The Twist between Corporate Law and Corporate Taxation – the Case of Delaware

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Abstract:

Delaware is recognized as the state with the largest number of incorporations in the US, but it is also frequently named a tax haven. This raises the question of whether Delaware corporate law is chosen for tax planning reasons, or because of its quality of corporate law. Using Tobin's *q* as an estimate of after-tax firm value, we find that Delaware firms generally have a higher firm value than similar firms incorporated in other US states. We conclude that charter competition leads to an alignment of corporate and tax law that overcomes agency conflicts between management and shareholders.

Keywords: Delaware, Law, Corporate Governance, Tax haven, Corporate Tax Avoidance.

JEL: G30; G34; G38, H25, H71, K22

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1. Corporate governance and tax avoidance

Two issues play a major role in the lifetimes of firms: Corporate governance, which is determined largely by corporate law, and the tax burden, which depends on the tax law a firm is subject to. In both issues, the owners of a firm may make choices regarding the firm's governance and tax obligations. For example, firm owners may select a specific type of corporate law, in order to mitigate agency problems and they may engage in tax planning, in order to avoid taxes. Both choices have attracted a lot of attention by economists and legal scholars. However, the interrelation between tax avoidance strategies and corporate law has received limited scrutiny (Dyreng, Lindsey & Thornock, 2013; Kane & Rock, 2008). The simple reason for neglecting connections between tax avoidance and corporate governance derives from a widely held assumption that extra profit from tax avoidance accrues to shareholders and increases after-tax firm value (Desai & Dharmapala, 2009). This notion implies there is no agency problem between tax avoiding managers and shareholders. Or, to put it simply, there is no risk that managers will divert parts of the additional tax benefit into their own pockets (Desai & Dharmapala, 2009; Desai, Dyck & Zingales, 2007; Mironov, 2013).

The so-called ‘agency view of tax avoidance’ (Slemrod, 2004; Chen & Chu, 2005; Desai & Dharmapala, 2009; Hanlon & Slemrod, 2009) takes a different perspective and assumes there is indeed an agency problem between shareholders and managers when the latter engage in tax avoidance. As a consequence, the agency view of tax avoidance leads to a more nuanced view of how tax avoidance strategies increase after-tax firm value.

Findings regarding the agency view of tax avoidance are straightforward. Desai and Dharmapala (2009) find that if a firm has adopted a strong corporate governance regime, then aggressive tax planning leads to an increase of after-tax firm value. Managers are prevented from diverting profits from tax avoidance. In the case of weak corporate governance, they find that tax avoidance strategies lead to a decrease of firm value. Hence, strong governance rules prevent managers from diverting profits from tax avoidance strategies.

Two main factors trigger these findings. 1) Tax avoidance strategies have a necessarily complex and opaque design, in order to prevent detection. But at the same time secret tax planning strategies and complex firm structures are the seedbed for managerial opportunism, such as earnings manipulation, concealment of obligations or outright diversion (Desai & Dharmapala, 2008). 2) The contract between the shareholders (the principal) and the managers (the agent) specifying tax avoidance activity is inherently incomplete and cannot be enforced by courts, which places shareholders in a weak position, if they prefer managers engage in aggressive tax avoidance, but not engage in diversion of profits (Chen & Chu, 2005; Crocker & Slemrod, 2005).

One might argue that the opaqueness of a firm's corporate structure and the risk of profit diversion is the price that shareholders must pay, if they want to maximize a firm's after-tax value. However, empirical studies indicate that firms become devaluated at the stock market, if they publicly announce they will adopt a corporate structure aimed at avoiding taxes by obscuring profits from tax authorities (Desai & Dharmapala, 2008, 2009; Hanlon & Slemrod, 2009; Gallemore, Maydew & Thornock, 2014). For example, Dynegy (an electric utility company based in the United States) planned a tax shelter strategy, in order to receive tax benefits. But

when a journalist made the plans visible to the public, Dynegy gave up the plans, due to the stock market's negative reaction. The plans were later revived, but ultimately ended, as a consequence of accounting fraud accusations, as managers maintained two sets of documents and things got out of control (Desai & Dharmapala, 2008). Thus, it is more than doubtful that shareholders are willing to pay the price of reduced monitoring in exchange for an uncertain promise of higher after-tax firm value. One can even go a step further and draw the conclusion that shareholders will only be in favor of aggressive tax planning when corporate governance structures exist, which reliably prevent the diversion of rents from complex tax planning strategies.

Another implication of the agency view of tax avoidance is that governmental pressure against aggressive tax planning may induce a higher after-tax firm value of the targeted firms (Desai, Dyck & Zingales, 2007; Mironov, 2013). The reason is that strong government policies against tax avoidance serve as a substitute for weak corporate governance. For example, government may force firms to make a transparent public declaration of profits. In that case, managers are forced to behave in accordance with the preferences of shareholders, because non-conforming managerial behavior can be relatively easily detected by shareholders. Thus, corporate taxation is not only a means for generating state income but also a means to make standardized accounting information available to the public (Desai, Dyck & Zingales, 2007).

As a result, corporate taxation can be understood as a means for protection of shareholders against expropriation by opportunistic managers. Thereby the applicable tax law is usually tied to the firm’s place of incorporation, but may also refer to other characteristics of the business, like the permanent establishment of the firm, the place of sales, etc. What is important here is that a firm’s place of incorporation (its choice of corporate law) not only indicates the corporate governance rules which are

available to shareholders to monitor managers, but also that the place of incorporation indicates which monitoring capacities a jurisdiction has as a "tax collecting shareholder" (Desai & Dharmapala, 2008).

Overall, the agency view of tax avoidance leads to a more composite perspective on the governance problem faced by shareholders, when a firm engages in tax planning. Shareholders evaluate not only the appropriateness of corporate law rules for monitoring managers, but also the place of incorporation with regard to tax planning and the capacity of the tax authority to mitigate agency problems. Therefore, the composition and interrelatedness of both laws constitutes the legal product a shareholder is willing to pay for. In other words, a shareholder will choose the corporate law for incorporation which empowers her to monitor managers in a way that aggressive tax planning results in a profit for her. More specifically, an investor will prefer the stock of firms which are incorporated in a jurisdiction which provides a mix of corporate law and tax law, which can increase after-tax firm value.

The idea, that corporate law and tax law are symbiotic and jointly trigger shareholders' decisions on where to incorporate business, sheds new light on the debate whether a regulatory competition between corporate laws results in a "race to the top" or a "race to the bottom". Even though there is already a huge literature on competition between corporate laws, this literature has widely ignored the impact of corporate taxation on incorporation decisions (see Dyreng, Lindsey & Thornock, 2013; Kane & Rock, 2008 and recently Lai & Ng, 2013, for exceptions). This is no wonder, because the "naïve" view of corporate tax avoidance makes no connection to the agency problem; thusly, in the past corporate tax issues were discussed separately from corporate governance issues.

The more recent agency view of tax avoidance makes a connection between a management's tax avoidance strategy and corporate governance, but yet assigns to shareholders a rather limited role with regard to corporate governance. Shareholders can buy and sell stocks, and thereby impact a management's propensity to divert profits from tax planning strategies. It is implicitly assumed that corporate governance is given, which is not always the case. Shareholders can make choices. They can prefer firms incorporated in jurisdictions which provide corporate governance rules allowing for better monitoring of firms which engage in aggressive tax planning. Additionally, institutional investors can, due to better monitoring, force managers to overcome agency problems. Lastly, for jurisdictions in which corporate governance is not present, jurisdictions can adapt their corporate law to be more appropriate to monitor aggressive tax planning. Hence, the aim of this paper is to take a step forward and to endogenize the choice of corporate governance into the agency view of tax avoidance. By doing so, we will contribute to the charter competition debate, because we will obtain additional insight as to why shareholders prefer Delaware corporate law for incorporation.

The paper proceeds as follows. In section 2 we will briefly review the literature on competition between corporate laws and refer to the puzzles of this literature. We will point out that these puzzles might be overcome by aligning the literature on competition between corporate laws with insights into the agency view of tax avoidance. We will also formulate more specific hypotheses, making a connection between the choice of corporate law, the applicable tax law and firm value. Section 3 describes our main variables and data collection. Section 4 provides research design, empirical results and robustness checks. Section 5 provides a discussion of the results, and section 6 contains the conclusion.

2. The Corporate Law Puzzle and Taxation

2.1 The Delaware Story

For nearly a hundred years, the State of Delaware has been the undisputed leader for incorporations in the United States (Grandy, 1989; Romano, 1985, 1993; Kane & Rock, 2008). Delaware is home to more than 1,000,000 business entities, and 64% of publicly traded firms in the Fortune 500 index are incorporated in Delaware (State of Delaware, Division of Corporations 2013). Moreover, Delaware is the leader for small and medium sized firms (incorporated as LLC or LLP) and also hosts the largest share of subsidiaries (Dyreng, Lindsey & Thornock, 2013).

There is a vast amount of literature discussing why Delaware has become the market leader for incorporations in the US and why this result is sustainable over such a long period of time (see Cain & Davidoff, 2012 for a recent summary). Central to this debate is the argument that enabling the choice of corporate law triggers a competition between states to attract firms for incorporation. The literature can thereby be divided roughly into two opposing camps, the proponents of a "race to the top" and the proponents of a "race to the bottom".

Both camps do not deny the existence of charter competition, but come to very different conclusions about the desirability of such a competition. "Race to the top" scholars argue that charter competition stimulates states to instate corporate laws that satisfy the interests of shareholders (Winter, 1977; Romano, 1993). Moreover, competition stimulates states to draft innovative legal rules as a response to new corporate governance problems. From that perspective, charter competition produces corporate law rules which mitigate agency conflicts between shareholders and management (Romano 1985, 1993: Cain & Davidoff, 2012). In return for its corporate

law and legal services, Delaware charges incorporated firms an incorporation fee, which provides roughly 20% of state revenues (Romano 1993; Dyreng, Lindsey & Thornock, 2013). Insofar it pays for Delaware to provide and improve its corporate law product (Romano 1985, 1993).

If it were true that Delaware corporate law mitigates agency problems between shareholders and management, one should expect a significantly higher firm value for firms incorporated in Delaware. Along these lines, Daines (2001) undertakes a large-sample and cross-sectional study to acquire evidence of the effect of corporate law on firm value. He uses Tobin's q as an estimate for firm value, and finds that Delaware firms are worth more than similar firms incorporated elsewhere based on a sample of 4,481 exchange-traded U.S. corporations between 1981 and 1996. From these findings, one may indeed conclude indeed that competition between corporate laws triggers a "race to the top".

However, the "race to the top" story is not undisputed. "Race to the bottom" scholars argue that charter competition augments the agency problem between shareholders and management (Cary, 1974; Bebchuk, 1992). Because management has leeway to decide on where to incorporate, managers will prefer lax corporate law rules which protect them from control of shareholders. Ultimately, lax corporate law protects managers against being replaced. From that perspective, Delaware is seen as a state which maximizes incorporation fees by providing a management friendly corporate law, while shareholder rights become deteriorated. The empirical study by Daines (2001) is also controviersial. For example, Bebchuk, Cohen and Ferrell (2002) argue that when firms decide to reincorporate in Delaware, this usually coincides with other major changes, such as as reorganization or acquisitions. As a result, it is

difficult to separate the effects of those changes from the effect of reincorporation in Delaware.

In addition, the premiums or discounts of incorporation in Delaware are rather small and have become even smaller over time. Thus, critics argue that the Delaware effect has in fact disappeared over time (Subramanian, 2004). Furthermore, some scholars draw the conclusion that if indeed there is a race between corporate laws, it is heading to "nowhere in particular" (Bratton, 1994; Kahan & Kamar, 2002; Roe, 2003). Some features of Delaware corporate law may be in the interest of shareholders but others may not be. The same applies to the corporate law of other states. In the end, no clear picture has emerged on whether Delaware corporate law improves firm value or not, or which subset of corporate law rules triggers a race to the top or to the bottom (Cain & Davidoff, 2012).

2.2 The interaction of corporate taxation and corporate law

There is a growing, yet still scarce amount of literature making a connection between the choice of corporate law and corporate taxation (Kane & Rock, 2008; Dyreng, Lindsey & Thornock, 2013). There are two reasons why the interaction between choice of corporate law and corporate taxation has been largely neglected in the past. The first reason is that as long as there is no agency problem assumed between managers and shareholders concerning tax avoidance, the choice of corporate law is indifferent with regard to tax planning.

The second reason is that when corporate taxation does not differ much between states, then indeed corporate taxation does not play a decisive role for the choice of corporate law (Kane & Rock, 2008). This argument has some empirical relevance, as there is a federal corporate income tax of up to 35 percent in the US, which is equally

applicable to corporations. However, states may also tax corporations, if there is a "nexus" between the state and the firm, for example, a production site. As a consequence, the revenue from state corporation income taxation has to be apportioned between all states with which a firm has a "nexus". The consecutive question is then, whether the place of incorporation affects the total corporate income tax burden. As long as there is sufficient coordination between the states to assure fair apportion, the choice of incorporation does not affect corporate income taxation. This means, independently from the place of incorporation, a firm's corporate income tax burden remains the same. Indeed, after the adoption of the Uniform Division of Income Practices Act (UDITPA) by most of the states in 1959, for about thirty years state corporate income tax apportion affected firms' tax burdens, which were independent from the place of incorporation. However, this has changed over the years, as individual states began to undermine the apportion rules and the place of incorporation became decisive to receiving corporate income tax deductions. As a result, incorporating a parent company in a certain state and having subsidiaries in certain other states enables a company to obtain notable corporate income tax discounts (Pomp, 1998).

Kane and Rock (2008) report that in recent years a growing number of US parent companies have incorporated off-shore (for example in Panama or Bermuda, so-called "corporate inversions"), in order to receive tax deductions (see also Desai & Hines, 2002; Webber, 2011). However, as a result these companies may end up with an inferior corporate law leading to severe corporate governance problems. That is to say, firms may incorporate into a jurisdiction promising the biggest tax advantage, but thereby the quality of corporate law can be easily neglected. The subsequent corporate

governance failures may cause poor firm performance which exceeds any tax advantages.

However, firms must not necessarily incorporate off-shore to get tax deductions. In the US, choosing Delaware corporate law also allows firms to engage in aggressive tax planning (Dyreng, Lindsey & Thornock, 2013). For example, Delaware makes it possible for firms to build up complex holding structures that aim at aggressive tax planning. A Delaware parent company may have subsidiaries in appropriate other states (like Nevada or Wyoming). Trademarks and other valuable intangible assets are then transferred between the parent company and the subsidiaries. These transfers include royalty payments or license fees which are free from corporate income taxation in Delaware or the state of the subsidiary. At the same time, the company that pays the royalty can deduct the payment from state corporate income tax. As a result, a firm's tax burden can be lowered considerably. Insofar, Delaware has repeatedly been called a tax haven (Dyreng, Lindsey & Thornock, 2013). Other examples may be drawn from Europe, where, for example, the Netherlands (Dijk, Weyzig & Murphy, 2006), the United Kingdom (Financial Times, 2013) or Ireland (Permanent Subcommittee on Investigations, 2013) make similar tax planning strategies feasible.

2.3 Hypotheses

The owners of a firm are interested in profit-maximization, which translates into long-run after tax firm value maximization. Corporate taxes reduce the after tax firm value, hence shareholders are principally interested in a reduction of the firm's tax burden. For that reason, they would like management to engage in tax avoidance activities. However, shareholders do not want managers to divert profits from those tax avoidance activities.

Since tax planning strategies must be opaque to the public in order to be effective, shareholders have to deal with an agency problem (Desai & Dharmapala, 2008; 2009). This problem can be dealt with by employing corporate governance mechanisms which prevent managers from diverting profits resulting from tax avoidance. Because corporate governance is mainly determined by corporate law, a firm's place of incorporation becomes of utmost importance for shareholders. Therefore, our first hypothesis H1 is:

> (H1) The more provisions for corporate tax planning are available, and the more targeted a firm's corporate governance (corporate law) is, the higher is the firm's after tax value.

Hypothesis (1) assumes an interaction between tax avoidance and corporate governance, whereby corporate governance is assumed as a means for shareholders to monitor the tax avoidance activities of managers.

Delaware corporate law is the undisputed market leader in the corporate charter business (Dyreng, Lindsey & Thornock, 2013; Barzuza, 2012). Delaware is also popular for granting corporate tax deductions, which have earned it the title of a tax haven. One may wonder whether Delaware corporate law is chosen for the reason of receiving tax benefits. Other states, for example Nevada or Wyoming, also offer ample possibilities for corporate tax avoidance and have tried in recent years to become more active in the charter business.

The charter competition debate covers whether competition between corporate laws leads to a race to the top or to the bottom. More precisely, the question is whether the incorporation in Delaware leads to an increase in after-tax firm value (Daines, 2001; Bebchuk, Cohen & Ferrell, 2002). A race to the top might occur because Delaware

corporate law provides firms a governance structure allowing shareholders to closely monitor managers' tax avoidance activities. But the opposite might also be true: Delaware corporate law allows managers to more easily divert profits from shareholders. As a result, managers may opportunistically support incorporation into Delaware corporate law. Therefore, testing explicitly for the race to the top hypothesis, leads to our second hypothesis:

> (H2) Using Tobin's q as an estimate of the after-tax firm value, Delaware firms have a significantly higher after-tax firm value than similar firms incorporated elsewhere.

Hypothesis (2) allows us to assess whether the parallel competition of corporate law and state corporate income taxation between US states leads to a race to the top or to the bottom. This answers the question of Kane and Rock (2008), on whether the parallel choice of corporate law and corporate tax law leads to a legal mismatch, resulting in severe agency problems, or whether market forces result in legal choices which mitigate agency conflicts and lead ultimately to value creation.

3. Measuring firm value, corporate governance and corporate tax avoidance

The data sample contains all firms from the S&P 500 over the period January 1992 to December 2012. In general, we had to remove firms for which no data was available.

The used data is drawn from Wharton Research Data Service (WRDS). Specifically, financial accounting data are from CompuStat North America database (including Company Financial and Director Compensation), data on salaries of the boards of

directors are from Execucomp database (part of the CompuStat North America database), data on institutional ownership of firms are from Thomson Reuters Institutional (13f) Holdings, and governance and directors data are from the RiskMetrics Governance and Directors databases (formerly called IRRC, or Investor Responsibility Research Center). Merging these variables – considering also missing data of used variables – leads to a dataset with 1,932 observations at the firm-year level with 285 firms. The variables are described in detail below as well as in table 2. The corresponding descriptive statistics are reported in the following table 1. In general, the descriptive statistics are similar to the statistics of Desai and Dharmapala (2009).

[Insert Table 1]

In order to test the hypotheses, we build on the extensive literature in corporate finance on the determinants and measurement of firm value. We follow Desai and Dharmapala (2009) and employ Tobin`s *q* (TBQ_{it}) to measure the firm value.

In addition to drawing on financial statement data, our analysis requires two measures of firm governance. The first measure of governance ($1/GI_{it}$) is the inverse of the index constructed by Gompers, Ishii and Metrick (2003). Due to the fact that data regarding this index is only available until 2007, we expanded the variable ($1/GI(exp)_{it}$) for years after 2007 by using 10 governance items (for details see table 2 in the appendix). As the original Gompers Index consists of 24 items, we had to scale our findings as follows: The respective result times 10 divided by 24. Using an incidence of 24 governance rules, the “Governance Index” is a proxy for the level of shareholder rights and contains to a large part antitakeover provisions (see for details Gompers, Ishii & Metrick, 2003).

Additionally, as a second measure of governance, we used the fraction of the firm's shares owned by institutional investors. This fraction is averaged over each firm-year. The fraction is reported quarterly.

The basic idea underlying this proxy is that institutional investors have greater incentives and a larger capacity to monitor managerial performance. Therefore, the higher the fraction of institutional investors is, the greater the scrutiny to which managerial actions are subjected, and therefore the smaller the agency problems between managers and shareholders (Desai & Dharmapala, 2009). This captures a different aspect of governance than the first measure captures.

Given efforts to obscure income, tax avoidance is difficult to measure. Therefore, we adopt the indirect approach according to Desai and Dharmapala (2009). We construct a measure of corporate tax avoidance that takes, as its starting point, the gap between financial and taxable income – the so-called book-tax-gap. In the regressions reported below, $BTG(s)_{it}$ is used as a proxy for tax avoidance activities.

In addition, since tax returns are confidential, the reported income to tax authorities cannot be observed directly. It must be inferred using financial accounting data, as described for example in Manzon and Plesko (2002) and used by Desai and Dharmapala (2009). In our paper we follow the approach of Desai and Dharmapala (2009).

Given the inferred value of the firm's taxable income, the book-tax-gap can be estimated by simply subtracting inferred taxable federal income from the firm's reported pretax (domestic) income. Furthermore, the US federal corporate tax rate was exactly calculated based on the "Joint Committee On Taxation" (https://www.jct.gov/publications.html?func=startdownandid=4363). In contrast,

Desai (2009) used a flat US federal corporate tax rate of 30%. In order to control for differences in firm scale, and because the dependent variable is deflated by the book value of assets, the inferred book-to-tax-gap was also scaled by the book value of assets (total assets). However, due to limitations associated with inferring taxable income, it would be reasonable to implement a validation check of the book-to-tax-gap as a measure of corporate tax sheltering activity (see, for example, Graham & Tucker, 2006; Desai & Dharmapala, 2009). Unfortunately, such a validation check is not available due to the non-availability of tax shelter litigation data. Furthermore, it seems to not be necessary due to the similarities in the approach of Desai and Dharmapala (2009) and their positive (test) results.

Since the book-tax-gap does not necessarily reflect corporate tax avoidance activity, any measure of tax avoidance must normally control for other factors. In particular, the overreporting of financial income (so-called "earnings management") may contribute to the measured book-tax gap. Due to this fact, we adjusted for earnings management with an accruals proxy ($TA(s)_{it}$) which isolates the component of the gap due to tax avoidance. Given the confidentiality of tax returns, the procedure outlined above yields – according to the relevant literature – the best measure of corporate tax avoidance obtained using publicly available data. Moreover, similar to Desai and Dharmapala (2009), we used the same control variables (e.g. tax loss carry forwards to capture the incentives from engaging in tax avoidance; foreign income to measure the incentives for tax avoidance which may be influenced by foreign activity; current debt for the size of the tax shield; research and development expenditures as proxy for changes in intangibles that affect TBQ but only partly the book value; value of stock option grants to executives as a determinant of the firm value, presumably through incentive alignment; and volatility as a risk measure).

Additionally, we consider an indicator variable DW_i for incorporation in Delaware (indicator for incorporation in Delaware (=1), otherwise (=0)), in order to test whether the effect is higher for firms incorporated in Delaware than for firms incorporated in other states. All applied variables including the respective definitions and used databases are mentioned in table 2 in the appendix.

4. Research design, results and robustness analysis

4.1 Research design and results

The first main hypothesis of the paper concerns the interaction of governance and tax avoidance. This is addressed using the following two specifications (model 1 and 2):

$$\mathbf{TBQ_{it} = \beta_1 BTG(s)_{it} + \beta_2 1/GI_{it} + \beta_3 DW_i + X_{it}\vec{\beta} + \mu_i + \varepsilon_t + \upsilon_{it}\ (Model\ 1)}$$

where the variables $BTG(s)_{it}$ (book-tax gap scaled), $1/GI_{it}$ (Reciprocal Governance Index), and DW_i (indicator for incorporation in Delaware (=1), otherwise (=0)) are as defined above. μ_i and ε_t are firm and year fixed effects, and ν_{it} is the error term, whereby all regressions reported in this paper use both firm and year fixed effects. X_{it} is a vector consisting of control variables.

$$\mathbf{TBQ_{it} = \beta_1 1/GI_{it} BTG(s)_{it} + \beta_2 BTG(s)_{it} + \beta_3 1/GI_{it} + \beta_4 DW_i + X_{it}\vec{\beta} + \mu_i + \varepsilon_t + \upsilon_{it}\ (Model\ 2)}$$

In model 2 variables $\mathbf{BTG(s)_{it} \cdot 1/GI_{it}}$ are combined in order to account for the effect of the interaction between governance and tax avoidance on the after-tax firm

value. Furthermore, we divided the sample into Delaware and Non-Delaware firms and tested the same effect using model 2.

Concerning panel data, two assumptions can be made: (1) the random-effects assumption states that the individual specific effects are uncorrelated with the independent variables. (2) The fixed-effect assumption states, in the opposite, that the individual specific effects are correlated with the independent variables (see Hausman & Taylor, 1981). Accordingly, we impose time independent effects for each entity that is possibly correlated with the regressors, which allow us to control for unobserved heterogeneity. More broadly speaking, this approach refers to Daine's insight (2001) that Tobin's q is likely to be affected by unobserved firm heterogeneity.

To determine whether the data contained fixed or random effects, we tested the panel regressions against an unweighted ordinary least squares (OLS) estimation. For the random effects model, we conducted a Lagrange Multiplier test (Green, 2012). For the fixed effects model, we conducted a simple F-test. Subsequently, we used the Hausman-Wu test to verify that the fixed effects model dominates the random effects model.

Moreover, we tested the residuals for autocorrelation within the random effects model. Therefore, we used a modified Durbin-Watson test according to Bhargava et al. (1982) in association with Baltagi et al. (2003). For the test of heteroscedasticity, we conducted a robust Lagrange Multiplier test according to Montes-Rojas and Escudero (2010) in the random effects model as well as an adjusted Breusch-Pagan-test according to Juhl and Sosa-Escudero (2014) in the fixed-effects model. The former test was necessary within the random effects model, because heteroscedasticity

existed from the different error terms for the different firms within the covariance matrix, the latter to account for the fixed effects.

To address the autocorrelation as well as the heteroscedasticity, we used so-called Rogers robust estimators for the standard errors. According to Petersen (2009), this estimator is especially appropriate in the case of firm effects given here.

In order to test for endogeneity, we followed Green (2012) by applying an instrumental variable approach. As instrumental variables we used lagged variables and tested the endogeneity with the help of a Hausman specification test. Here, we "killed two birds with one stone" due to the fact that an instrumental variable approach is also inevitable, because some independent variables measurement errors might occur. We used as instrumental variables lagged $\mathbf{BTG(s)_{it} \cdot 1/GI_{it}}$, and according to Desai and Dharmapala (2009) Check-the-box (CTB) variables (see also section 4).

Finally, yet most importantly, we had to test, if $\mathbf{BTG(s)_{it} \cdot 1/GI_{it}}$ is more pronounced in Delaware than in other states. Therefore, we implemented two approaches. Firstly, we ran model 2 separately for Delaware and Non-Delaware firms. Secondly, we split the set by including slope dummy variables DW and $\overline{\mathbf{DW}}$ for the regression coefficient of $\mathbf{BTG(s)_{it} \cdot 1/GI_{it}}$:

$$\mathbf{TBQ_{it} = \beta_1 1/GI_{it} BTG(s)_{it} DW_i + \beta_2 1/GI_{it} BTG(s)_{it} \overline{DW}_i + X_{it}\vec{\beta} + \mu_i + \varepsilon_t + \upsilon_{it}} \ \textbf{(Model 3)}$$

This gives us a hint that the effect is higher in Delaware than in Non-Delaware States. Because this effect is the crucial point of our analysis, we employed two

different tests. For these tests we had to split up model 3 into a Delaware and Non-Delaware model, leading to two equations.

$$\mathbf{TBQ_{it}} = \boldsymbol{\beta_1 1/GI_{it} BTG(s)_{it} DW_i} + \mathbf{X_{it}}\vec{\boldsymbol{\beta}} + \boldsymbol{\mu_i} + \boldsymbol{\varepsilon_t} + \boldsymbol{\upsilon_{it}} \ (\mathbf{Model\ 3a})$$

$$\mathbf{TBQ_{it}} = \boldsymbol{\beta_1 1/GI_{it} BTG(s)_{it}}\overline{\mathbf{DW_i}} + \mathbf{X_{it}}\vec{\boldsymbol{\beta}} + \boldsymbol{\mu_i} + \boldsymbol{\varepsilon_t} + \boldsymbol{\upsilon_{it}} \ (\mathbf{Model\ 3b})$$

Due to the fact that these equations are (partially) non-nested linear models, we could apply the J- and P-test according to Davidson and McKinnon (1981) while using Rogers robust estimators of the standard errors. Firstly, for both tests we independently estimated model 3a and 3b. Secondly, we extended the regression equation model 3b by the estimated value of model 3a leading to model 4:

$$\mathbf{TBQ_{it}} = \boldsymbol{\alpha}\left(\widetilde{\boldsymbol{\beta_1}}\mathbf{1/GI_{it} BTG(s)_{it} DW_i}\right) + (\mathbf{1}-\boldsymbol{\alpha})\boldsymbol{\beta_2 1/GI_{it} BTG(s)_{it}}\overline{\mathbf{DW_i}} + \mathbf{X_{it}}\vec{\boldsymbol{\beta}} + \boldsymbol{\mu_i} + \boldsymbol{\varepsilon_t} + \boldsymbol{\upsilon_{it}} \ (\mathbf{Model\ 4})$$

With that we tested the significance of the α coefficient of the extension (J-test). Furthermore, we repeated the procedure for the Non-Delaware States starting with model 3b.

Within the P-test, the second step was to take the residuals of the first regression models 3a and 3b as dependent variables and the differences between both models as independent variable. Therefore, we could test if the model 3a has explanatory power for the residuals of model 3b and vice versa.

$$\mathbf{TBQ_{it}} - \widetilde{\mathbf{TBQ_{it,\overline{DW}}}} = \boldsymbol{\gamma}\left(\widetilde{\mathbf{TBQ_{it,\overline{DW}}}} - \widetilde{\mathbf{TBQ_{it,DW}}}\right), \mathbf{TBQ_{it}} - \widetilde{\mathbf{TBQ_{it,DW}}} = \boldsymbol{\gamma}\left(\widetilde{\mathbf{TBQ_{it,DW}}} - \widetilde{\mathbf{TBQ_{it,\overline{DW}}}}\right) \ (\mathbf{Model\ 5})$$

The main results for the total timeframe January 1992 to December 2012 are summarized in table 3.

[Insert Table 3]

The main result is (see table 3) that the governance variable ($1/GI_{it}$) as well as the tax avoidance variable ($BTG(s)_{it}$) are significant (see model 1 in table 3). $BTG(s)_{it}$ is significant at the level of 1% as well as $1/GI_{it}$ for the whole sample of 285 firms. Furthermore, we received exactly the same effects for all control variables as Desai and Dharmapala (2009), except for the control variable $\ln(SALES)_{it}$. Against the background that our sample consists of huge companies (S&P 500) and therefore the mean (75.13 vs. 3.58 millions of $ according to Desai and Dharmapala, 2009) of the variable is much higher compared to Desai and Dharmapala (2009) the $\ln(SALES)_{it}$ result is to be expected. Overall, we obtained relatively high R-squares (in all models about 70%), except for model 5 (round about 60%). All in all, there is a (absolute) Delaware effect (according to the mean of TBQ_{it}) referring to the whole time period (1992-2012).

The interaction variable $\mathbf{BTG(s)_{it} \cdot 1/GI_{it}}$ is also highly significant at the level of 1% for the whole sample (see model 2 (interacting) in table 3). Moreover, the governance variable ($1/GI_{it}$) and the tax avoidance variable ($BTG(s)_{it}$) are highly significant at a level of 1%. Nevertheless, only the interaction variable $\mathbf{BTG(s)_{it} \cdot 1/GI_{it}}$ and the tax avoidance variable ($BTG(s)_{it}$) are highly significant (at a level of 1%) for firms incorporated in Delaware (see model 2 (DW) in table 3); strongly supporting our hypothesis H2. In contrast to the findings concerning Delaware firms, the results regarding these variables for the subsample of Non-Delaware firms are not significant. Only the governance variable ($1/GI_{it}$) is highly significant at a level of 1%.

Again, these findings stress the highly significant results of the subsample of Delaware firms. Furthermore, hypothesis H1 is also strongly supported for the whole sample. Nevertheless, by differentiating between Delaware and Non-Delaware firms it can be seen that hypothesis H1 is only supported for Delaware firms. This is also underpinned by the J-test as well as the P-test. Here, both tests show that $\mathbf{BTG(s)_{it}} \cdot \mathbf{1/GI_{it}} \cdot \mathbf{DW_i}$ can better explain Tobin's *q* than the variable for Non-Delaware firms.

Last but not least, it is very interesting that the governance variable ($1/GI_{it}$) is significant for Non-Delaware firms, whereas aside from the interacting term only the tax avoidance variable ($BTG(s)_{it}$) is significant at a level of 1% for Delaware firms.

This means that the interaction between governance and tax avoidance is much stronger in Delaware than it is in other US States ("race to the top"), although some of the other states have clearly better tax systems (with better opportunities for firms to avoid taxes). In addition, this underlines that not only the tax effect affects the after-tax firm value; in particular, the interaction between governance and tax avoidance must be taken into consideration. In more detail, referring to the complete time frame (1992-2012) there is a (absolute) Delaware effect observable. In other words, Tobin`s *q* (TBQ_{it}) is absolutely higher for firms which are incorporated in Delaware. Nevertheless, this effect has gone for years after 1999 (see model 3 (until 1999 and after 1999) in table 8). Moreover, taking our main results (see table 3) into consideration, it is apparent that only Delaware firms are able to use tax avoiding strategies and at the same time create value for the shareholders. After 1999, only the interaction between governance and tax avoidance has a positive and significant influence on Tobin`s *q* (TBQ_{it}), albeit a clear and significant (absolute) Delaware effect is no longer observable. To this extent, our results confirm the findings by

Daines (2001) and more recently by Dyreng, Lindsey and Thornock (2013). However, these studies did not account for the interaction between corporate governance and corporate tax avoidance.

In contrast to their method, we applied two tests, the lagged variables and the check-the-box approach. We therefore altered model 3 in two ways:

$$\mathbf{TBQ_{it}} = \boldsymbol{\beta_1 1/GI_{it-1} BTG(s)_{it-1} DW_i} + \boldsymbol{\beta_2 1/GI_{it-1} BTG(s)_{it-1} \overline{DW_i}} + \mathbf{X_{it}\vec{\beta}} + \boldsymbol{\mu_i} + \boldsymbol{\varepsilon_t} + \boldsymbol{\upsilon_{it}} \ (\mathbf{Model\ 3(lag)})$$

and

$$\mathbf{TBQ_{it}} = \boldsymbol{\beta_1 1/GI_{it} InsBTG(s)_{it} DW_i} + \boldsymbol{\beta_2 1/GI_{it} InsBTG(s)_{it} \overline{DW_i}} + \quad \mathbf{X_{it}\vec{\beta}} + \boldsymbol{\mu_i} + \boldsymbol{\varepsilon_t} + \boldsymbol{\upsilon_{it}} \ (\mathbf{Model\ 3(CTB)})$$

whereby

$$\mathbf{InsBTG(s)_{it}} = \boldsymbol{\beta_1 TLCF_{it} PCTB} + \boldsymbol{\beta_2 LCT_{it} PCTB} + \boldsymbol{\beta_3 DLTT_{it} PCTB} + \boldsymbol{\beta_4 InstIO_{it} TLCF_{it} PCTB} + \boldsymbol{\beta_5 InstIO_{it} LCT_{it} PCTB} + \boldsymbol{\beta_6 InstIO_{it} DLTT_{it} PCTB} + \mathbf{X_{it}\vec{\beta}} + \boldsymbol{\mu_i} + \boldsymbol{\varepsilon_t} + \boldsymbol{\upsilon_{it}}$$

and **PCTB** is a dummy variable equaling one in years after the introduction of the CTB rule.

Similar to Desai and Dharmapala (2009) we could not find endogeneity, meaning that the interaction between governance and tax avoidance is an explanatory factor for the after-tax firm value and not vice versa. This supports the Hausman specification test by comparing the original model with the instrumental model (see table 4 in the appendix). Considering these results, it is necessary to take the interactions into consideration with regard to the after-tax firm value.

4.2 Robustness analysis

In order to control for a different definition of Tobin's *q*, we performed the same regression analysis using Tobin's *q*, but we excluded deferred tax expense ($TBQ(ex)_{it}$). This alternative measure led to consistent results, which strongly supports our hypotheses (see table 7 in the appendix).

The results are also robust (for all samples) when the governance variable $1/GI_{it}$ is replaced by the governance variable $1/GI(exp)_{it}$ – see table 6 in the appendix. In contrast to the employment of the governance variables ($1/GI_{it}$ or $1/GI(exp)_{it}$), the use of the governance variable Institutional Ownership (InstIO) leads to different results (see table 5 in the appendix). For Delaware and Non-Delaware firms the variable is not significant. Nevertheless, the results for Delaware firms are the same. However, for Non-Delaware firms the governance variable is no longer significant. Regarding the whole sample the significance of the variables declines (see model 2 in table 5 in the appendix). This probably means that the quality of monitoring is less important than the level of shareholder rights, which is measured by the variables $1/GI_{it}$ or $1/GI(exp)_{it}$, respectively. Nevertheless, taking model 3 (see table 5 in the appendix) into consideration, the effect (5.339 DW vs. 0.212 Non-DW) is generally the same compared to the use of the variables $1/GI_{it}$ and $1/GI(exp)_{it}$.

Overall, the main result is robust to the reported (as well as unreported) inclusion of additional variables. Moreover, we divided the total timeframe into several sub-periods. We performed a so-called regime switching model according to Hamilton (1988; 1989; 1994; 2005), in order to identify normal and turbulent timeframes, because it could be that our results are only valid in times with high or low volatility of stock prices. The change from a normal to a turbulent timeframe is often accompanied by a break in the corresponding time series – triggered, for example, by

a financial crisis or by political changes (for an extensive overview see Hamilton, 1988; Jeanne & Masson, 2000; Cerra & Saxena, 2003).

We followed Hamilton (1989, 1994) by using the maximum likelihood estimation method for deriving the transition matrix P*, which indicates the time series switches from state *i* to state *j* (normal or turbulent market periods). For calibrating the regime switching model we used a database of weekly closing prices at the New York Stock Exchange from January 1998 to December 2010. We chose weekly instead of daily closing prices, because the weekly closing prices had lower volatility.

By applying calculated smoothed probabilities, we divided the total timeframe into six sub-periods. Hamilton (1989) established that this approach allows very clear predictions for the probability of being in a normal or turbulent period. According to Hamilton, this means only a few smoothed probabilities should range between 0.3 and 0.7, and in most cases the algorithm correctly identifies the true state (for a critical discussion on different algorithms see, Hamilton, 1989).

Accordingly, in the second sub-period we treated the occurring two short periods with a high smoothed probability as outliers and considered them to be within a normal time. In the third and fifth sub-period we faced times switching from turbulent to normal and back to turbulent with high frequency. We applied Hamilton's (1989) decision criteria and demanded an expected smoothed probability for a turbulent timeframe, accompanied by an approximate Gauss test at a 95% significance level.

As a result we obtained five sub-periods: 1992 to 2001 as a normal period; 2002 as a turbulent period; 2003 to 2007 as a normal period; 2008 to 2009 as a turbulent period; 2010 to 2012 as a normal period. Even within these different time periods, our results

do not significantly change (see table 8 in the appendix). Furthermore, we applied model 3 to the timeframes 1992 to 1999 and 2000 to 2012 in order to test a possible declining Delaware effect (see model 3 (until and after 1999) in table 8 in the appendix). Again, after 1999, only the interaction between governance and tax avoidance has a positive and significant influence on Tobin`s *q* (TBQ_{it}), albeit a clear and significant (absolute) Delaware effect is no longer observable. To this extent, our results confirm the findings by Daines (2001) and more recently by Dyreng, Lindsey and Thornock (2013).

To sum up, there is a strong interaction between corporate governance and corporate tax evasion, and incorporation in Delaware outperforms the incorporation in other states with regard to after-tax firm value.

5 Discussion

This paper contributes to the literature on competition between corporate laws ("Delaware story") in a specific way: It aligns corporate governance with corporate taxation in an agency framework. More specifically, it explores the interrelation between the choice of corporate law and state corporate income taxation when firms make an incorporation decision.

Even though incorporation and corporate taxation touch upon the most important decisions that a firm must make, the economic analysis of these issues is, to a large degree, compartmentalized. There is a vast amount of literature on competition between corporate laws on one hand, and a large amount of literature on corporate tax evasion on the other hand. The reason for this separation is twofold. Obviously, in the past there was no urgent need to delve into the relation between charter competition

and state corporate income taxation, for the simple reason that there was a high degree of state corporate income tax harmonization between the US states. It did not matter much, from a corporate taxation point of view, which state a firm incorporated in, because the Uniform Division of Income Practices Act (UDITPA) led to a level playing field. Meanwhile, states have given up the UDITPA-consensus and state corporate income tax competition has unfolded (Kane & Rock, 2008).

The second reason for making no connection between competition between corporate laws and corporate taxation is that it was until recently simply assumed that management's tax avoidance activities would always be in the interest of shareholders, thus leading to higher after-tax firm value. This view has only changed in recent years, triggered by a series of articles concerning the agency problem of tax avoidance (see, for example, Desai & Dharmapala 2009; Hanlon & Slemrod 2009). There, it is argued that tax avoidance is only in the interest of shareholders when appropriate corporate governance mechanisms make sure management does not divert the evaded tax money into its own pockets.

The core idea of the agency view of tax avoidance is that the choice of corporate law largely determines the quality of corporate governance, or more specifically, the governance tools with which shareholders can prevent diversion of money from tax avoidance. Therefore, a logical question is whether there is indeed an interaction between the choice of corporate law (incorporation) and corporate tax avoidance. We tested our hypothesis (H1) in a regression analysis, where we found strong support for the interaction between governance variables and the corporate tax avoidance variable. The more provisions for corporate tax planning granted by states and the more targeted a firm's corporate governance, the higher the firm's after tax value.

This result is – amongst other things – robust to different measures of the after-tax firm value (Tobin's *q* including and excluding deferred taxes) as well as to normal and turbulent timeframes in a so-called regime switching model. It can be concluded that shareholders are indeed sensitive to the "optimal mix" of tax planning and corporate governance. However, this result does not suggest the interplay of competition between corporate laws and state corporate income taxation already provides the best available solution to hinder management from diverting avoided tax money. It might be, for example, that a firm's value would be even higher, if state corporate income taxation would be abolished and an even stricter regime of federal corporate taxation was applied. This might also include the alignment of financial accounting and tax accounting rules and require tax accounting figures to be publicly published. This would provide highly standardized and rigorous financial information for financial markets. Papers by Desai and Dharmapala (2009) and Desai, Dyck and Zingales (2007) as well as a testimony by Desai (2007) at a Senate Hearing on "Executive stock options: Should the Internal Revenue Service and Stockholders be given different information?" point in that direction.

With hypothesis 2 (H2), we extend our discussion to the question of if specific incorporation in Delaware is beneficial for shareholders. This is an interesting question, because Delaware is not only home to most publicly listed corporations in the United States, but it is also frequently named a tax haven. Thus, incorporation in Delaware might be mostly driven by managers seeking a tax haven, where they can relatively easily divert saved money from tax evasion into their own pockets. However, our data do not support the "race to the bottom" hypothesis in an extended form. On the contrary, firms incorporated in Delaware have a higher after-tax firm value than similar firms incorporated elsewhere. Insofar our findings support the

findings by Daines (2001) that incorporation in Delaware results in a higher after-tax firm value. Likewise, from the angle of tax avoidance, Dyreng, Lindsey and Thornock (2013) show that incorporating subsidiaries in Delaware improves after-tax firm value. However, both studies have not dealt explicitly with the interaction of corporate tax avoidance and corporate governance.

Our data indicate a significant interaction between corporate governance and tax avoidance when a firm incorporates in Delaware. Obviously, tax and corporate governance issues also come into play when an incorporation decision is made. Moreover, incorporation in Delaware, in combination with tax avoiding strategies, raises the after-tax firm value more than the incorporation in any other state. This result is again robust against various checks. Incorporating in Delaware allows for effectively avoiding corporate taxation on one hand, and restraining managers from diverting saved tax money on the other hand. It can therefore be concluded that the legal product Delaware offers today has been successfully complemented by a corporate tax component. One might interpret that as Delaware's unique capacity to come up with a steady stream of legal product innovations (Romano, 1993). This becomes intuitively clear, if one considers the gradual erosion of the Uniform Division of Income Practices Act (UDITPA) over the last twenty years, which forced US States to reconsider their strategy towards corporate taxation (Huddleston & Sicilian, 2009) and to start engaging in corporate tax competition (Kane and Rock, 2008; Hildreth, Murray & Sjoquist, 2005).

However, even though the quality of Delaware corporate law might be high and the interaction of Delaware corporate law with state corporate tax law is accompanied by an improving after-tax firm value, the impact on total social welfare remains

ambiguous. While a narrow perspective on the effect of competition between corporate laws on after-tax firm value suggests that ultimately an increasing after-tax firm value adds to a society's welfare (Daines, 2001), taking the tax component into consideration blurs that result (Dyreng, Lindsey & Thornock, 2013). Delaware's corporate law enables firms to lower their state corporate income tax at the expense of other states. Such an erosion of the tax base can be interpreted as welfare reducing, because it may result in an underprovision of local public goods and a distorted tax system in which immobile factors (labor) bear a disproportional tax burden, while mobile factors (capital) get away without taxation (Wildasin, 1988; Chirinko & Wilson, 2013). However, if one takes into account that local politicians and bureaucrats might be more interested in their own well-being than in public welfare (Brennan & Buchanan, 1980; Oates, 1999), state corporate income competition might be conceived as beneficial, because it would constrain local governments from welfare distorting expenditures. As a result, the welfare effects remain unclear, although shareholders appreciate Delaware's combination of corporate governance and the possibilities to deduct taxes.

On a more general level, our results indicate a new aspect in the debate on charter competition. The legal product that Delaware provides is not only focused on corporate governance issues (corporate law), but also interacts with other legal rules, namely tax law. In order to get a clear picture of the workability of US charter competition, one must therefore delve into the complex interaction between corporate law and other legal rules. The uncovering of interaction effects is not only affected by the availability of appropriate theoretical tools, like the agency view of tax avoidance, but also by historical and situational contexts. State corporate income taxation did not play a decisive role for incorporation decisions as long as there was a high degree of

tax coordination between the states (Uniform Division of Income Practices Act). Only when states gave up the UDITPA-consensus did the interaction between corporate law and corporate tax law become a decisive issue for incorporation.

6. Conclusion

In this contribution, we put our focus on the United States. For our purposes, the United States serve as a kind of laboratory, where interaction between corporate governance and corporate tax avoidance can be studied in great detail. But that does not mean that interaction between corporate governance and corporate tax avoidance exists only in the United States. This interaction exists *sui generis*, but in the US the specific legal context makes the interaction especially apparent.

Yet, it is not obvious which legal framework yields the highest future returns for society as a whole. If one considers Weingast's "fundamental political dilemma of an economic system", where "a government strong enough to protect property rights and enforce contracts is also strong enough to confiscate the wealth of its citizens" (1995, p 1), then there is clearly a tension between the government’s good intention to prevent diversion by management and the temptation of government to abuse its power to tax for self-interested reasons. Therefore, future research may delve into the intriguing question, whether the parallel competition of corporate income taxation and corporate laws is not only profitable for shareholders, but also for society as a whole. Interjurisdictional competition may hinder governments to produce inefficiently high tax burdens and bind governments more tightly to the fiscal preferences of citizens.

Another research avenue consists of replication and refinement of the US results. One may consider studying other countries, for example Cyprus and the Netherlands.

Both countries have been considered as tax havens (Gravelle, 2009). However, both countries are certainly very different with regard to the quality of corporate governance (RiskMetrics Group, 2009). Also, while the Netherlands have emerged from the financial crisis so far relatively unscathed, Cyprus needed a bail-out, in 2013 not least because of attracting financial business that operated beyond the perimeter of financial regulation. The application of the agency view of tax avoidance could be an analytical tool to receive deeper insight into the complex interrelation between corporate governance, tax avoidance and public welfare in these specific country cases.

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Appendix

Table 1 – Descriptive statistics

	Minimum	Mean	Median	Maximum	Standard Deviation	Number of Observations
TBQ	0.54	2.50	1.92	32.21	1.88	1,932
TBQ(ex)	0.44	2.45	1.88	32.19	1.85	1,751
1/GI	0.06	0.11	0.10	0.33	0.04	1,751
1/GI(exp)	0.04	0.11	0.10	0.33	0.04	1,768
InstIO	0.00	0.65	0.67	1.25	0.18	1,932
BTG(s)	-2.66	0.00	0.01	1.05	0.09	1,932
ln(SALES)	13.75	17.39	17.38	22.00	1.22	1,932
SALES(g)	-0.36	0.12	0.08	2.47	0.20	1,932
RDIP(s)	-0.31	0.00	0.00	0.00	0.02	1,932
CAPEX(s)	0.00	0.06	0.05	0.56	0.05	1,932
TLCF(s)	0.00	0.06	0.00	2.98	0.21	1,932
TXDB(s)	0.00	0.03	0.02	0.53	0.04	1,932
TA(s)	-0.51	-0.05	-0.05	2.37	0.09	1,932
PIFO(s)	-0.30	0.04	0.02	0.35	0.05	1,932
LCT(s)	0.02	0.25	0.23	0.86	0.12	1,932
DLTT(s)	0.00	0.17	0.17	1.20	0.13	1,932
VOLA	0.12	0.38	0.32	2.42	0.22	1,932
OPTG(s)	0.00	0.42	0.43	0.99	0.27	1,932
DW	0.00	0.60	1.00	1.00	0.49	1,932

Note: The table depicts the descriptive statistics of the applied variables. The variables are defined according to table 2. Due to the restrictions of the data set the number of observations differs for TBQ, TBQ(ex), 1/GI and 1/GI(exp).

Table 2 – Applied variables

Variables	Operationalization
Tobin`s q (including deferred tax expense)	TBQ - according to Desai (2009, footnote 4) Definiton: (Total Assets + Market Value – Total Common/Ordinary Equity) / Total Assets Used databases: Compustat North America – Fundamentals Annual and Execucomp / Company Financial and Director Compensation
Tobin`s q (excluding deferred tax expense)	TBQ(ex) - according to Desai (2009, footnote 4) Defintion: (Total Assets + Market Value – Total Common/Ordinary Equity – Deferred Taxes Balance Sheet) / Total Assets Used databases: Compustat North America – Fundamentals Annual and Execucomp / Company Financial and Director Compensation
Reciprocal Governance Index	1/GI Used database: RiskMetrics Governance Legacy
Reciprocal Governance Index (expanded)	1/GI(exp) – For the Years after 2007 (The GI-Index is only available until 2007.) Used database: RiskMetrics Governance Note: The calculation is based on the following 10 items (according to the exact definitions in the database; for details see Gompers, Ishii and Metrick (2003, Appendix A)): BLANKCHECK, CBOARD, CUMVOTE, FAIRPRICE, GPARACHUTE, LABYLW, LACHTR, LSPMT, LWCNST, PPILL As the original Gompers Index consists of 24 items, we had to scale our findings as follows: Respective result times 10 divided by 24.
Institutional Ownership (fraction)	InstIO Used database: Thomson Reuters Institutional (13f) Holdings
Book-tax Gap (scaled)	BTG(s) – according to Desai (2009, footnote 7) Definiton: (Domestic Pretax Income – Federal Income Taxes / U.S. Federal Corporate Tax Rate) / Total Assets Used databases: Compustat North America – Fundamentals Annual Note: The U.S. federal coprorate tax rate was calculated on the basis of the Joint Committee On Taxation exatcly(https://www.jct.gov/publications.html?func=startdownandid=4363). In contrast, Desai (2009) used a flat U.S. federal coprorate tax rate of 30%.
Napierian Logarithm of Sales	ln(SALES) Used database:Compustat North America – Fundamentals Annual
Sales Growth	SALES(g) – Average of the last 5 Years Growth in Sales Used database: Execucomp / Company Financial and Director Compensation
In Process RandD Expense (scaled)	RDIP(s) – scaled by Total Assets Used database: Compustat North America – Fundamentals Annual
Capital Expenditure (scaled)	CAPEX(s) – scaled by Total Assets Used database: Compustat North America – Fundamentals Annual
Tax Loss Carry Forward (scaled)	TLCF(s) – scaled by Total Assets Used database: Compustat North America – Fundamentals Annual
Deferred Taxes Balance Sheet (scaled)	TXDB(s) – scaled by Total Assets Used database: Compustat North America – Fundamentals Annual
Total Accruals (scaled)	TA(s) – according to Desai (2009, footnote 9) Defintion: TA(i1)=(ACT(i1)-ACT(i1-1)-(LCT(i1)-LCT(i1-1))-(CHE(i1)-CHE(i1-1))+DLC(i1)-DLC(i1-1)-DPC(i1))/AT(i1-1) with TA = Total Accruals; ACT = Total Current Assets; LCT = Total Current Liabilities; CHE = Cash and Short Term Investments; DLC = Total Debt in Current Liabilities; DPC = Depreciation and Amortization (Cash Flow); i1 = Current Year; i1-1 = The Year Before Used database: Compustat North America – Fundamentals Annual
Pretax Income/Foreign (scaled)	PIFO(s) – scaled by Total Assets Used database: Compustat North America – Fundamentals Annual

Current Liabilities – Total (scaled)	LCT(s) – scaled by Total Assets Used database: Compustat North America – Fundamentals Annual
Long-Term Debt – Total (scaled)	DLTT(s) – scaled by Total Assets Used database: Compustat North America – Fundamentals Annual
Volatility	VOLA Used database: Execucomp / Company Financial and Director Compensation
Option Grants (scaled)	OPTG(s) – according to Desai (2009, footnote 12) Definition: The ratio of the Black-Scholes value of stock option grants to total compensation (i.e., the sum of the value of stock options, salary, and bonus) scaled by total assets. Used database: Execucomp / Company Financial and Director Compensation Note: In contrast to Desai (2009) we also included other compensation.
Indicator (=1) for Incorporation in Delaware, otherwise 0	DW Used database: Compustat North America – Fundamentals Annual

Table 3 – Main results

		Model 1	Model 2 (interacting)	Model 2 (DW)	Model 2 (Non-DW)	Model 3	Model 4	Model 5a (Non-DW)	Model 5b (DW)
Alpha	$\widetilde{\beta_1}\,1/GI_{it}BTG_{it}DW_i$						0.999***		
Beta	BTG(s) 1/GI DW					15.456***			
	BTG(s) 1/GI $\overline{DW}$					-0.524	-0.524		
	BTG(s) 1/GI		29.700***	113.498***	-2.598				
	BTG(s)	1.050***	-2.760***	-12.615***	0.481				
	1/GI	6.780***	6.880***	2.541	11.502***				
	CAPEX(s)	2.110**	2.170**	2.350**	1.726	2.534***	2.534***		
	TXDB(s)	3.560**	3.620**	4.631***	1.575	3.460**	3.460**		
	ln(SALES)	-0.176***	-0.164**	-0.202**	0.116	-0.201***	-0.201***		
	DLTT(s)	-1.110***	-1.210***	-1.580***	-1.515**	-1.256***	-1.256***		
	PIFO(s)	12.900***	12.200***	12.073	8.077***	12.566***	12.566***		
	TLCF(s)	-0.128	-0.144	-0.025	-0.221	-0.186	-0.186		
	RDIP(s)	-3.460*	-3.970**	-2.790**	-8.251**	-4.226**	-4.226**		
	VOLA	-0.729***	-0.702***	-0.790***	-0.684*	-0.605**	-0.605**		
	OPTG(s)	0.999***	1.000***	1.260**	0.748***	1.007***			
	TA(s)	-0.754	-0.710	-1.023	1.633*	-0.605*			
	DW	0.451	0.529						
Gamma	$\widetilde{TBQ_{,\overline{DW}}} - \widetilde{TBQ_{,DW}}$							-52.723***	-11.580
	Number of companies	285	285	169	116	285	285	285	285
	Number of observations	1,751	1,751	1,051	700	1,751	1,751	1,751	1,751
	R^2	69.90%	70.20%	71.56%	72.84%	70.06%	70.06%	58.43%	59.50%
	Durbin Watson	1.600***	1.640***	1.896	1.348***	1.615***	1.615***	1.438***	1.422***
	Hausman-Wu test	223***	279***	360***	93***	257***	257***	19***	0

Note: The dependent variable in columns 1-6 is Tobin's q (TBQ) as defined in table 2. The dependent variable in column 7 and 8 are the residuals of model 3a and b as described in section 4.1 model 5. The sample (over the period 1992–2012) is drawn from databases described in section 3 and is restricted to firm years (1,751 observations – 1,051 DW and 700 Non-DW) where values of all variables are available. The independent variables of model 1-3 with regression coefficients beta are defined as in table 2. The independent variable for model 4 with regression coefficient alpha is the estimated value of model 3a. The independent variable of model 5 with regression coefficient

gamma is the difference between model 3b and 3a (vice versa) according to model 3a and 3b. In the second to last line the modified Durbin Watson statistic is depicted. In the last line the value of the Hausman-Wu test is presented. All specifications include year effects, firm fixed effects as well as a test, whether the data contained fixed effects (positive for all models). Rogers robust standard errors that are clustered at the firm level are applied to determine significance (*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively).

Table 4 – Endogeneity

		Lagged variables			Check-the-box variables		
		Model 1	**Model 2 (interacting)**	**Model 3**	**Model 1**	**Model 2 (interacting)**	**Model 3**
Alpha	$\widetilde{\beta_1}\,1/GI_{it}BTG_{it}DW_i$ (estimated)						
Beta	(Ins)BTG(s) 1/GI DW			16.947***			12.949*
	(Ins)BTG(s) 1/GI $\overline{DW}$			-1.901			0.548
	(Ins)BTG(s) 1/GI		40.091***			58.533***	
	(Ins)BTG(s)	1.162***	-4.027***		-1.838*	-9.933***	
	1/GI	7.195***	6.936***		6.607***	7.540***	
	CAPEX(s)	2.507**	2.529**	2.940***	2.030**	2.003**	2.361**
	TXDB(s)	4.152**	4.528***	3.736**	4.052***	4.714***	3.466**
	ln(SALES)	-0.099	-0.088	-0.126*	-0.181***	-0.178***	-0.215***
	DLTT(s)	-0.985**	-1.093**	-1.094**	-1.071***	-1.130***	-1.190***
	PIFO(s)	13.248***	12.195***	12.761	14.979***	15.346***	12.961***
	TLCF(s)	-0.001	-0.018	-0.124	0.295	0.439*	-0.170
	RDIP(s)	-2.099	-2.605	-2.693**	-1.207	-1.455	-4.255**
	VOLA	-0.599**	-0.590**	-0.615***	-0.803***	-0.849***	-0.654**
	OPTG(s)	1.112***	1.108***	1.141	1.002***	1.007***	1.010***
	TA(s)	-0.829	-0.691	-0.882	-0.116	-0.024	-0.841*
	DW	-1.350	-3.365		0.507	0.403	
Gamma	$\widetilde{TBQ_{,\overline{DW}}} - \widetilde{TBQ_{,DW}}$						
	Number of companies	249	249	249	285	285	285
	Number of observations	1,466	1,466	1,466	1,751	1,751	1,751
	R^2	71.26%	71.69%	71.46%	69.80%	70.14%	69.59%
	Durbin Watson	1.674***	1.730***	1.691***	1.609***	1.689***	1.634***
	Hausman-Wu test	265***	325***	295***	229***	291***	247***
	Hausmann specification test	19	11	17	2,445***	1,810***	0

Note: The dependent variable in all columns is Tobin's q (TBQ) as defined in table 2. The first part (columns 1-3) contains the lagged variables approach, the second part (columns 3-6 the check-the-box approach as described in chapter 4.1. Moreover, the independent variable BTG(s) is replaced by InsBTG(s) as also described in chapter 4.1. The sample (over the period 1992–2012) is drawn from databases described in section 3 and is restricted to firm years (1,466 observations "Lagged variables" – 1,751 "CTB

variables") where values of all variables as well as the lagged values of the non-control variables (lag 1 year) are available. The independent variables of model 1-3 with regression coefficients beta are the instrumental variables (lagged variables) defined as in section 3 and table 2. In the third to last line the modified Durbin Watson statistic is depicted. In the second to last line the value of the Hausman-Wu test is presented. The last line contains the Hausman specification test statistic for endogeneity. All specifications include year effects, firm fixed effects as well as a test, whether the data contained fixed effects (positive for all models). Rogers robust standard errors that are clustered at the firm level are applied to determine significance (*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively).

Table 5 – Robustness checks (1) – independent variable InstIO (Institutional Ownership)

		Model 1	Model 2 (interacting)	Model 2 (DW)	Model 2 (Non-DW)	Model 3	Model 4	Model 5a (Non-DW)	Model 5b (DW)
Alpha	$\widetilde{\beta_1}\,\mathrm{InstIO_{it}BTG_{it}DW_i}$						1.002***		
Beta	BTG(s) InstIO DW					5.339***			
	BTG(s) InstIO $\overline{\mathrm{DW}}$					0.212	0.212		
	BTG(s) InstIO		5.450***	14.470***	-3.242				
	BTG(s)	1.302***	-1.385**	-4.723***	2.274				
	InstIO	0.421*	0.400*	0.297	0.318				
	CAPEX(s)	2.287**	2.151**	2.363**	2.005	2.316**	2.316**		
	TXDB(s)	2.736**	2.302*	2.482*	0.117	2.477*	2.477		
	ln(SALES)	-0.241***	-0.256***	-0.366***	0.101	-0.211***	-0.211***		
	DLTT(s)	-1.172***	-1.082***	-1.029**	-1.770***	-1.219***	-1.219***		
	PIFO(s)	11.302***	11.360***	14.171	5.288***	11.206***	11.206***		
	TLCF(s)	-0.418*	-0.502**	-0.094*	-0.114	-0.360*	-0.360*		
	RDIP(s)	-3.535*	-4.395**	-3.795**	-7.653**	-4.562**	-4.562*		
	VOLA	-0.692***	-0.728***	-0.733***	-0.626*	-0.606**	-0.606**		
	OPTG(s)	1.075***	1.066***	1.257*	0.748***	1.043***	1.043***		
	TA(s)	-0.171	-0.208	-0.702	1.472**	-0.606	-0.606		
	DW	0.769	0.969						
Gamma	$\widetilde{\mathrm{TBQ}_{,\overline{\mathrm{DW}}}} - \widetilde{\mathrm{TBQ}_{,\mathrm{DW}}}$							12.027***	-277.296
	Number of companies	307	307	185	122	307	307	307	307
	Number of observations	1,932	1,932	1,159	773	1,932	1,932	1,932	1,932
	R^2	70.25%	70.45%	71.25%	72.85%	70.69%	70.69%	58.49%	60.96%
	Durbin Watson	1.653***	1.652***	1.709***	1.405***	1.627***	1.627***	1.492***	1.446***
	Hausman-Wu test	296***	320***	235***	114***	281***	281***	14***	1

Note: The dependent variable in columns 1-6 is Tobin's q (TBQ) as defined in table 2. The sample (over the period 1992–2012) is drawn from databases described in section 3 and is restricted to firm years (1,932 observations – 1,159 DW and 773 Non-DW). The independent variables of model 1-3 with regression coefficients beta are defined as in table 2. In detail, the variable 1/GI is replaced by the variable InstIO. Both variables are defined in table 2. The independent variable for model 4 with regression coefficient alpha is the estimated value of model 3a. The independent variable of model 5 with regression coefficient gamma is the difference between model 3b and 3a (vice

versa) according to model 3a and 3b. In the second to last line the modified Durbin Watson statistic is depicted. In the last line the value of the Hausman-Wu test is presented. All specifications include year effects, firm fixed effects as well as a test, whether the data contained fixed effects (positive for all models). Rogers robust standard errors that are clustered at the firm level are applied to determine significance (*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively).

Table 6 – Robustness checks (2) – independent variable GI(exp) (Reciprocal Governance Index expanded)

		Model 1	Model 2 (interacting)	Model 2 (DW)	Model 2 (Non-DW)	Model 3	Model 4	Model 5a (Non-DW)	Model 5b (DW)
Alpha	$\widetilde{\beta_1}\frac{1}{GI_{it}}$ (exp)$BTG_{it}DW_i$						0.998***		
Beta	BTG(s) 1/GI(exp) DW					15.475***			
	BTG(s) 1/GI(exp) $\overline{DW}$					-0.649	-0.649		
	BTG(s) 1/GI(exp)		29.551***	112.993***	-3.012				
	BTG(s)	1.046***	-2.740***	-12.548***	0.606				
	1/GI(exp)	6.662***	6.759***	2.589	11.456***				
	CAPEX(s)	2.094**	2.163**	2.418**	1.719	2.507***	2.507***		
	TXDB(s)	3.534**	3.607**	4.682***	1.592	3.439**	3.439**		
	ln(SALES)	-0.176***	-0.165**	-0.202**	0.113	-0.199***	-0.199***		
	DLTT(s)	-1.120***	-1.221***	-1.580***	-1.530**	-1.273***	-1.273***		
	PIFO(s)	12.847***	12.178***	12.080	8.037***	12.539***	12.539***		
	TLCF(s)	-0.142	-0.157	-0.029	-0.205	-0.195	-0.195		
	RDIP(s)	-3.505*	-4.018**	-2.833**	-8.335**	-4.272**	-4.272**		
	VOLA	-0.705***	-0.677***	-0.759***	-0.703*	-0.579**	-0.579**		
	OPTG(s)	0.990***	0.995***	1.254**	0.741***	0.994***	0.994***		
	TA(s)	-0.725	-0.688	-1.022	1.472*	-0.579*	-0.842*		
	DW	0.446	0.700						
Gamma	$\widetilde{TBQ_{,\overline{DW}}} - \widetilde{TBQ_{,DW}}$							17.741***	-10.040
	Number of companies	295	295	175	120	295	295	295	295
	Number of observations	1,768	1,768	1,063	705	1,768	1,768	1,768	1,768
	R^2	70.02%	70.27%	71.68%	72.80%	70.14%	70.42%	59.00%	59.79%
	Durbin Watson	1.604***	1.642***	1.901	1.347***	1.615***	1.616***	1.436***	1.421***
	Hausman-Wu test	217***	278***	358***	91***	250***	251***	72***	0

Note: The dependent variable in columns 1-6 is Tobin's q (TBQ) as defined in table 2. The sample (over the period 1992–2012) is drawn from databases described in section 3 and is restricted to firm years (1,768 observations – 1,063 DW and 705 Non-DW). The independent variables of model 1-3 with regression coefficients beta are defined as in table 2. In detail, the variable 1/GI is replaced by the variable 1/GI(exp). Both variables are defined in table 2. The independent variable for model 4 with regression coefficient alpha is the estimated value of model 3a. The independent variable of model 5 with regression coefficient gamma is the difference between model 3b and 3a (vice

versa) according to model 3a and 3b. In the second to last line the modified Durbin Watson statistic is depicted. In the last line the value of the Hausman-Wu test is presented. All specifications include year effects, firm fixed effects as well as a test, whether the data contained fixed effects (positive for all models). Rogers robust standard errors that are clustered at the firm level are applied to determine significance (*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively).

Table 7 – Robustness checks (3) – dependent variable TBQ(ex) (Tobin`s q excluding deferred tax expense)

		Model 1	Model 2 (interacting)	Model 2 (DW)	Model 2 (Non-DW)	Model 3	Model 4	Model 5a (Non-DW)	Model 5b (DW)
Alpha	$\widetilde{\beta_1}\,1/GI_{it}BTG_{it}DW_i$						0.999***		
Beta	BTG(s) 1/GI DW					15.456***			
	BTG(s) 1/GI $\overline{DW}$					-0.524	-0.524		
	BTG(s) 1/GI		29.700***	113.498***	-2.598				
	BTG(s)	1.050***	-2.760***	-12.615***	0.481				
	1/GI	6.780***	6.880***	2.541	11.502***				
	CAPEX(s)	2.110**	2.170**	2.350**	1.726	2.534***	2.534***		
	TXDB(s)	2.560*	2.620*	3.631**	0.575	2.460*	2.460*		
	ln(SALES)	-0.176***	-0.164**	-0.202**	0.116	-0.201***	-0.201***		
	DLTT(s)	-1.110***	-1.210***	-1.580***	-1.515**	-1.256***	-1.256***		
	PIFO(s)	12.900***	12.200***	12.073	8.077***	12.566***	12.566***		
	TLCF(s)	-0.128	-0.144	-0.025	-0.221	-0.186	-0.186		
	RDIP(s)	-3.460*	-3.970**	-2.790**	-8.251**	-4.226**	-4.226**		
	VOLA	-0.729***	-0.702***	-0.790***	-0.684*	-0.605**	-0.605**		
	OPTG(s)	0.999***	1.000***	1.260**	0.748***	1.007***	1.007***		
	TA(s)	-0.754	-0.710	-1.023	1.633*	-0.605*	-0.605*		
	DW	0.452	0.527						
Gamma	$TBQ\widetilde{(ex)}_{,\overline{DW}} - TBQ\widetilde{(ex)}_{,DW}$							-59.624***	-14.681
	Number of companies	285	285	169	116	285	169	285	285
	Number of observations	1,751	1,751	1,051	700	1,751	1,051	1,751	1,751
	R^2	70.20%	70.50%	71.80%	73.15%	70.33%	69.51%	57.99%	59.50%
	Durbin Watson	1.600***	1.640***	1.896	1.348***	1.615***	1.579***	1.441***	1.422***
	Hausman-Wu test	223***	279***	360***	93***	257***	257***	22***	0

Note: The dependent variable in columns 1-6 is Tobin's q excluding deferred tax expense (TBQ(ex)) as defined in table 2. The dependent variable in column 7 and 8 are the residuals of model 3a and b as described in section 4.1 model 5. The sample (over the period 1992–2012) is drawn from databases described in section 3 and is restricted to firm years (1,751 observations – 1,051 DW and 700 Non-DW) where values of all variables are available. The independent variables of model 1-3 with regression coefficients beta are defined as in table 2. The independent variable for model 4 with regression coefficient alpha is the estimated value of model 3a. The independent

variable of model 5 with regression coefficient gamma is the difference between model 3b and 3a (vice versa) according to model 3a and 3b. In the second to last line the modified Durbin Watson statistic is depicted. In the last line the value of the Hausman-Wu test is presented. All specifications include year effects, firm fixed effects as well as a test, whether the data contained fixed effects (positive for all models). Rogers robust standard errors that are clustered at the firm level are applied to determine significance (*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively).

Table 8 – Robustness checks (4) – Normal and turbulent regimes

		Normal Regimes			Turbulent Regimes				
		Model 1	**Model 2 (interacting)**	**Model 3**	**Model 1**	**Model 2 (interacting)**	**Model 3**	**Model 3 (until `99)**	**Model 3 (after `99)**
Alpha	$\widetilde{\beta_1}\,1/GI_{it}BTG_{it}DW_i$								
Beta	BTG(s) 1/GI DW	70.113217		12.956**			101.384***	70.446***	1.671
	BTG(s) 1/GI $\overline{DW}$	-16.314007		-3.429			-31.977*	-10.440	-2.383
	BTG(s) 1/GI		-14.062			240.369***			
	BTG(s)		2.487*		4.783	-23.576***			
	1/GI		0.378		34.355**	31.336***			
	CAPEX(s)	-0.77557845**	2.142**	2.297**	1.262	3.620	4.178	-0.730	5.241***
	TXDB(s)	11.268465	0.292	0.503	25.467	24.565***	20.460***	11.903***	0.277
	ln(SALES)	0.6942457*	-0.110*	-0.094	-0.798	-0.716**	-1.285***	0.550***	-0.326**
	DLTT(s)	-1.723599	-0.412	-0.513	-2.414*	-2.526**	-3.493***	-1.368**	-0.969**
	PIFO(s)	7.1657901***	9.515***	9.005	14.472***	16.892***	21.031***	7.518***	9.532***
	TLCF(s)	5.6359772	-0.188	-0.137**	0.967	0.453	0.631	4.685***	0.088
	RDIP(s)	5.9747763**	-4.516**	-4.791	33.137	-3.709	8.744	6.569**	-3.754*
	VOLA	0.14357391	-0.013	0.051***	-6.720	-5.256***	-5.689***	0.344	-0.355
	OPTG(s)	0.74748755***	0.684***	0.680*	1.733***	1.463***	1.763***	0.798***	0.547***
	TA(s)	-1.7924083*	1.054*	1.006	-7.860**	-6.355***	-5.689***	0.344***	-0.355
	DW		-0.401		-0.194	-0.058			
Gamma	$\widetilde{TBQ_{,\overline{DW}}} - \widetilde{TBQ_{,DW}}$								
	Number of companies	278	278	278	180	180	180	177	248
	Number of observations	1,387	1,387	1,387	364	364	364	760	991
	R^2	77.12%	77.17%	77.22%	80.54%	83.24%	81.59%	82.09%	78.93%
	Durbin Watson	1.591***	1.590***	1.591***	1.878	1.865***	1.867***	1.880	1.441***
	Hausman-Wu test	134***	140***	132***	21***	21***	20***	263***	122***

Note: The dependent variable in all columns is Tobin's q (TBQ) as defined in table 2. The sample was split up in two regimes (five sub-periods): 1992 to 2001 as a normal period; 2002 as a turbulent period; 2003 to 2007 as a normal period; 2008 to 2009 as a turbulent period; 2010 to 2012 as a normal period (columns 1-3 normal regimes; columns 3-6 turbulent regimes). Furthermore, we applied model 3 to the timeframes 1992 to 1999 and 2000 to 2012 in order to test a possible declining Delaware effect (see model 3 (columns 7-8).The sample is divided into 1,387 observations regarding normal regimes and 364 observations regarding turbulent regimes. The independent variables

of model 1-3 with regression coefficients beta are defined as in section 3 and table 2. In the second to last line the modified Durbin Watson statistic is depicted. In the last line the value of the Hausman-Wu test is presented. All specifications include year effects, firm fixed effects as well as a test, whether the data contained fixed effects (positive for all models). Rogers robust standard errors that are clustered at the firm level are applied to determine significance (*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively).