dividend payout increases, however, one would expect to see an increase in dividends relative to repurchases. That is, even if repurchases rose following the tax cut, we would expect to see dividends rise as a fraction of dividends plus repurchases, given the improvement in their relative tax treatment.

Figure 6 plots aggregate annual data on dividend payouts and share repurchases for the sample of NonREITs. In the years following the tax cut, repurchases surged far more rapidly than did dividend payouts. While repurchases were a bit lower than dividends in 2002, repurchases were fully twice as large as dividend payouts by 2007. The data emphatically demonstrate that dividends did not rise as a share of aggregate cash payouts following the tax cut—in fact they fell dramatically.[15] These facts further corroborate the main conclusion

[15]Both Brown, Liang, and Weisbenner [2007] and Blouin, Raedy, and Shackelford [2007] present evidence that some firms substituted dividends for share repurchases following the tax cut. Figure 6 clearly demonstrates that these effects do not drive the aggregate data on dividend and repurchase amounts. Thus their

Figure 6: Dividend Payouts and Share Repurchases by NonREITs, 1995 to 2008
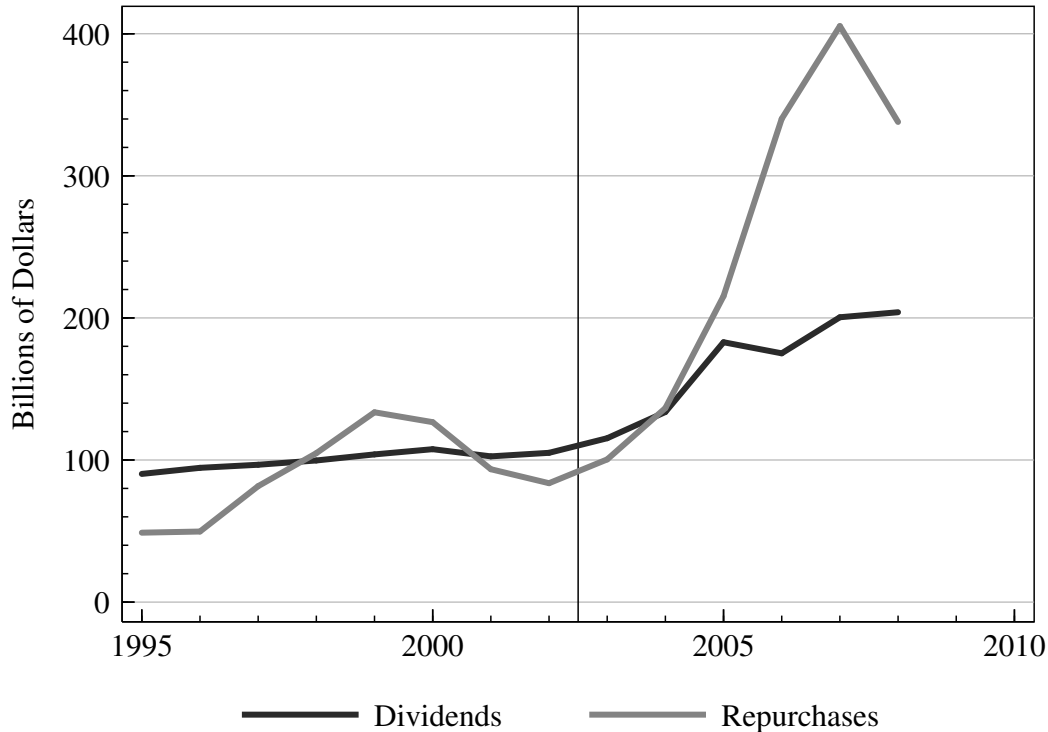
The vertical line precedes the observation for 2003, when the dividend tax cut was proposed and passed. Non-calendar fiscal years are counted in the calendar year in which they end. Repurchases are calculated at the firm level following Skinner [2008] and Blouin, Raedy, and Shackelford [2007], using positive annual changes in treasury stock where available and otherwise using net repurchase amounts from the statement of cash flows, subtracting xchanges in preferred stock. This measure may overstate repurchases when shares are reissued (for example, to compensate employees) in the year after they are repurchased. The dividend measure comes from the statement of cash flows and includes both regular and special dividends. The dividend observation in 2005 is noticeably increased by Microsoft's $32 billion dollar special dividend.
Source: Compustat.

of this paper—that the 2003 tax cuts were likely not a key driver of the observed increase in aggregate dividend payouts.

6   Conclusions

The finding that a large change in the dividend tax rate induced at most a modest response of aggregate dividend payouts might appear to support the "new view" of dividend taxation. In

results must have been driven by smaller firms.

light of the findings of Poterba [2004], who estimates economically significant, but very slow, responses of aggregate payouts to dividend taxation, and recent literature like DeAngelo, DeAngelo, and Stulz [2006] and Denis and Osobov [2008] who advocate an agency-based view of dividend policy, I endorse a different view. I suggest that dividend policy is driven fundamentally by agency concerns, but responses to tax changes are blunted by inattention or optimization frictions reminiscent of those modeled in Chetty [2009]. In the presence of such frictions, it might take years or decades for the full effect of tax changes to appear in data on aggregate dividend payouts. A better understanding of the consequences of dividend taxation in a world like this would be a useful goal for future research.

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7 Appendix: Measures of Corporate Earnings

In this paper, I relate dividend payout decisions to measures of corporate earnings or profits. Since at least Lintner [1956], economists have often studied dividend payouts as a fraction of corporate earnings. This exercise is complicated a bit when earnings turn negative. As documented previously by Altshuler, Auerbach, Cooper, and Knittel [2008] and Edgerton [2009], U.S. corporations ran unprecedented levels of losses around the 2001 recession.

Figure 7 graphs several measures of aggregate corporate earnings for the Compustat non-REIT and REIT samples from 1990 to 2007. Beginning with a firm's sales and subtracting the costs of goods sold and selling and administrative expenses produces earnings before interest, taxes, and depreciation and amortization, or EBITDA. Subtracting depreciation and amortization produces EBIT. Subtracting interest expenses, nonoperating income, and special items produces pretax income. Subtracting income taxes and minority interest produces income before extraordinary items. Subtracting preferred dividends, common stock equivalents, and extraordinary items and discontinued operations then produces net income. A measure of cash flows can be created by adding depreciation, amortization, and deferred taxes back to income before extraordinary items or to net income.

In June 2001, the Financial Accounting Standards Board issued its Statement No. 142, which changed the way that firms accounted for goodwill. Prior to FAS 142, acquiring firms would recognize an amount of goodwill on their balance sheet essentially equal to the difference between the purchase price of an acquired firm and the value at which the acquirer would carry the acquired firms' assets on the acquirer's balance sheet. This goodwill would then be slowly amortized (depreciated) over time.

FAS 142 instead required that firms conduct an initial and then annual review of the value of their goodwill to determine whether changing market conditions had "impaired" its value. Many firms conducting such impairment reviews in 2001 and 2002 discovered significant impairments to the goodwill that they had acquired by purchasing firms during the dotcom boom. Many of these firms recorded these impairment charges as "Special
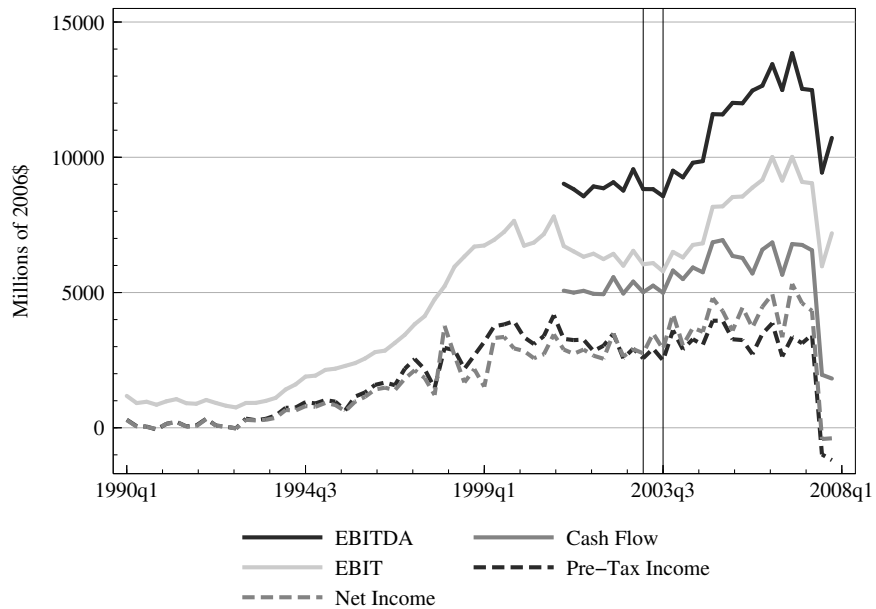
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Items," which appear on the income statement as deducted from Earnings Before Interest and Taxes in the calculation of Pre-tax Income. Other firms recorded these impairments as "Extraordinary Items," which appear on the income statement after the subtraction of taxes in the calculation of Net Income. Firms report and Compustat records the component of Special Items accounted for by goodwill impairment as a separate variable, although the breakdown of Special Items has only appeared in Compustat since the late 1990s. Compustat also includes a measure of the component of Extraordinary Items attributable to accounting changes, of which goodwill impairment is one example. I subtracted off the accounting charges for goodwill impairment, other writedowns and accounting changes when constructing the measures of pre-tax income and net income that appear in Figure 7

As Figure 7 attests, pre-tax income and net income fell below or close to zero for the nonREIT sample in some quarters surrounding the 2001 downturn. Focusing on percentage changes in these measures or on ratios with these measures in the denominator might give misleading impressions about movements in corporate income. I thus focus in this paper on EBITDA and EBIT, which remain comfortably positive. It is also clear in the figure that cash flow and EBIT are close to equal in most quarters (because interest and taxes are nearly equal to depreciation), so focusing on cash flows would give similar results to EBIT.

Figure 7: Measures of Aggregate Corporate Earnings
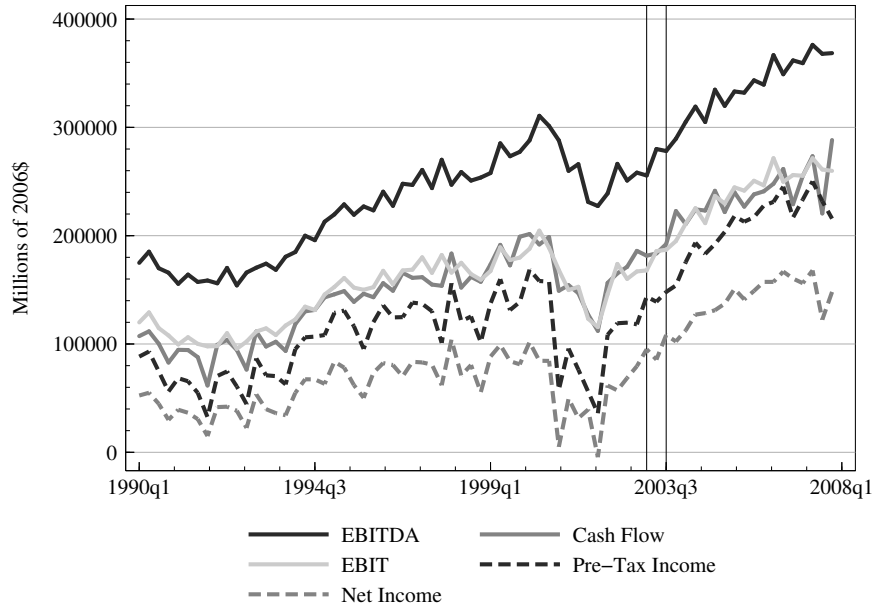
(a) NonREITs

(b) REITs

Source: Compustat.