

# Does Dividend Tax Impede Competition for Corporate Charters?\*

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## Abstract

We develop a model of jurisdictional competition for corporate charters among the states in which a corporation's agency cost depends on the federal dividend income tax rate and the takeover regulations of its domicile state. When corporations select their domicile states, the federal dividend income tax rate affects both the intensity of competition among the states and the equilibrium level of state takeover regulations. Increasing dividend tax rate weakens the competition for corporate charters under a condition: that the dividend payment and the market for corporate control are complementary corporate governance mechanisms. Exploiting the fact that the 2003 tax cut uniformly applied to all corporations regardless of their anti-takeover provisions, we empirically verify that this condition holds. Our results suggest that high dividend tax rate not only discourages firms from paying dividends but it also weakens their corporate governance through weakening states' incentives to improve their corporate laws.

*Keywords:* Jurisdictional competition, Corporate charters, Takeover regulations, Corporate law, Corporate federalism, Tax law, Corporate governance, Agency costs, Dividend taxation, Dividend payment, Investment.

*JEL Classifications:* G31, G34, G35, H32, K34, K22, K33

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# 1. Introduction

Consider the following series of causal relations:

Factors  $\implies$  Competition among the states  $\implies$  U.S. corporate law  $\implies$   
Corporate governance  $\implies$  Firms' financing, strategies, and value.

This paper studies the first " $\implies$ " because U.S. corporate law evolves from states competing for corporate charters ([Cary 1974](#) and [Winter 1977](#)). The laws that evolve from this competition depends on its intensity. In turn, the kinds of U.S. corporate law determine the strength of corporate governance of U.S. firms. The financing costs, strategies, and firm value are all functions of their corporate governance.<sup>1</sup>

The first " $\implies$ " concerns the forces that ultimately shape firms' corporate governance. Studying this relation involves three challenges. First, how do we conceptualize and measure the intensity of competition for corporate charters? Second, which of the many potential factors that affect competition intensity must we investigate? Third, what empirical strategies allow us to document a causal relation? We construct a theoretical model to address these challenges.

**1. Competition concept and measure.** States compete in the market for corporate charters by offering corporate law to firms ([Romano, 1985](#)). A firm's incorporation decision is to shop around states to find the "best deals." In equilibrium, states must have no incentive to change its corporate law, while firms must have no incentive to move to another state. If a state offers a slightly worse set of corporate law, then some firms would move away. Competition intensity is measured by the number of firms lost by a state. Losing very few firms indicates a weak competition; while losing all firms implies perfect competition ([Tiebout, 1956](#)).

A firm re-incorporates in another state (i.e., walk away from its state) only if the benefits outweigh the costs; section 3 models the incorporation choices of a firm. The states are modeled as competing among themselves for corporate charters. The model focuses on two factors, namely, the (exogenously given) federal dividend income tax and the (endogenously chosen) state takeover regulations. The former exacerbates firms' agency costs by increasing the costs for them to disgorge cash through dividends, while the latter compromises the market for corporate control as an external governance mechanism. These factors jointly affect the agency costs and incorporation decisions of firms. Specifically, the model reveals how increasing the federal dividend income tax rate changes the states' incentives to enact takeover regulations; such incentives originate from the decision of firms to reincorporate elsewhere. The states enact more takeover regulations if the competition is weak, that is, if not many firms decide to reincorporate elsewhere.

**2. Factors affecting states' competition.** The competition among states for corporate charters started shaping U.S. corporate laws from 1840 (Shughart II and Tollison, 1985; Wallis, 2005). However Leeson (2011) warns that this corporate federalism system is threatened by the incentive of the federal government to overtake the power of the states.<sup>2</sup> If this threat is severe, interstate competition as a system will fall apart. The fact that such has not fallen apart suggests that the federal government relies on reassuring commitment devices. One of such devices prohibits the federal government from levying taxes without the approval from the states.

By 1913, almost all states had adopted general incorporation, thereby allowing those groups that satisfy certain minimum requirements to incorporate their firms. Adopted in 1913, the 16th amendment ushers the era of federal income tax. However, Easterbrook (2013) views this amendment as the threat

that [Leeson \(2011\)](#) has warned about, that is, by allowing the Congress to levy taxes without approval from the states will take away power from the states and consequently reduce federalism. According to [Easterbrook \(1994, 2003, 2013\)](#), how states compete depends on the federal government. Few economics studies have linked federal government regulations with the way states compete in the market for corporate charters.<sup>3</sup>

Among the many federal income tax items, the dividend income tax paid by the shareholders was first exempted from the early years of the 16th amendment but was subsequently removed from the exempted list.<sup>4</sup> Federal dividend income tax directly weakens corporate governance by increasing the costs for firms to commit to their dividend policies to disgorge cash regularly ([Easterbrook, 1984; Jensen, 1986](#)).<sup>5</sup>

To the best of our knowledge, no one has proposed that the federal income dividend tax can weaken governance by impeding inter-state competition for corporate charters. This paper focuses on this aspect. Although dividend tax directly compromises firms' commitment to disgorge cash regularly, firms can still rely on other mechanisms to reduce free cash flow (such as increasing their debt level ([Jensen, 1986](#)), share repurchase, etc.). Unlike this direct effect, if dividend tax impedes the competition among states for corporate charters and lead to an overall worse set of corporate laws, then U.S. firms only have a limited set of strategies to address such negative influence.<sup>6</sup>

**3. Empirical test.** Is there evidence suggesting that dividend tax may have weakened the competition among states? [Poterba \(2004\)](#) argues that since World War II, the weighted average household marginal tax rate on dividend in the U.S. never went below 31.9% before 1987 (the year of the landmark case *CTS Corp. v. Dynamics Corp. of America* that started waves of state takeover regulations). This rate remained roughly 31% since 1987 until the Jobs and

Growth Tax Relief Reconciliation Act (JGTRRA) of 2003 capped this rate at 15%.<sup>7</sup> During this period of high dividend income tax rate, state takeover regulations proliferated, thereby compromising the market for corporate control (Romano, 2006). One explanation for this phenomenon is that the state competition for corporate charters is a race to the bottom.

The proliferation of state takeover regulations under a period of high dividend tax rates can also be explained by the fact that the high dividend tax rate impeded the competition for corporate charters. If we were to go back to the 80s, then we would have tested our hypothesis by lowering the federal dividend income tax rate. Our hypothesis holds true if the proliferation of state takeover regulations slows down. However, no one can change history; we need to perform other indirect empirical tests.

Our theoretical model gives a condition: state takeover regulations increase firms' agency costs by a smaller amount under a higher dividend tax rate. This condition is necessary and sufficient for dividend tax to impede the competition among states for corporate charters.

This necessary and sufficient condition concerns a mainstream governance question (Misangyi and Acharya, 2014): are the different governance mechanisms, namely, dividend payment (an internal governance mechanism hindered by federal dividend income tax) and market for corporate control (an external governance mechanism hindered by state takeover regulations), complements or substitutes? If increasing the dividend tax rate makes firms less capable of benefiting from an unfettered market for corporate control, then the firms' incorporation decisions should concern less on the state takeover regulations under a higher dividend tax rate. To test whether dividend tax impedes the competition among states, our theoretical model directs us to examine firms.

Section 4 explains our empirical strategy. The sharp dividend tax cut in

2003, which was uniformly applied to corporations regardless of their anti-takeover provisions, allows us to test whether the necessary and sufficient condition holds.<sup>8</sup> Section 5 presents the empirical analysis. We empirically observe that firms governed by a different number of anti-takeover provisions respond differently to the 2003 dividend tax cut in a manner consistent with the view that dividend payment and the market for corporate control are complementary governance mechanisms.<sup>9</sup> Therefore, dividend tax impedes the competition among states for corporate charters. This conclusion reconciles the fact that state takeover regulations proliferated in the late 80s and early 90s while the states were competing; given the high dividend tax back then, the competition among the states might not have been intense enough.

## 2. Related Literature

Our paper belongs to the corporate federalism literature and focuses on the effects of national tax policies on the interactions between states and firms in the context of corporate law. A long-term research theme of a leading scholar, [Easterbrook \(1994, 2003, 2013\)](#) studies the plan prescribed in James Madison's Federalist No. 10 in the corporate law context. To mitigate the harm of interest groups, Madison's plan diffuses power through federalism. The U.S. founders envisioned that competition can help foster diversity and constrain states from abusing their powers.

Federalism differentiates U.S. corporate law from the corporate laws in other countries. [Romano \(1993, 2005, forthcoming\)](#) argues that the system strengthens U.S. firms' corporate governance by experimenting with different types of corporate law and diffusing those useful types across states. [Carney \(1997a,b\)](#) argues that corporate federalism harnesses competitive forces in shaping the law, thereby resulting in the faster (slower) diffusion of good (bad)

types of corporate laws across U.S. states relative to those among European nations. [Easterbrook \(1994\)](#) also notes such a distinction contributes to the differences in corporate governance between U.S. and European firms.

The key to such a political system is the mobility of people and resources, which underscores the competition among states for people and resources. [Cooter \(2000\)](#) argues that such mobility not only measures but also defines the competition among states. [Holmes and Schmitz \(2010\)](#) review the literature on the measurement of competition at the industry level and conclude that it is a main challenge in understanding how competition improves productivity. We contribute to the literature by not directly measuring the competition intensity of the states for corporate charters but by using theory to identify how we can use firms' responses to national tax policy changes to infer the changes in competition intensity.

Even if federalism has been set up as a political structure, [Leeson \(2011\)](#) questions why the central government would choose not to take the power away from the states. If the Congress imposes a mandatory set of corporate governance practices on all U.S. corporations, then these practices take the power away from the states and directly reduce corporate federalism.<sup>10</sup>

[Easterbrook \(2009\)](#) cautions that a race to the bottom may come from the national government instead of the states by imposing mandatory corporate governance practices, effectively knocking out jurisdictional competition.<sup>11</sup>

The federal dividend income tax paid by shareholders has never been viewed as a means for the national government to compromise the structure of federalism. This tax came from the 16th Amendment of 1913. [Leeson \(2011\)](#) posits that allowing the Congress to levy taxes without the states approval will take away power from the states and directly reduce federalism ([Easterbrook, 2013](#)). Our paper is the first to take a closer look at how, through federal dividend income tax, the 16th Amendment impedes the competition among

states for corporate charters.

Our paper also contributes to the literature on the regulatory competition of corporate charters. Most papers in this field are empirical in nature; among the few that offer theoretical models, [Eldar and Magnolfi \(2016\)](#) is the closest to ours. Their model guides a structural empirical estimation, which is the main gist of their paper. However, the study of [Eldar and Magnolfi \(2016\)](#) is dynamic, while ours is static. Specifically, [Eldar and Magnolfi \(2016\)](#) emphasize firms' inertia (choosing to remain in their current domicile state unless the benefits of reincorporating elsewhere outweigh the costs). We implicitly model this inertia by modeling each firm as having its reincorporation costs. By contrast, we focus on how changing the exogenous federal dividend income tax rate changes the way states compete, which is absent in the model of [Eldar and Magnolfi \(2016\)](#).

### **3. Model of Competition for Corporate Charters**

We construct a sequential-move game of jurisdictional competition for corporate charters among states. The model allows us to write down the intensity of competition for corporate charters in equilibrium. As such, we can derive the effects of increasing the federal dividend income tax rate faced by shareholders on both the equilibrium levels of state takeover regulations and the intensity of competition for corporate charters among states. In the model, the corporations can freely choose their domicile states. Their costs-and-benefits calculation of such incorporation decisions involve three factors: their reincorporation costs (which depend on their type), federal dividend income tax rate (exogenously given), and the states' takeover regulations (endogenously chosen by the states).



### 3.1. Model setup

There are  $N \geq 2$  identical states (indexed by  $s = 1, \dots, N$ ) competing for corporate charters. In each state, a continuum of corporations of mass 1 exists.<sup>12</sup> This game involves two stages. In stage 1, the legislators of these states simultaneously choose the amounts of takeover regulations to be enacted. In stage 2, the corporations in each state decide whether to stay in their own state or to reincorporate in another state.

**Stage 1** Following [Romano \(1985, 1987\)](#), we model the payoff of the legislator in State  $s$ , denoted by  $U_s$ , as follows:

$$U_s = f(\theta_s) + g(m_s). \quad (1)$$

The first part,  $f(\theta_s)$ , is the private benefits provided by interest groups as a function of  $\theta_s$ , which denotes the amount of enacted takeover regulations.<sup>13</sup> We assume that the legislator gets more private benefits by enacting more takeover regulations, but at a diminishing rate (i.e.,  $f' > 0$  and  $f'' < 0$ ). The second part,  $g(m_s)$ , is a function of  $m_s$ , which denotes the mass of corporate charters incorporated in State  $s$ . It includes 2 groups: (i) those corporations originally from State  $s$  choosing to stay and (ii) those reincorporated from another state to State  $s$ . We assume that the legislator obtains a higher utility when more corporations are incorporated in the state (i.e.,  $g' > 0$ ).

A legislator's strategic decision in the game in stage 1 is to pick an amount of takeover regulations for her state to maximize her own payoff. This way of modeling the state legislators' strategic decision is similar to that presented in [Hadfield and Talley \(2006\)](#).<sup>14</sup>

**Stage 2** Each corporation can potentially generate a firm value of 1. We model the agency cost as the probability that the corporation fails because of agency conflicts, resulting in a value of 0. If a corporation always survives, then its agency cost is 0. If a corporation fails for sure, then its agency costs is 1. As such, a State  $s$  corporation's agency cost is its probability of dying, which is expressed as:

$$\text{Agency Cost} = q(\theta_s, \tau), \quad (2)$$

where  $\tau$  is the federal dividend income tax rate. Following [Manne \(1965\)](#), we assume that takeover regulations increase the agency costs of a corporation at an increasing rate (i.e.,  $q_1 > 0$  and  $q_{11} > 0$ ). Following [Easterbrook \(1984\)](#), we assume that increasing the dividend tax rate increases the agency costs of a firm (i.e.,  $q_2 > 0$ ).

If the corporation decides to reincorporate elsewhere, then it incurs a reincorporation cost  $c$ . This cost characterizes the types of different corporations. We assume that  $c$  is uniformly distributed over  $[0, 1]$ . Therefore, the firm value of a State  $s$  corporation is computed as its potential value 1 minus its agency cost and any reincorporation cost:

$$V = \begin{cases} 1 - q(\theta_s, \tau) & \text{if it stays in State } s, \\ 1 - q(\theta_{s'}, \tau) - c & \text{if it moves to State } s' \neq s. \end{cases} \quad (3)$$

In stage 2, a corporation's strategic decision is to choose a state to incorporate to maximize its firm value.

### 3.2. Equilibrium

We solve this game by backward induction. The notion of equilibrium we use is subgame perfect equilibrium. In stage 2 (in which the corporations decide where to incorporate), in equilibrium, no corporation can change its incorporation decision to further increase its firm value. In stage 1 (in which the states' legislators decide the amount of takeover regulations to enact given a particular dividend tax rate from the federal government), in equilibrium, no legislator can enact more or fewer takeover regulations to further increase her payoff.

**Stage 2** Given  $(\theta_1, \dots, \theta_N)$  chosen by the legislators in Stage 1, the corporations in different states decide whether to stay in their home state or to reincorporate in another state.

A State  $s$  corporation's decision is based on the following rule: It will move to State  $s' \neq s$  if the value from moving is higher than that from staying, that is,:

$$\underbrace{1 - q(\theta_{s'}, \tau) - c}_{\text{Value from moving}} > \underbrace{1 - q(\theta_s, \tau)}_{\text{Value from staying}}, \quad (4)$$

In other words, the corporation will move if to the reincorporation cost is smaller than the difference between the agency costs in States  $s$  and  $s'$ .

$$c < q(\theta_s, \tau) - q(\theta_{s'}, \tau). \quad (5)$$

Given that  $c$  is uniformly distributed over  $[0, 1]$ , the mass of State  $s$  corporations moving to State  $s'$  is  $q(\theta_s, \tau) - q(\theta_{s'}, \tau)$ , where  $\theta_{s'} < \theta_s$ .

If more than one state have fewer takeover regulations than State  $s$ , in equilibrium, those State  $s$  corporations with low enough reincorporation costs

will always move to the state with the smallest amount of takeover regulations.

**Stage 1** Anticipating the corporations' staying/moving decisions in stage 2, the legislators in different states simultaneously choose the amounts of takeover regulations in stage 1 to maximize their payoffs.

Given the choices of other legislators, each State  $s$  faces the following two cases:

- **Case 1:  $q(\theta_s, \tau)$  being the smallest.** In this case, State  $s$  has the smallest amount of takeover regulations among all states. Therefore, the corporations from other states with low enough reincorporation costs will move to State  $s$ . Specifically, the mass of State  $s' \neq s$  corporations moving to State  $s$  is given by  $q(\theta_{s'}, \tau) - q(\theta_s, \tau)$ . Therefore, the *total* mass of corporations incorporated in State  $s$  is expressed as follows:

$$m_s = 1 + \sum_{s' \neq s} [q(\theta_{s'}, \tau) - q(\theta_s, \tau)] = 1 + \sum_{s' \neq s} q(\theta_{s'}, \tau) - (n-1)q(\theta_s, \tau). \quad (6)$$

The payoff function of the legislator in State  $s$  is:

$$U_s = f(\theta_s) + g \left[ 1 + \sum_{s' \neq s} q(\theta_{s'}, \tau) - (n-1)q(\theta_s, \tau) \right]. \quad (7)$$

- **Case 2:  $q(\theta_{s'}, \tau)$  being the smallest.** In this case, State  $s'$  has fewer takeover regulations than state  $s$ . Suppose state  $s'$  has the smallest amount of takeover regulations among all states, then the mass of State  $s$  corporations moving to State  $s'$  is  $q(\theta_{s'}, \tau) - q(\theta_s, \tau)$ . Given that the agency cost of State  $s$  is not the lowest, no corporations from other states will move to State  $s$ . Therefore, the mass of corporations incorporated in

State  $s$  is computed as follows:

$$m_s = 1 - [q(\theta_s, \tau) - q(\theta_1, \tau)] = 1 + q(\theta_1, \tau) - q(\theta_s, \tau). \quad (8)$$

The payoff function of the legislator in State  $s$  is computed as follows:

$$U_s = f(\theta_s) + g [1 + q(\theta_1, \tau) - q(\theta_s, \tau)]. \quad (9)$$

Taking all other  $\theta_{-s}$  as given, each legislator maximizes the payoff by choosing  $\theta_s$ . The first-order conditions are as follows:

$$\begin{cases} f'(\theta_1) + g \left[ 1 - \sum_{s' \neq s} q(\theta_{s'}, \tau) - (n-1)q(\theta_s, \tau) \right] \times q_1(\theta_s, \tau) = 0 & \text{for Case 1,} \\ f'(\theta_s) + g' [1 - q(\theta_1, \tau) - q(\theta_s, \tau)] \times q_1(\theta_s, \tau) = 0 & \text{for Case 2.} \end{cases} \quad (10)$$

The first-order conditions for different legislators characterize the best response functions, which are denoted as  $\theta_s^*(\theta_{-s})$ . In any symmetric equilibrium, the level of takeover regulations enacted in different states is such that  $\theta_s^* = \theta^*$  for all  $s = 1, \dots, N$ , where  $\theta^*$  solves the following:<sup>15</sup>

$$f'(\theta^*) - g'(1) \times q_1(\theta^*, \tau) = 0. \quad (11)$$

### 3.3. Federal dividend income tax rate and competition for corporate charters

The model allows us to derive the intensity of the competition for corporate charters among states. Consistent with [Cooter \(2000\)](#), the intensity is measured as the number of corporations that would have reincorporated elsewhere (i.e., the loss of customers of the state) if the number of enacted takeover regulations slightly exceeds that enacted in equilibrium.

In math, let  $n_s$  be the mass of State  $s$  corporations relocating (to the state with the lowest agency cost). Therefore, the competition intensity that State  $s$  faces is computed as follows:

$$\text{Competition intensity} = \frac{\partial n_s(\theta_s^*, \theta_{-s}^*)}{\partial \theta_s}. \quad (12)$$

Recall that  $\partial n_s(\theta_s^*, \theta_{-s}^*)/\partial \theta_s = \partial q(\theta_s^*, \tau)/\partial \theta_s > 0$ . (12) is not the number of incorporated corporations given a particular level of takeover regulations, but is the *decrease* in the number of corporations if the number of enacted takeover regulations slightly exceeds that enacted in equilibrium. As such, it is a counterfactual that does not happen in reality, making it a difficult notion to measure empirically.

How does an increase in the federal dividend income tax rate ( $\tau$ ) change this competition intensity? The answer depends on a mainstream governance question: whether dividend tax and the market for corporate control are complements or substitutes in mitigating a firm's agency costs. Proposition 1 offers the main result:

**Proposition 1** *The competition intensity ( $\partial n_s(\theta_s^*, \theta_{-s}^*)/\partial \theta_s$ ) decreases with the federal dividend income tax rate ( $\tau$ ) if and only if  $q_{12} < 0$ .*

**Proof** The mass of State  $s$  corporations relocating (to State 1 with the lowest agency cost) is computed as  $n_s = q(\theta_s, \tau) - q(\theta_1, \tau)$ . In equilibrium, the mass of State  $s$  corporations migrating away as more takeover regulations are enacted  $\partial n_s(\theta_s^*, \theta_{-s}^*)/\partial \theta_s$ . This mass is differentiated as follows with respect to  $\tau$ :

$$\frac{\partial}{\partial \tau} \left[ \frac{\partial n_s(\theta_s^*, \theta_{-s}^*)}{\partial \theta_s} \right] = \frac{\partial}{\partial \tau} \left[ \frac{\partial q(\theta_s^*, \tau)}{\partial \theta_s} \right] = q_{12}. \quad (13)$$

The above equation suggests that  $\partial n_s(\theta_s^*, \theta_{-s}^*)/\partial \theta_s$  decreases with  $\tau$  if and only if  $q_{12} < 0$ . Q.E.D.

If any state deviates from the equilibrium by slightly increasing its amount of takeover regulations, then this state loses some corporations. The proposition states that  $q_{12} < 0$  (or the cross derivatives of *Agency Cost* with respect to the amount of takeover regulations and the dividend income tax rate) is a necessary and sufficient condition for the state to lose fewer corporations when the federal dividend income tax rate increases.<sup>16</sup> The marginal impact of additional takeover regulations (the partial derivative of *Agency Cost* with respect to the amount of takeover regulations) on corporations becomes smaller given a higher dividend tax rate ( $\tau$ ). The competition in the market for corporate charter becomes weaker given a higher federal dividend income tax rate.

How does an increase in the federal dividend income tax rate change the equilibrium level of takeover regulations? A corollary directly follows the proposition.

**Corollary 1** *The equilibrium level of takeover regulations ( $\theta^*$ ) increases with the federal dividend income tax rate ( $\tau$ ) if and only if  $q_{12} < 0$ .*

**Proof** Differentiate (11) with respect to  $\tau$  and rearrange the terms to obtain:

$$\frac{\partial \theta^*}{\partial \tau} = \frac{g'(1)q_{12}(\theta^*, \tau)}{f''(\theta^*) - g'(1)q_{11}(\theta^*, \tau)}. \quad (14)$$

The denominator is negative because  $f''(\theta^*)$  is negative and  $q_{11}(\theta^*, \tau)$  is positive. Therefore,  $\theta^*$  increases with  $\tau$  (i.e.,  $\partial \theta^* / \partial \tau > 0$ ) if and only if  $q_{12} < 0$ . Q.E.D.

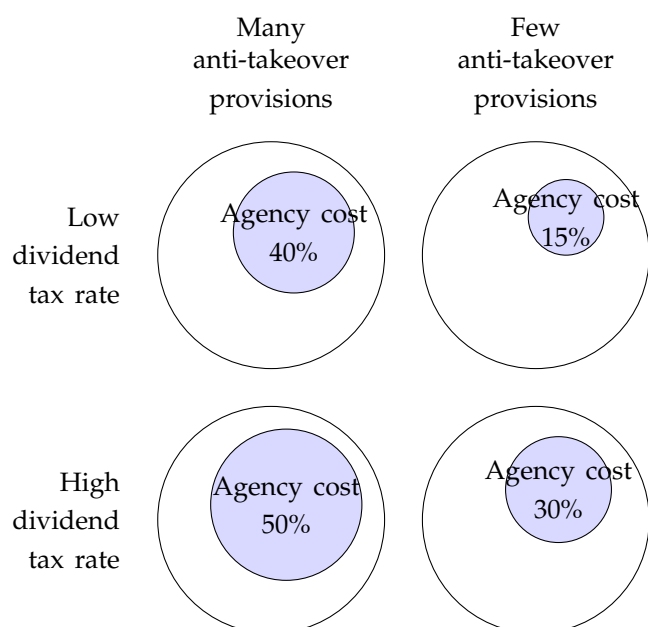
State takeover regulations proliferated all over the U.S. in the era of high dividend income tax rate. The above corollary states that a higher dividend income tax rate results in more takeover regulations in equilibrium if and only if  $q_{12} < 0$ . Therefore, the proliferation of state takeover regulations when states

are competing for corporate charters may be explained by the fact that the high dividend income tax rate weakens the competition intensity that the states are facing.

## 4. Taking the Model to the Data

What does  $q_{12} < 0$  mean?<sup>17</sup> Figure 1 shows an example. Imagine that a firm reincorporates from a state with more takeover regulations to another state with few takeover regulations. This reincorporation can be pictured as a move *from the left to the right column*. The firm benefits from such move by reducing its agency costs (thereby increasing its firm value). Such reduction occurs whether the firm is in the low (top row) or high dividend tax regime (bottom row). If  $q_{12} < 0$ , then the reduction in the top row must be larger than that in the bottom row, that is, such a reincorporation results in a larger reduction in agency costs for the firm when facing a low dividend tax rate.

**Figure 1: An example of  $q_{12} < 0$ : Agency costs ( $q$  = shaded area) shrink the firm value (unshaded area) among different regimes**





We empirically exploit the sudden dividend tax reduction in 2003 by looking at the movement *from the bottom to the top row*. Figure 1 shows an example of  $q_{12} < 0$ , which predicts a particular pattern of differential reactions among firms that are governed by a different number of anti-takeover provisions. Specifically, those firms with fewer anti-takeover provisions are expected to react in such a way as to reduce their agency costs more dramatically (moving from the bottom to the top row in the right column), while those firms with more anti-takeover provisions are expected to react in such a way as to reduce their agency costs less dramatically (moving from the bottom to the top row in the left column).

We focus on the movement *from the bottom to the top row* rather than *from the left to the right column* because of two empirical problems. The first problem is the endogeneity of firm-level estimation. Changing the number of anti-takeover provisions that govern a firm by either reincorporating in another state or amending its corporate charter is an endogenous choice of the firm.<sup>18</sup> This endogeneity requires the use of credible instruments that affect any of our firm-level outcome variables only through the number of anti-takeover provisions. We do not know if any instrument exists. Second, even if an instrument exists, we still cannot identify any differential effects across high- and low-dividend tax regimes because the shareholders of all firms are subject to the same federal dividend tax structure at any point in time. The dividend tax rates do not vary across firms.

How to measure the *changes* in the agency costs of firms? When we say agency costs, we have in mind the *changes* in the extent of managers misappropriating a firm's surplus. One may think that the changes in agency costs may be measured by the *changes* in the perks that are consumed by corporate managers. However, [Rajan and Wulf \(2006\)](#) show that perks can measure things other than management misappropriation. In addition, they

state that the perks across U.S. corporations do not significantly vary over time in their extensive dataset, which explains why they use cross-sectional rather than panel-data estimation. Therefore, the *changes* in these perks over time cannot be easily measured.

Easterbrook (1984) and Jensen (1986) focus on the free cash flow problem. Those firms that are plagued by high agency costs tend to have corporate managers who control and waste a large amount of cash on matters that are orthogonal to value maximization. As a result, Jensen (1993) suggests that these firms usually have low-dividend payout ratios and large investment ratios that cannot be explained by reasonable firm covariates.

To measure the *changes* in the firms' agency costs, we follow Jensen (1993) by measuring the changes of dividend payout and investment ratios that are *unexplained* by the firm covariates. Increasing dividend payout ratios and reducing investment ratios after controlling for firm covariates can offer proxies for the reduction of agency costs.

Figure 1 implies that if  $q_{12} < 0$ , then reducing the dividend tax rate can induce those firms that are governed by fewer anti-takeover provisions to increase their dividend payout and reduce their investment ratios more drastically than those firms that are governed by more anti-takeover provisions. Do these firms show more drastic responses?

## 5. Empirical Analysis

### 5.1. Data and variable definitions

We use a sample of publicly listed firms in the U.S. Standard & Poor's Compustat and the Center for Research in Security Prices (CRSP) provide financial data for these firms. Firm-level anti-takeover provision counts come from two

indexes, namely, the Corporate Governance Index (G Index) by [Gompers, Ishii, and Metrick \(2003\)](#) and the Entrenchment Index (E Index) by [Bebchuk, Cohen, and Ferrel \(2009\)](#). The G Index counts 24 anti-takeover provisions, while the E Index counts 6 of these anti-takeover provisions that have the greatest effect on firm value as shown in the literature.<sup>19</sup> These anti-takeover provisions come either from the default charter code of the firms' domicile states or from charter amendments. Similar to [Chetty and Saez \(2005\)](#), we exclude all foreign firms and those in the utilities (SIC codes between 4900 and 4949) and financial (SIC codes between 6000 and 6999) sectors.<sup>20</sup> We also exclude certain observations around 2003 to ensure that the outcomes are measured after the implementation of the tax cut.<sup>21</sup> Our sample period is between 1995 and 2008.

We define the following variables for the dividend and investment regressions:

- *Dividend regressions:* Following [Chetty and Saez \(2005\)](#), we define a Dividend Payer Dummy which takes a value of 100 if the firm pays a positive amount of common dividends in year  $t$ .<sup>22</sup> We define another dummy variable, the Dividend Increase Dummy, which takes a value of 100 if the dividend per share of the firm in year  $t$  is higher than that in year  $t - 1$ . We also consider dividend yield, defined as common dividend scaled by market capitalization. We follow the literature (e.g., [Fama and French 2001](#); [DeAngelo, DeAngelo, and Stulz 2006](#); [Hoberg and Prabhala 2009](#)) and include the following control variables in the dividend equation: profitability, NYSE percentile, asset growth rate, market-to-book ratio, retained earnings, and stock volatility.<sup>23</sup>
- *Investment regressions:* We measure investment by Capital Expenditure scaled by Lagged Net Fixed Assets (i.e., Total Property, Plant, and Equipment). Following [Kaplan and Zingales \(1997\)](#) and [Aivazian, Ge, and](#)

Qiu (2005), we include the following control variables in the investment equation: cash flow, market-to-book ratio, sales, and leverage.

Tables A and B in Appendix A present the definitions of these variables and reports the summary statistics, respectively. We lag the controls of the dividend regressions by one year to avoid any possible contemporaneous feedback between these controls and the outcome variable. In the investment regressions, we use the lagged values of market-to-book ratio and leverage. To limit the influence of outliers, we also winsorize all of the financial ratios at the 1% and 99% tails.

## 5.2. Econometric specification

To test whether a lower dividend tax and fewer anti-takeover provisions exhibit complementarity in reducing agency cost, we estimate the following difference-in-differences model:

$$y_{it} = \beta \left( \text{Anti-takeoverProvisions}_i \times \text{Post2003}_t \right) + X'_{it} \delta + \mu_i + \lambda_t + \varepsilon_{it}, \quad (15)$$

where  $i$  indexes firm and  $t$  indexes year;  $y_{it}$  is the outcome variable of interest;  $\text{Anti-takeoverProvisions}_i$  is the count of anti-takeover provisions in 2002 to measure the firm's *pre-tax* cut number of anti-takeover provisions;  $\text{Post2003}_t$  is a dummy variable that takes a value of 1 if the observation is after 2003;<sup>24</sup>  $X_{it}$  contains other relevant covariates;  $\mu_i$  and  $\lambda_t$  are firm and year fixed effects, respectively; and  $\varepsilon_{it}$  is the error term.<sup>25</sup> We cluster the standard errors at the firm-level to control for heteroskedasticity and serial correlation. We have also checked and confirmed that those firms that are governed by more and few anti-takeover provisions follow the similar time-trend before 2003, thereby lending support to our difference-in-differences model.<sup>26</sup>

Our regressor of interest is the interaction term between the *pre-tax*

cut number of anti-takeover provisions and the post-2003 dummy ( $\beta$ ). Our identification strategy depends on the fact that the 2003 dividend tax cut applies uniformly to all firms, regardless of their anti-takeover provisions. Our estimates of  $\beta$  become biased only if those corporations that are governed by the same number of anti-takeover provisions all amend their charters in anticipation of the tax cut.

A negative  $\beta$  suggests that after the 2003 dividend tax cut, those firms that are governed by fewer anti-takeover provisions *increase* the outcome variable of interest more than those firms that are governed by more anti-takeover provisions. Such complementarity implies that  $\beta < 0$  when dividend payment, dividend initiation, or dividend payout is the outcome variable, and  $\beta > 0$  when investment is the outcome variable.

### 5.3. Empirical results

Table 1 shows that  $\beta < 0$  when dividend payment, dividend initiation, or dividend payout is the outcome variable, and  $\beta > 0$  when investment is the outcome variable.

Panel A uses the Dividend Payment Dummy as the dependent variable; we regress it on the interaction between the governance indexes and the post-2003 dummy and other covariates. Using the G Index as the measure of the anti-takeover provisions in place, we progressively saturate the estimation model. Column (1) includes firm and year fixed effects only. Column (2) includes the controls. Column (3) follows [Chetty and Saez \(2005\)](#) and [Brown, Liang, and Weisbenner \(2007\)](#), in which the controls are interacted with the post-2003 dummy to control for the possibility that these control variables may affect the outcome variable differently after the 2003 tax cut. The coefficients of the interaction term between the G Index and the post-2003 dummy are all negative with similar magnitudes and are statistically significant. Using the E

Index in columns (4) to (6) generates similar results. Therefore, those firms that are governed by fewer anti-takeover provisions tend to pay dividends more following the dividend tax cut, compared with those firms that are governed by more anti-takeover provisions.

Panel B shows the analogous set of estimation results using the Dividend Increase Dummy as the dependent variable. Across these regressions, the coefficients of the interaction term are all negative with similar magnitudes and are statistically significant.

Panel C shows the differential responses of the firms in dividend yield. The coefficients of the interaction terms in these regressions are all negative and statistically significant. The three tables suggest that after the dividend tax cut, those firms that are governed by fewer anti-takeover provisions tend to pay, increase dividends and dividend yield more compared with those firms that are governed by more anti-takeover provisions.

Panel D uses Capital Expenditure as the dependent variable. Similar to the previous regressions, column (1) includes firm and year fixed effects only; column (2) includes other covariates; and in column (3), the controls are interacted with the post-2003 dummy to account for the possibility that the controls affect investment decisions differently after the 2003 tax cut. Across the different specifications, the coefficients of the interaction term are all positive and statistically significant, which suggests that those firms that are governed by fewer anti-takeover provisions are less likely to increase their investment after the dividend tax cut compared with those firms that are governed by more anti-takeover provisions.

[Table 1 is about here.]

Appendix B shows several robustness checks, which suggests that our results are unlikely to be attributed to alternative explanations. These ex-

planations include explicitly accounting for the fact that firms can disgorge cash paying dividends and engaging in share repurchase, taking into account ownership structure differences among firms, performing a placebo test using a year in which no sudden dividend tax cut, and explicitly accounting for the possibilities that both the Sarbanes-Oxley Act of 2002 and the Job Creation and Worker Assistance Act of 2002 may influence our results.

## **6. Conclusion**

We derive a strategic model of competition for corporate charters that reconciles the fact that state takeover regulations have proliferated in the U.S. under high federal dividend income tax rate even if the states are competing for corporate charters. The high federal dividend income tax rate weakens the intensity of competition that the states are facing. These firms will lose few charters if they enact takeover regulations. The necessary and sufficient condition for the dividend income tax to impede the competition for corporate charters is derived. The condition is that dividend payment and the market for corporate control are complementary governance mechanisms.

Does the condition hold empirically? We exploit the fact that the 2003 tax cut was uniformly applied to all corporations, regardless of their anti-takeover provisions. Such uniformity makes our difference-in-differences estimation credible. The differential reactions among those firms that are governed by more versus fewer anti-takeover provisions to the tax cut supports this condition. Therefore, the federal dividend income tax likely impedes the competition for corporate charters. The by-product, that enacting more state takeover regulations will weaken hostile takeover as a disciplinary device for managers, can weaken the governance of all U.S. corporations.

Is our theory only applicable to the U.S.? The jurisdictional competition

in the provision of corporate laws may seem unique to the U.S. After *Centros*, *Überseering*, and *Inspire Art*, Europe has been more permissive to firms shopping for corporate laws.<sup>27</sup> International jurisdictional competition may also take place outside of Europe. Therefore, what determines the intensity of jurisdictional competition in the provision of corporate/company laws is a question that also applies to regions outside of the U.S.

## Notes

<sup>1</sup>The fact that law and politics causally affect finance is certainly not unique to the U.S. [Malmendier \(2009\)](#) shows historical evidence supporting the notion that the laws and political environment in ancient Rome affect its financing activities.

<sup>2</sup>The federal government may have preempted states from competing by federal chartering. Except for certain non-profit (e.g., Daughters of the American Revolution) and governmental organizations (e.g., Fannie Mae and Freddie Mac), the federal government maintains a hands-off approach, thereby allowing the competition among states to continue to shape corporate laws.

<sup>3</sup>A notable exception is [Cumming and MacIntosh \(2000\)](#), who observe a weak competition among Canadian provinces for corporation charters because provincial corporate law judgment can be appealed at the Supreme Court of Canada. By contrast, state appellate courts are almost always the last resort on corporate law lawsuits.

<sup>4</sup>The double-taxing of the same income, once in the form of corporate income taxes and again in the form of federal dividend income tax levies on shareholders, can be avoided if a corporation elects the S corporation status, which enjoys pass-through tax treatment. However, listed corporations are not eligible for that status.

<sup>5</sup>[Easterbrook \(1984\)](#) argues that committing firms to disgorge cash mitigates the free cash flow problem and forces firms to borrow from the external capital market from time to time. The capital market's pricing helps solve the free-riding problems among shareholders. [Jensen \(1986\)](#) argues that the free cash-flow problem is a major agency cost for firms with separation of ownership and control. Both dividend payment and debt repayment are means for firms to disgorge cash.

<sup>6</sup>Except for incorporating in a foreign domicile or organizing as an unincorporated entity.



<sup>7</sup>The Jobs and Growth Tax Relief Reconciliation Act was signed into law by President George W. Bush on May 28, 2003. Prior to 2003, dividends were taxed at the marginal tax rate of the individual investors, which could reach as high as 35%. The Act caps the dividend tax rates at 15%, which is the same rate as the long-term capital gains tax. Specifically, the Economic Growth and Tax Relief Reconciliation Act of 2001 gradually decreased the top individual tax rate from 39.6% to 35%. However, prior to the 2003 tax cut, the top rate was higher than 35%. The lower rate was initially set to expire on December 31, 2008, but the Tax Increase Prevention and Reconciliation Act of 2005 extended this lower tax rate through 2010. [Poterba \(2004\)](#) reports that from 1993 to 2002, the weighted average household marginal tax rate on dividends leveled at approximately above 32%, but decreased sharply to 18.5% in 2003. The share of equity owned by households hovers at approximately 60% ([Poterba, 2004](#)), thereby ensuring the economic significance of the dividend tax cut to the U.S. households.

<sup>8</sup>Logical deduction: “A iff B” (our model) + “A” (our empirics)  $\implies$  “B”(our research question).

<sup>9</sup>Several robustness checks (in appendix B) rule out alternative explanations. These explanations include explicitly accounting for the fact that firms can disgorge cash through both paying dividends and engaging in share repurchase, taking into account ownership structure differences among firms, performing a placebo test using a year in which no sudden dividend tax cut was implemented, and explicitly accounting for the possibilities that both the Sarbanes-Oxley Act of 2002 and the Job Creation and Worker Assistance Act of 2002 may drive our results.

<sup>10</sup>[Cooter \(2000\)](#) posits that the federal law that binds state government is a form of obligatory harmonization. [Cooter \(2000\)](#) states, “obligatory harmonization diminishes jurisdictional competition and reduces the scope of bargaining over jurisdiction between the parties to a contract. (page 137).

<sup>11</sup>If the mandatory practices fail to offer corporations good governance, corporations will face more difficulties in moving out of the U.S. than moving to another state. However, other kinds of competition exist, such as incorporating abroad or using other types of legal entities (e.g., unincorporated).

<sup>12</sup>In the model of [Hadfield and Talley \(2006\)](#), two states compete for corporate charters by offering corporate law. They compare the equilibrium with that if the providers are private entities rather than state legislators.

<sup>13</sup>[Ribstein \(2010, p.7\)](#) summarizes these private benefits as follows: “But legislators have a lot to gain from guarding access to the governance levers of large, publicly held firms. For

example, managers want laws that help them retain power while workers want to protect their jobs and pay. Federal and state legislators can earn campaign support and other benefits by favoring particular groups.”

<sup>14</sup>Hadfield and Talley (2006) extensively discuss whether this is a right way to model the state legislators’ behaviors. We believe that their argument is the best available in the literature on the theoretical modeling of regulatory competition for corporate charters.

<sup>15</sup>This symmetry condition is also imposed to solve the model of Hadfield and Talley (2006).

<sup>16</sup>We can interpret the notion of  $q_{12} < 0$  in two ways. First, reducing the dividend tax and removing the takeover regulations exhibit complementarity in *reducing* agency cost. Second, a higher dividend tax reduces the marginal increase of the agency costs of firms when these firms are governed by an increasing number of anti-takeover provisions.

<sup>17</sup>The logic is the following: If A, then B. To show that B is true, we need to show that A is true.

<sup>18</sup>Hansmann (2006) explains why, in contrast to private firms, publicly held corporations rarely amend their charters. His theory implies that the differences in takeover regulations across the domicile states of firms account for the substantial variation in the anti-takeover provisions of firms, a view shared by Bertrand and Mullainathan (2003).

<sup>19</sup>The 24 provisions are listed in Appendix A of Gompers, Ishii, and Metrick (2003). State laws allow firms to opt in and out of a particular takeover regulation. These options have been taken care of in the G Index, and thus reflect the actual number of effective provisions that govern the firms.

<sup>20</sup>Chetty and Saez (2006) argue that the “dot-com” bust in 2000 sharply reduced the number of CRSP firms; these dropouts mechanically introduce changes in the dividend payment or initiation rates in the following years. In the empirical analysis, we focus on those firms with available governance indexes in 2002 (i.e., before the tax cut). We also consider those firms with available governance indexes in 1998, 2000, and 2002, and obtain very similar empirical results. Either way, the sample sizes are rather stable at approximately 1,900 across these years. Therefore, this sample selection concern is unlikely to drive our empirical results.

<sup>21</sup>Specifically, the tax cut was signed into law on May 28, 2003. We exclude the observations for those firms whose financial years ended between June 2002 and April 2003 and between June 2003 and April 2004. The observed outcome variables in the data for the former and latter groups may have been counted as responses and non-responses to the tax cut, respectively.

<sup>22</sup>All dummy dependent variables in this paper take values of either 0 or 100.

<sup>23</sup>Our empirical results remain qualitatively the same when the other controls used by [Brown, Liang, and Weisbenner \(2007\)](#) or [Brav, Graham, Harvey, and Michaely \(2005\)](#) are included in the regression analysis. These results are not reported for brevity.

<sup>24</sup>We exclude those observations in which the firms' financial years end between June 2002 and April 2003 and between June 2003 and April 2004. These observations may be problematic because we do not know whether the outcomes are measured before or after May 2003.

<sup>25</sup>Controlling for firm and year fixed effects eliminates the need to include *Anti-takeoverProvisions<sub>i</sub>* and *Post2003<sub>t</sub>* in the regression.

<sup>26</sup>We check whether those firms that are governed by more and few anti-takeover provisions follow the same time-trend before 2003. Figure A in Appendix A shows some unconditional time trends for firms with below and above median governance indexes. Those firms with higher governance indexes (i.e., those governed by more anti-takeover provisions) tend to pay or increase their dividends and have higher dividend yields, but have lower capital expenditure ratios, compared with those firms with lower governance indexes (i.e., those governed by fewer anti-takeover provisions). The pre-2003 time trends of both groups for different outcome variables generally look similar, thereby supporting our difference-in-differences model.

<sup>27</sup>The references include: Case C-212/97 *Centros Ltd v Erhvervs- og Selskabsstyrelsen* [1999] ECR I-1459. Case C-208/00 *Überseering BV v Nordic Construction Company Baumanagement GmbH* [2002] ECR I-9919. Case C-167/01 *Kamer van Koophandel en Fabrieken voor Amsterdam v Inspire Art Ltd* [2003] ECLI:EU:C:2003:512.

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**Table 1: Dividend Tax Cut, Anti-takeover Provisions, and Dividend and Investment Policies: Estimation with firm and year fixed-effects**

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Dependent Variable: Dividend Payer Dummy						
G Index × Post-2003	-1.011** (0.401)	-0.810** (0.402)	-1.051** (0.415)			
E Index × Post-2003				-2.053** (0.905)	-1.670* (0.901)	-1.826** (0.914)
Controls	No	Yes	Yes	No	Yes	Yes
Controls × Post-2003	No	No	Yes	No	No	Yes
Observations	10309	10309	10309	9159	9159	9159
Adjusted R <sup>2</sup>	0.819	0.826	0.828	0.822	0.828	0.830
Panel B: Dependent Variable: Dividend Increase Dummy						
G Index × Post-2003	-0.797* (0.433)	-0.682 (0.427)	-1.030** (0.435)			
E Index × Post-2003				-3.045*** (0.985)	-2.660*** (0.975)	-2.820*** (0.967)
Controls	No	Yes	Yes	No	Yes	Yes
Controls × Post-2003	No	No	Yes	No	No	Yes
Observations	10324	10324	10324	9172	9172	9172
Adjusted R <sup>2</sup>	0.456	0.467	0.471	0.463	0.472	0.477
Panel C: Dependent Variable: Dividend Yield						
G Index × Post-2003	-0.043*** (0.014)	-0.036** (0.014)	-0.045*** (0.014)			
E Index × Post-2003				-0.106*** (0.032)	-0.092*** (0.033)	-0.092*** (0.033)
Controls	No	Yes	Yes	No	Yes	Yes
Controls × Post-2003	No	No	Yes	No	No	Yes
Observations	10303	10303	10303	9153	9153	9153
Adjusted R <sup>2</sup>	0.632	0.636	0.639	0.653	0.657	0.660
Panel D: Dependent Variable: Capital Expenditure						
G Index × Post-2003	0.797*** (0.190)	0.473*** (0.176)	0.402** (0.180)			
E Index × Post-2003				1.522*** (0.455)	0.761* (0.418)	0.704* (0.421)
Controls	No	Yes	Yes	No	Yes	Yes
Controls × Post-2003	No	No	Yes	No	No	Yes
Observations	10579	10579	10579	9366	9366	9366
Adjusted R <sup>2</sup>	0.405	0.476	0.480	0.402	0.476	0.481

Note: In all specifications, firm and year fixed-effects are included. Standard errors are clustered at firm-level and are in parentheses. \*: significance at 10% level; \*\*: significance at 5% level; \*\*\*: significance at 1% level. The controls for Panel A, B, and C include: profitability, NYSE percentile, asset growth rate, market-to-book ratio, retained earnings, and stock volatility. The controls for Panel D include: cash flow, market-to-book ratio, sales, and leverage.

# Appendices

## A. Data Appendix

**Table A: Variable definition**

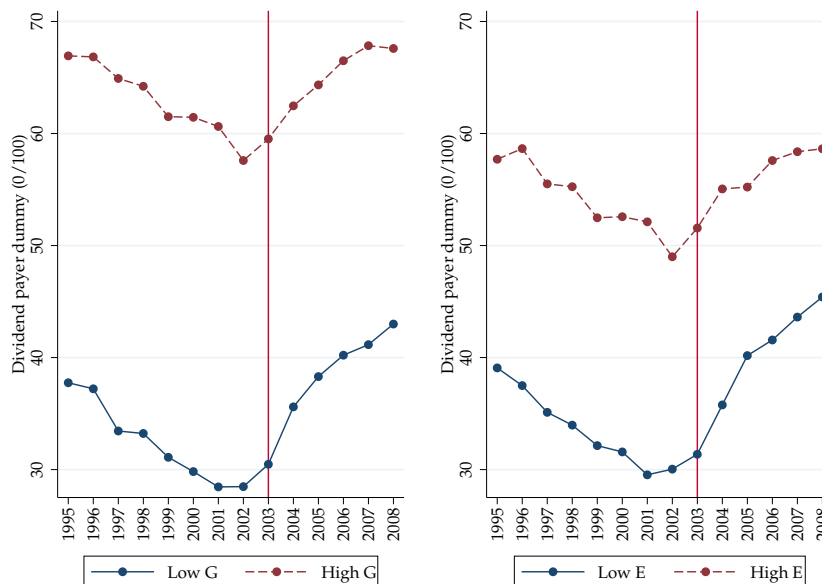
Variable	Description
Panel A: Outcome Variables	
Dividend Payer Dummy	A dummy which takes a value of 100 if the firm pays a positive amount of common dividends in year $t$
Dividend Increase Dummy	A dummy which takes a value of 100 if the firm's dividend per share in year $t$ is higher than that in year $t - 1$
Dividend Yield	Common Dividend scaled by Market Capitalization
Capital Expenditure	Capital Expenditure scaled by Lagged Net Fixed Assets (which is Total Property, Plant, and Equipment) $\times 100$
Panel B: Counts of anti-takeover provisions	
G Index	Corporate Governance Index constructed by Gompers, Ishii, and Metrick (2003), counting 24 anti-takeover provisions
E Index	Entrenchment Index constructed by Bebchuk, Cohen, and Ferrel (2009), counting 6 anti-takeover provisions
Panel C: Other Control Variables	
Profitability	Operating Income Before Depreciation, scaled by Total Assets
NYSE Percentile	NYSE market capitalization, defined as the fraction of NYSE firms having the same or smaller level of market capitalization than firm $i$ in year $t$
Asset Growth Rate	Percentage change of Total Assets
Market-to-book Ratio	The ratio of the firm's market value to the book value of its assets, defined as $(\text{Price} \times \text{Common Shares Outstanding} + \text{Total Liabilities}) / \text{Total Assets}$
Retained Earnings	Retained Earnings, scaled by Total Assets
Stock Volatility	The standard deviation of monthly stock returns for the past 24 months
Cash Flow	$(\text{Income Before Extraordinary Items} + \text{Depreciation}) / \text{Lagged Net Fixed Assets}$
Sales	Total Sales scaled by Lagged Net Fixed Assets
Leverage	Total Liabilities / Total Assets



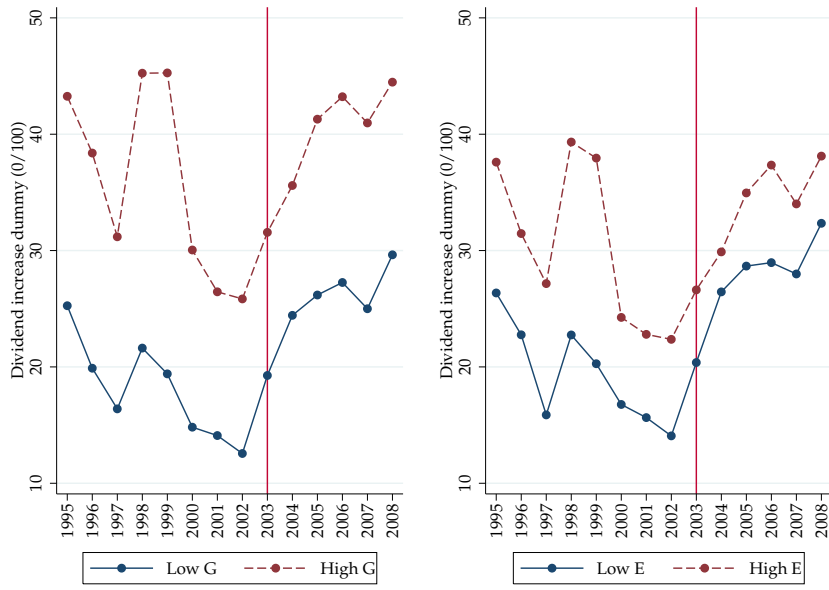
**Table B: Summary Statistics**

Variable	Observations	Mean	Median
Panel A: Variables for Dividend Regressions			
Dividend Payer Dummy	10309	51.314	49.985
Dividend Increase Dummy	10324	30.618	46.093
Dividend Yield	10303	0.959	1.406
Profitability	10324	0.144	0.111
NYSE Percentile	10324	75.910	17.757
Asset Growth Rate	10324	0.185	0.414
Market-to-book Ratio	10324	2.304	1.644
Retained Earnings	10324	0.154	0.705
Stock Volatility	10324	0.115	0.070
G Index	10324	9.091	2.662
E Index	9172	2.451	1.247
Panel B: Variables for Investment Regressions			
Capital Expenditure	10579	27.935	19.024
Cash Flow	10579	0.811	42.393
Tobin's Q	10579	2.262	1.573
Sales	10579	8.813	17.106
Leverage	10579	0.492	0.220
G Index	10579	9.086	2.657
E Index	9366	2.461	1.254

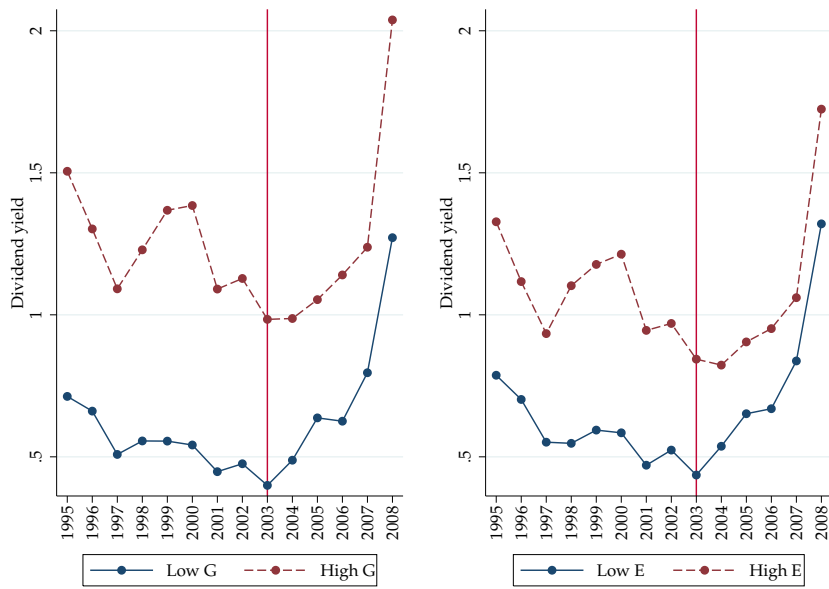
**Figure A: Time Trends by High and Low G Index and E Index**



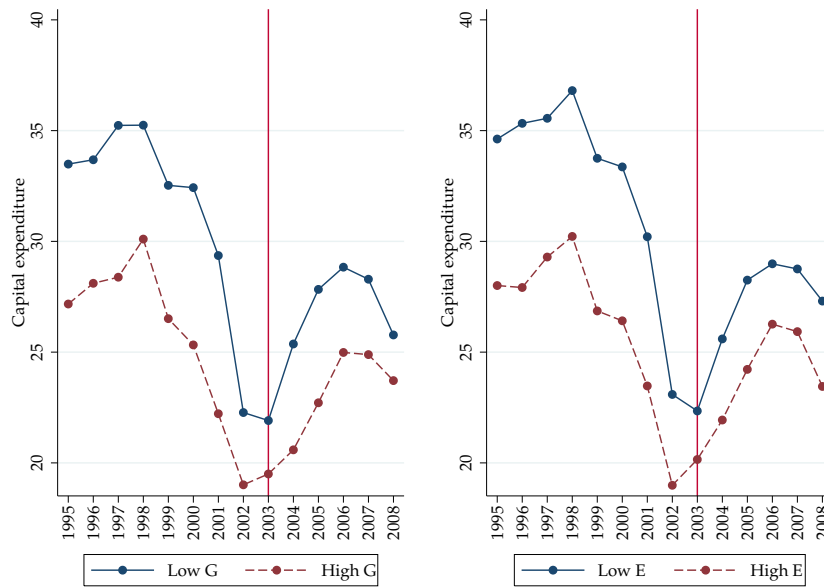
(a) Dividend Payer Dummy



(b) Dividend Increase Dummy



(c) Dividend Yield



(d) Capital Expenditure

## B. Robustness Checks: Ruling Out Alternative Explanations

The results in section 5 are consistent with dividend payment and the market for corporate control being complements. We, however, try the best we can to rule out other alternative explanations. The robustness checks below lead us to conclude that other alternative explanations are unlikely the driving force behind our results.

### B.1. Dividend payment versus share repurchase

One concern is that firms with fewer anti-takeover provisions do not increase their overall payout to shareholders relative to those with more anti-takeover provisions. They merely reduce their share repurchases to support their dividend increases after the tax cut without increasing their overall cash payout to their shareholders. To address this issue, we follow Skinner (2008) and consider net repurchases as the increase in common treasury stock (if the firm uses the treasury stock method for repurchases), or the difference between stock purchases and issuances (if the firm uses the “retirement” method for repurchases instead).<sup>28</sup> We define a dummy variable (“Share Repurchase Dummy”) which equals to 100 if the firm has positive share repurchases and 0 dividend payment in year  $t$ .

Table C uses this Share Repurchase Dummy as the dependent variable and estimate Equation (15). Using either the G Index or the E Index, the coefficients of the interaction term between the governance index and the

post-2003 dummy are never statistically significant. These results suggest that our results are unlikely to be driven by substitution between dividends and share repurchases. Firms governed by fewer anti-takeover provisions indeed disgorge cash more.

**Table C: Robustness Check: Dividend Tax Cut, Anti-takeover Provisions, and Share Repurchase**

	(1)	(2)
G Index $\times$ Post-2003	-0.295 (0.413)	
E Index $\times$ Post-2003		-0.258 (0.996)
Observations	10324	9172
Adjusted $R^2$	0.416	0.415

Note: The dependent variable is a dummy variable which takes a value of 100 if the firm has positive share repurchases but zero dividend payment in year  $t$ . The same set of controls used in Panels A, B, and C of table 1, firm and year fixed-effects are included. Standard errors are clustered at firm-level and are in parentheses. \*: significance at 10% level; \*\*: significance at 5% level; \*\*\*: significance at 1% level.

### B.2. Controlling for ownership measures

Chetty and Saez (2005) report that after the 2003 dividend tax cut, firms pay more dividends and that this effect is stronger for firms whose top executives own a larger fraction of shares and when large shareholders are on the board of directors. Brown, Liang, and Weisbenner (2007) also find that firms with a larger executive ownership have a higher likelihood of increasing dividends after the tax cut. Large ownership concentration in the hands of managers does not always imply stronger corporate governance. Fama and Jensen (1983) show how managers with large ownership stakes can dominate the board and expropriate corporate wealth, a view also shared in Stulz (1988). Demsetz (1983) argues that diffuse ownership does not necessarily induce detrimental effects. Our previous results do not control for the ownership structure of the firms, thus raising the following concern: Does the omission of ownership concentration drive the previous results?

To address this concern, we follow Chetty and Saez (2005) and Brown, Liang, and Weisbenner (2007) by constructing four ownership measures, namely, the fraction of shares owned by the top five executives, the largest unexercisable option holding among top executives, the largest exercisable option holding among top executives, and the fraction of shares held by institutional investors.<sup>29</sup>

We include these ownership measures and their interaction terms with the post-2003 dummy as extra controls in the previous estimations. Each cell in Table D reports the estimated coefficient of the interaction term between the

governance index and the post-2003 dummy in a regression. Panel A uses the Dividend Payer Dummy as the dependent variable. Columns (1) to (8) experiment with the different combinations of each ownership measure and the governance index. Columns (9) and (10) include all four ownership measures in the regression. The coefficients of the interaction terms are consistently negative and statistically significant except those in columns (8) and (10). Using the Dividend Increase Dummy and Dividend Yield as the dependent variables respectively, Panels B and C show that the coefficients of the interaction terms are all negative and statistically significant. The results are similar for the investment regressions, reported in Panel D. These regression results suggest that anti-takeover provisions remain important to the reaction of firms to the tax cut after controlling their ownership structure.

### *B.3. Placebo tests*

One may argue that firms with fewer anti-takeover provisions simply differ from those with more anti-takeover provisions regardless of the dividend tax cut. Therefore, even if there were no dividend tax cut in 2003, the former group of firms would have had increased their dividend and reduced their investment by more than the latter group of firms. To address this issue, we conduct placebo tests by assuming that the dividend tax cut occurred in 1998 (when the actual weighted average household marginal tax rate leveled at 0.34 before and after) instead of 2003. The regression results are presented in Table E. Each cell reports the coefficient of the interaction term between the governance index and the post-event (1998) dummy. These results imply that whether the firms are governed by more or fewer anti-takeover provisions does no change in different dividend and investment policies before and after 1998.

### *B.4. The Sarbanes-Oxley Act*

The Sarbanes-Oxley Act (SOX), enacted within a close window of time on July 30, 2002, may have driven the differential effects. This federal-level Act in response to the major U.S. corporate and accounting scandals aims at imposing a one-size-fit-all governance protocol strengthen corporate governance across all firms. The SOX has two possible effects: it either improves corporate governance or weakens corporate governance. The latter case matters to our results.<sup>30</sup>

If the act has weakened corporate governance ([Romano, 2005](#)), one should expect that firms would have benefited from avoiding the Act.<sup>31</sup> [Dharmapala and Khanna \(2016\)](#) show that firms that the Jumpstart Our Business Startups (JOBS) Act of 2012 exempted them from the SOX requirements registered positive abnormal returns compared to their control groups. If this case likewise held true in 2003, then our concern is whether the incentives to be exempted from the SOX would have driven our results. Specifically, if the firms with fewer anti-takeover provisions happen to be those firms that would be more likely to be exempted from the SOX by reducing investment

**Table D: Robustness Check: Controlling for Ownership Measures**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ownership measure:	% of shares by top 5 executives		Largest option holdings (unexercisable)		Largest option holdings (exercisable)		% of shares by institutional investors		All	
Panel A: Dependent Variable: Dividend Payer Dummy										
G Index × Post-2003	-1.066** (0.446)		-1.092** (0.448)		-1.050** (0.449)		-1.067** (0.470)		-1.245*** (0.461)	
E Index × Post-2003		-1.986** (0.978)		-1.931* (0.984)		-1.944** (0.980)		-1.678 (1.068)		-2.449** (1.067)
Observations	9400	8457	9400	8457	9400	8457	8253	7468	8253	7468
Adjusted R <sup>2</sup>	0.824	0.826	0.823	0.825	0.824	0.826	0.829	0.832	0.819	0.822
Panel B: Dependent Variable: Dividend Increase Dummy										
G Index × Post-2003	-1.246*** (0.465)		-1.261*** (0.466)		-1.282*** (0.468)		-1.234** (0.484)		-1.199** (0.486)	
E Index × Post-2003		-3.308*** (1.008)		-3.236*** (1.012)		-3.244*** (1.011)		-2.974*** (1.046)		-3.502*** (1.085)
Observations	9412	8467	9412	8467	9412	8467	8264	7477	8264	7477
Adjusted R <sup>2</sup>	0.464	0.469	0.464	0.468	0.464	0.468	0.469	0.473	0.452	0.458
Panel C: Dependent Variable: Dividend Yield										
G Index × Post-2003	-0.039** (0.015)		-0.040*** (0.015)		-0.039** (0.015)		-0.039** (0.016)		-0.045*** (0.016)	
E Index × Post-2003		-0.087** (0.035)		-0.086** (0.035)		-0.087** (0.035)		-0.097*** (0.034)		-0.127*** (0.035)
Observations	9397	8454	9397	8454	9397	8454	8250	7465	8250	7465
Adjusted R <sup>2</sup>	0.640	0.660	0.640	0.659	0.641	0.660	0.645	0.669	0.637	0.661
Panel D: Dependent Variable: Capital Expenditure										
G Index × Post-2003	0.544*** (0.165)		0.536*** (0.165)		0.537*** (0.166)		0.653*** (0.180)		0.616*** (0.179)	
E Index × Post-2003		0.989** (0.402)		0.944** (0.401)		0.938** (0.404)		1.214*** (0.428)		1.110*** (0.424)
Observations	9524	8554	9523	8554	9523	8554	8329	7526	8328	7526
Adjusted R <sup>2</sup>	0.494	0.497	0.495	0.499	0.494	0.498	0.507	0.513	0.512	0.518

Note: Standard errors are clustered at firm-level and are in parentheses. The same set of controls used in table 1, firm and year fixed-effects are included. \*: significance at 10% level; \*\*: significance at 5% level; \*\*\*: significance at 1% level.

and increasing dividend payout, relative to the firms with more anti-takeover provisions, then our results can be driven by the SOX rather than the dividend tax cut.

Our tests are as follows. [Gao, Wu, and Zimmerman \(2009\)](#) state that “The initial Securities Act of 1933 and the Securities Exchange Act of 1934 exempt small firms from certain filing requirements. The Securities and Exchange Commission (SEC) expanded these exemptions in implementing the Sarbanes-Oxley Act of 2002 (SOX).” The actual definition of being “small” is that the public float of a firm is below \$75 million, which would subsequently prompt the SEC to define the firm as a “nonaccelerated” filer.<sup>32</sup> Paying more dividends

**Table E: Robustness Check: Placebo Tests**

	(1)	(2)
Panel A: Dependent Variable: Dividend Payer Dummy		
G Index $\times$ Post-1998	-0.289 (0.283)	
E Index $\times$ Post-1998		-0.954 (0.666)
Observations	10309	9159
Adjusted $R^2$	0.826	0.828
Panel B: Dependent Variable: Dividend Increase Dummy		
G Index $\times$ Post-1998	-0.420 (0.400)	
E Index $\times$ Post-1998		-1.704* (0.932)
Observations	10324	9172
Adjusted $R^2$	0.467	0.472
Panel C: Dependent Variable: Dividend Yield		
G Index $\times$ Post-1998	-0.008 (0.010)	
E Index $\times$ Post-1998		-0.014 (0.024)
Observations	10303	9153
Adjusted $R^2$	0.635	0.656
Panel D: Dependent Variable: Capital Expenditure		
G Index $\times$ Post-1998	0.166 (0.163)	
E Index $\times$ Post-1998		0.483 (0.422)
Observations	10579	9366
Adjusted $R^2$	0.480	0.481

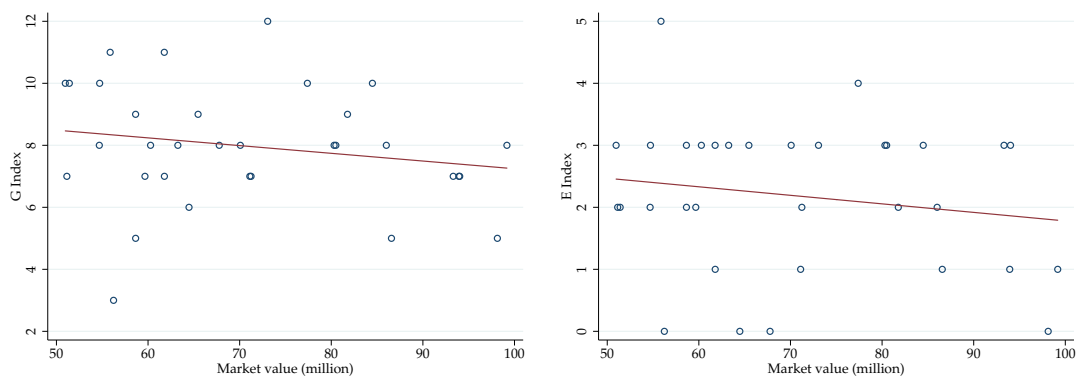
Note: Standard errors are clustered at firm-level and are in parentheses. The same set of controls used in table 1, firm and year fixed-effects are included. \*: significance at 10% level; \*\*: significance at 5% level; \*\*\*: significance at 1% level.

and investing less indeed would help keep the public float below this threshold. But if a firm is way larger than \$75 million, there is no hope for it to gain the “nonaccelerated” filer status. Therefore, the motive for these firms to avoid SOX cannot drive our results.

We therefore only examine firms whose market value was roughly \$75 million in 2002 and determine whether their market value correlates with their number of anti-takeover provisions. Figures B(a) and (b) show such relationships for G Index and E Index, respectively. Both graphs illustrate that out of roughly 1,000 firms in 2002, only 33 firms have a market value of between \$50 million and \$100 million. Among these 33 firms, the correlations between their market values and the governance indexes are both negative but statistically insignificant. This small number of firms and the weak correlation

are unlikely for the SOX to drive our differential effects.

**Figure B: Anti-takeover Provisions and Market Value**



(a) G Index: Slope =  $-24.895$ , ( $p = 0.288$ )

(b) E Index: Slope =  $-13.766$ , ( $p = 0.346$ )

### B.5. *The Job Creation and Worker Assistance Act*

The Job Creation and Worker Assistance Act (JCWAA) was enacted on March 9, 2002, roughly a year before the JGTRRA. the JCWAA increases depreciation allowances for certain types of business investments.<sup>33</sup> The JGTRRA not only cuts dividend tax but also further increases this depreciation allowances to 50%.

One may argue that our results are driven by the possibility that firms with fewer anti-takeover provisions face increased difficulty in purchasing wasteful assets qualified for the bonus relative to those firms with more anti-takeover provisions. Consequently, firms with fewer anti-takeover provisions do not increase (and possibly reduce) their capital expenditure as quickly as firms with more anti-takeover provisions. If the differences in the changes in capital expenditure across both groups of firms were enormous, then firms with fewer anti-takeover provisions would more readily increase their dividend payout relative to firms with more anti-takeover provisions before and after the 2003 tax cut.

We examine the differential responses of the firms in R&D expenses following the tax cut. Unlike capital expenditure, R&D expenses are not qualified investment for the increases in depreciation allowances. Therefore, if the JCWAA did drive our results, we would not observe differential responses in R&D expenses. In Table F, we report the regression results using R&D expenses as the dependent variable.<sup>34</sup> In these regressions, we also observe differential responses similar to those reported in Table 1. In other words, even if the depreciation allowances do affect the investment behaviors of firms, these changes in allowances are unlikely to drive all our results.



**Table F: Robustness Check: Dividend Tax Cut, Anti-takeover Provisions, and R&D Expenses**

	(1)	(2)
G Index $\times$ Post-2003	0.131*** (0.045)	
E Index $\times$ Post-2003		0.239** (0.107)
Observations	11116	9869
Adjusted $R^2$	0.785	0.777

Note: The dependent variable is R&D Expenses/ Lagged Total Assets  $\times$  100. Missing R&D Expenses are treated as 0. The same set of controls used in table 1, firm and year fixed-effects are included. Standard errors are clustered at firm-level and are in parentheses. \*: significance at 10% level; \*\*: significance at 5% level; \*\*\*: significance at 1% level.