What Do Managers Do When Immune from Hostile Takeover Threats?

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Abstract

This paper adopts the mid-1990s Delaware antitakeover regime shift as a natural experiment to examine how the removal of hostile takeover threats affects managers' decisions on corporate financing and investment, and how it impacts on firm value. Our Differences-in-Differences-in-Differences analysis shows that, consistent with managerial agency models of capital structure and the free cash flow hypothesis of Jensen (1986), managers use lower debt financing and make higher capital expenditures and corporate acquisitions when protected from takeovers. These entrenched behaviors destroy firm value. In addition, we find the impacts of the exogenous changes in market control are more significant for firms with lower managerial ownerships or lower institutional holdings, lending supports to the arguments of Jensen (1993) that effective internal control systems can alleviate the negative impacts of weakened capital market controls.

Key words: Managerial entrenchment; Agency costs of free cash flows; Capital market controls; Internal control systems; Staggered board; Poison pill

JEL classification: G31; G32; G34; K22

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1. Introduction

This paper adopts the Delaware's mid-1990s antitakeover regime shift as a natural experiment to study how takeover impediments affect managers' decisions on corporate financing and investment, and ultimately how it impacts on firm value.

Due to the separation of ownership and control in corporations, managers may not work in the best interests of shareholders (Jensen and Meckling, 1976). Consequently, there are managerial agency costs; managers make sub-optimal corporate financing and investment decisions to maximize their own private benefits. On one hand, in the literature of corporate financing, models of capital structures with managerial entrenchment predict that entrenched managers have incentives to use less debt than that is optimal for shareholders (e.g., Grossman and Hart, 1982; Stulz, 1990; and Hart and Moore, 1995). The reason is because lower debt obligations of coupon payments and principles lead to lower chances of bankruptcy as well as higher free cash flows at managers' discretion. On the other hand, in the literature of corporate investment, Jensen (1986)'s agency theory of free cash flows predicts that entrenched managers have incentives to over-invest in activities of empire-building and corporate diversification. Both lines of research imply that the use of debt can discipline managers. Therefore, if a manager is able to choose debt policy totally at his wish, he / she will choose a low debt level. However, managers are also disciplined by hostile takeover threats as argued by Jensen (1993). If a manager does not do a competent job, the firm can be targeted by potential buyers and the manager could be replaced during the acquisition process. Considering this, a manager may voluntarily take on debt to defend hostile takeovers. Indeed, Zwiebel (1996), Novaes (2003) and Morellec (2004) construct models in which managers use debt not because it benefits shareholders but because it reduces the threat of a hostile takeover. Therefore, managers' incentives to use debt and to invest in empire-building activities should change with the antitakeover environment. In a takeover-friendly jurisdiction, managers should use a higher debt and decrease inefficient investment, which consequently boosts firm value. Conversely, if changes in state laws shield firms from takeover threats, managers should reduce the use of debt and increase corporate investment, which further will destroy firm value.

The Delaware's mid-1990s validation of the poison pill in conjunction with a

staggered board completely immunes Delaware firms with a staggered board from hostile takeovers. It provides a natural experiment along with a natural control sample of non-Delaware firms and Delaware firms without staggered boards to test the implications of the models of capital structure with managerial entrenchment and Jensen (1986)'s agency theory of free cash flows. In particular, this paper aims to answer the following questions.

- How do exogenous changes in antitakeover legal environment affect the managers' incentives to use debt for self-discipline?
- If takeover impediments lead to a reduction in the use of debt, how do corporate managers accordingly change their corporate investment decisions?
- What are the implications on firm value?

In addition, Jensen (1993) argues that effective internal control systems such as high managerial ownerships and high institutional holdings can mitigate the negative impacts of weakened capital market controls such as hostile takeover threats and debt disciplines. On one hand, if managers have higher stakes in a firm, their incentives can be more in lined with shareholders'. On the other hand, institutional investors are active investors and they typically exert more monitoring efforts on managers. With these said, in this paper, we also aim to shed lights on the following question.

- Are the impacts of takeover impediments more pronounced among firms with weaker internal control systems before the antitakeover regime shift?

The case of the Delaware's mid-1990s antitakeover regime shift has been discussed from law perspective by Gilson (2001), Bebchuk, Coates and Subramanian (2002) and Subranmanian (2004). Rauh (2006) and Low (2009) among others use it as an exogenous shock to study the implications of corporate governance on employee ownership used in defined contribution plans and managerial risk-taking behaviors, respectively. Before 1995, Delaware had friendly takeover laws. Delaware Supreme Court was not in favor of the target's poison pill and allowed shareholders to decide for themselves whether to accept a hostile bid. Without poison pill, staggered board structure would be just like "emperor's new clothes". This friendly takeover landscape changed markedly in 1995. The Delaware Supreme Court's ruling in *Moore Corp Ltd vs. Wallace Computer Services (1995)* legitimized the combination of

staggered board and the pill. Since then, Delaware firms with staggered boards have had a "Just Say No" defense to hostile takeover bids (Wall Street Journal, 1996, 1997). Bebchuk, Coates, and Subramanian (2002) find that not a single hostile bidder managed to win control against a target with an effective staggered board in the five-year period from 1996 to 2000. In addition, Rauh (2006) shows a decrease in the probability of takeover for Delaware firms after 1996. Subramanian (2004) argues that the series of takeover events have eliminated Delaware's distinctiveness as a takeover-friendly jurisdiction.

We adopt a Differences-in-Differences-in-Differences approach (triple-difference or DDD specification) to measure the impact of the exogenous changes in the Delaware's antitakeover legal environment since there are three levels of "differences": Delaware vs. non-Delaware, staggered board vs. non-staggered board, and before vs. after the Delaware's antitakeover regime shift in 1995. This type of specification is common in the labor economics and public finance literature (e.g., Gruber, 1994), and has been applied by Rauh (2006) and Low (2009) to corporate finance. Because the "Just Say No" defense is effective only for the Delaware firms with a staggered board (protected firms) but not for the non-Delaware firms and Delaware firms without a staggered board (unprotected firms), the latter groups naturally serve as a control group. Our main findings are summarized as follows.

With regard to the impacts on corporate financing, as predicted by the managerial agency models of capital structure, we find that managers reduce the use of debt when shielded from antitakeover threats. Our empirical analysis shows that the protected firms reduce leverage ratios by 0.9 percentage points more than the unprotected firms after the antitakeover regime shift. Such reduction accounts for 3.4% of the sample mean of leverage ratios of the whole sample before the regime shift. These results are robust after we control for financing adjustment costs and factors that differentiate the trade-off or pecking order theories of capital structure.

As to corporate investment, with weakened market control and discipline by debt, we find that managers make higher corporate investments and engage in more merger and acquisition activities. Our empirical analysis shows that the protected firms increase their ratio of capital expenditure to book assets by 0.7 percentage points more than the unprotected firms after the antitakeover regime shift. This number is both

statistically and economically significant considering it accounts for more than 10% of the sample average of capital expenditure to assets ratio of the whole sample before the regime shift. Furthermore, consistent with the free cash flow hypothesis of Jensen (1986), we find that the over-investment behaviors are more significant for firms with high cash holdings and low growth opportunities.

About implications on firm value, we find that the sub-optimal decisions on corporate financing and investment destroy firm value. In particular, Tobin's Q of protected firms is reduced by 14 to 16 percentage points more than the unprotected firms after the antitakeover regime shift. This is economically significant given the sample mean of Tobin's Q of the whole sample before the regime shift is 1.56.

Finally, to test Jensen (1993)'s views that effective internal control systems can serve as remedies of weak capital market controls, we sort firms based on the average managerial or institutional holdings before the antitakeover regime shift and examine whether the impact of takeover impediments is more significant for the group with low managerial or institutional holdings. We find supportive results.

Our paper is related to two strands of empirical studies of managerial entrenchment, i.e. entrenched managers' corporate financing decisions and their corporate investment decisions. We contribute to the existent literature by mitigating the endogeneity problem and by improving the measurement of anti-takeover protection. On the empirical studies of entrenched managers' corporate financing decisions, the results have been mixed. Berger, Ofek and Yermack (1997) draw from cross-sectional evidence and conclude that entrenched managers on average adopt lower level of leverage ratios. Safieddine and Titman (1996) find that targets that successfully defend takeover offers significantly increase their leverage ratios. Just the opposite, John and Litov (2009) find that firms with entrenched managers, who are less vulnerable to takeovers as measured by the Gompers et al. (2003) entrenchment index, actually use more debt financing and have higher leverage ratios.

Along the empirical studies of entrenched managers' corporate investment decisions, Gompers et al. (2003) construct an entrenchment index to characterize the strength of shareholder rights across firms and show that well protected firms with higher governance index have higher amount of capital expenditures and corporate acquisitions. Using entrenchment indexes developed by Gompers et al. (2003) and

Bebchuk et al. (2008) and measures of shareholder oversight, Dittmar and Mahrt-Smith (2007) find that entrenched managers destroy firm value through dissipating cash on assets with low accounting returns.

The above mentioned empirical studies focus on cross-sectional inferences which could be challenged by the endogeneity of corporate governance decisions to corporate financing and investment decisions. Exogenous changes in state law of antitakeover are a more useful source of identifying variation than cross sectional entrenchment indexes and other firm or executive characteristics. We, therefore, contribute to the literature by mitigating the endogeneity problem. In a related paper, Garvey and Hanka (1999) adopt the "second generation" state antitakeover laws in the period from 1987 to 1990 to show that the threat of hostile takeover motivates managers to take on debt they will otherwise avoid. We complement their study by providing further evidences on the relations of managerial entrenchment with corporate investment decisions and firm value, and by shedding some lights on Jensen (1993)'s arguments that effective internal control systems can serve as remedies of weak capital market controls. In addition, our use of the Delaware's mid-1990s antitakeover regime shift forms a better nature-experiment setting in that this regime shift was taken into effect within a very short period of time. In contrast, the second generation antitakeover laws were applied by different states in different years; the time period spanned from 1987 to 1990 making it difficult to draw cross-sectional comparisons. Furthermore, in many states, several second-generation laws were passed within a short period of time. Given this clustering of new legislation and the persistence of ownership from one year to the next, simultaneous identification of the effects of each of the individual legal measures on both takeover probabilities and corporate financing and investment decisions proves difficult. Moreover, the effectiveness of the second generation state antitakeover laws is questioned by Comment and Schwert (1995) who find little evidence that these laws reduced the frequency of takeovers.

In addition, we contribute to the existent literature by improving the measurement of anti-takeover protection. The existent papers have used firm-level entrenchment index developed by Gompers et al. (2003) and/or Bebchuk et al. (2008). Both indexes are primarily based on a count of charter provisions that reduce managerial vulnerability to takeovers. These indexes could suffer the measurement

errors and the empirical results based on them could be biased if the measurement errors are not random. Indeed, Core, Guay, and Rusticus (2006) have questioned the ability of Gompers et al. (2003) index to capture antitakeover protection. In contrast, the Delaware's mid-1990s validation of the poison pill in conjunction with a staggered board provides managers of Delaware firms with a staggered board an extremely effective defense against hostile bidders.

The rest of our paper is organized as follows. Section 2 introduces the case of the mid-1990s Delaware antitakeover ruling. Section 3 develops testable hypotheses. Section 4 describes the sample and the empirical methodology. Sections 5 and 6 present the main empirical findings and the further analyses, respectively. Section 7 concludes.

2. Case introduction

In this study, the natural experiment is formed based on the case of mid-1990s Delaware antitakeover regime shift, which is symbolized by the court ruling of *Moore Corp Ltd vs. Wallace Computer Services (1995)*. This case is discussed from law perspective by Gilson (2001), Bebchuk, Coates and Subramanian (2002) and Subranmanian (2004), and is used by Bebchuk and Cohen (2005), Rauh (2006) and Low (2009) among others to study the implications of corporate governance. In 1995, Delaware Supreme Court validated the poison pill in conjunction with a staggered board, which completely immunes Delaware firms with a staggered board from hostile takeovers. We give a brief introduction to the use of staggered board and poison pill as well as the case below.

A staggered board is a certain type of board structure adopted by many U.S. firms. Comparing to a unitary board, a staggered board stratifies the entire board into sub-classes and guarantees that only one class of directors can be replaced at each annual meeting. For example, the most common staggered board structure has three classes. It indicates that only one third of the directors can be replaced every year. A poison pill is a rights plan that entitles shareholders to dilute the value of the position of a bidder who acquires a large block.

A staggered board or a poison pill alone cannot defend takeovers effectively. The

reason for a weak role of the poison pill lies in the redemption feature of the pill: if a hostile bidder foresees potential obstacles from the pill, he / she could first tender an offer to shareholders and induce them to replace the current board. In this case, the acquisition could be carried out smoothly after the new board is in place and discards the pill. Meanwhile, prior to the development and adoption of the poison pill defense, staggered boards were considered only a mild takeover defense because they did not impede the acquisition of a control block. The introduction and acceptance of the poison pill, however, transformed the market for control, considerably enhancing the antitakeover power of staggered boards (Bebchuk, Coates and Subramanian, 2002). The reason is because the majority of board cannot be abolished at one single year, neither can the pill. It means that a bidder has to wait for at least two consecutive years to gain control power and revoke the pill. For one thing, waiting increases the bidder's uncertainty in winning two successive elections to replace the board. For another, it is costly to the bidder because the first year offer is not revocable yet the bidder may find it not profitable to provide the same offer in the next year. Therefore, the combination of a staggered board and a poison pill is most effective to defend hostile takeovers.

Before the year of 1995, the pill cannot be used infinitely in Delaware as implied from the case of *Unocal Corp. vs. Mesa Petroleum (1985)* and the subsequent case of *Moran vs. Household International Inc. (1985).* In these cases, the Delaware Supreme Court applied a proportionality test to demonstrate that managers' use of pill should be appropriate and proportional to the takeover threat. Since these cases, managers would fail to maintain the pill if incumbents lost their first election because such continuation of the pill was deemed as an abuse of entrenched power (Bebchuk, Coates and Subramanian, 2002). Under this situation, the staggered board structure would be no more like an "emperor's new clothes".

However, the ruling of *Moore Corp. vs. Wallace Computer (1995)* came as a turning point, which validated poison pill in conjunction with a staggered board. Wallace Computer successively defended itself against a hostile bid from Moore Corp., even though the company lost its first proxy contest and one third of its board was replaced. The *Wallace* case was so influential that the Delaware firms with a staggered board subsequently successfully defended hostile takeovers by adopting the poison pill, such as *Pennzoil Company vs. Circon Corp. (1997)*. Bebchuk, Coates and

Subramanian (2002) find that not a single hostile bidder managed to win control against a target with an effective staggered board in the five-year period from 1996 to 2000. The *Wallace* case essentially started a 'Just Say No' takeover defense for the Delaware firms with a staggered board (Wall Street Journal, 1996, 1997).

In our experiment setting, protected firms are referred to as those incorporated in Delaware and have a staggered board structure. One may argue that whether a firm has a poison pill is also important, but Gilson (2001) indicate that the poison pill is very ubiquitous. Indeed, in our sample, nearly 70% of Delaware firms with a staggered board have pill provisions.[1] Moreover, a firm can easily adopt a poison pill once Supreme Court validates the pill whenever facing a takeover threat even if the firm has no poison pill in its corporate charter. But, the board structure is relatively difficult to change once it is established. Therefore, the crucial point for an effective takeover protection for Delaware firms after the poison pill is validated in 1995 lies in whether a firm has a staggered board before the regime shift.

3. Hypothesis

In this section, we develop our main testable hypotheses.

3.1. Corporate financing, investment and firm value

Models of capital structures with managerial entrenchment predict that entrenched managers have incentives to use less debt than that is optimal for shareholders (e.g., Grossman and Hart, 1982; Stulz, 1990; and Hart and Moore, 1995). The reason is because lower debt obligations of coupon payments and principles lead to lower chances of bankruptcy (Fama, 1980) as well as higher free cash flows at managers' discretion (Jensen, 1986). The existent empirical results have been mixed. Berger, Ofek and Yermack (1997) draw from cross-sectional evidence and conclude that entrenched managers on average adopt lower level of leverage ratios. The entrenchment measure in their study is proxied by long CEO tenure and low executive holdings. Safieddine and Titman (1996) find that targets that successfully defend takeover offers significantly increase their leverage ratios. Just the opposite, John and Litov (2009) find that firms with entrenched managers, who are less vulnerable to

[1] The proportion is close to Bebchuk and Cohen (2004).

takeovers as measured by the Gompers et al. (2003) entrenchment index, actually use more debt financing and have higher leverage ratios.

However, managers are also disciplined by hostile takeover threats as argued by Jensen (1993). If a manager does not do a competent job, the firm can be targeted by potential buyers and the manager could be replaced during the acquisition process. Considering this, a manager may voluntarily take on debt to defend hostile takeovers. Indeed, Zwiebel (1996), Novaes (2003) and Morellec (2004) construct models in which managers use debt not because it benefits shareholders but because it reduces the threat of a hostile takeover. All these models also imply that if exogenous shocks shield firms from antitakeover threats, then managers will have the incentive to reduce the discipline of debt. So, our first hypothesis is:

H1a. After the 1995 ruling, Delaware firms with a staggered board will reduce the use of debt and thus decrease leverage ratios.

Another feature of entrenched managements is that they tend to undertake wasteful projects that may not beneficial to shareholder. The incentive of inefficient investments may come from two channels. It reduces manager's risk by constructing a diversified investment portfolio, and it enables managers to gain job security from empire building. The relationship between investment and level of entrenchment is tested by Gompers, Ishii and Metrick (2003), in which they find that capital expenditure is higher for firms with poor corporate governance, with other things equal. On the other hand, agency cost of investment could be reflected by profitability of projects. For example, Titman, Wei and Xie (2004) show that discretionary investments are always associated with negative stock market return, since investors interpret such investments as means of empire building. Also, Dittmar and Mahrt-Smith (2007) find that dollar value of cash holding decreases among firms with high managerial entrenchment, as entrenched mangers dissipate cash quickly on less profitable projects.

With market discipline managers may not engage in value-destroying projects, whereas without it, agency cost from investments could be more severe. Pugh, Page and Jahera (1992) use event study to show that antitakeover amendment protects managers from corporate control, the adoption of which leads to increase in capital

investment and R&D expense while other things being equal. Moreover, by studying shift of state law, Low (2009) notices that firms' unsystematic risk is reduced when firms are protected by antitakeover provision. It provides further evidence to show diversification purpose of entrenched management. As a result, after the change of Delaware takeover environment, we expect:

H1b. After the 1995 ruling, Delaware firms with a staggered board will increase corporate investments compared to the control group.

By assuming that there exists an optimal level of leverage according to firm's financing cost structure, a conservative debt policy of entrenched managers is not beneficial to the value of shareholders. The similar argument holds if one assumes the existence of optimal investment level, after balancing the firm's cash flow capacity and investment opportunities. Consequently, it is natural to see whether entrenchment management is associated with value destroying. Gompers, Ishii and Metrick (2003), Bebchuk and Cohen (2005) and Faleye (2007) all show that a relative lower value is related to firms with high entrenchment index.

Previously, the impact of antitakeover provisions on shareholder value is not conclusive. On the positive side, it increases the bargaining power of target firm during acquisition and thus raises takeover premium for the sellers (Comment and Schwert, 1995). Also, the removal of takeover threats promises job security to incumbents, eliminating managerial myopia and enabling managers to emphasize long term corporate strategy (Stein, 1988). In contrast, antitakeover provisions may hurt investors as it leads to a more entrenched management team and endows managers with discretionary power to pursuit personal benefit. If the latter hypothesis is true, we should observe:

H1c. After the 1995 ruling, the firm value of Delaware firms with a staggered board will be reduced when compared to control group.

3.2. The impact of managerial ownership

Equity-based compensation to top managers could serve as internal incentive to relieve agency problems, as it ties the interests of managers more closely to the value

of shareholders (Jensen and Meckling, 1976). Ang, Cole and Lin (2000) give a direct test to this hypothesis, and they find managerial shares are inversely related to their agency cost measures. When associating the cost with firm performance, Mehran (1995) shows equity-based compensation to top managers improves firm value in terms of Tobin's Q and stock return. In a dynamic framework, Fahlenbrach and Stulz (2009) show an increase in managerial ownership leads to an increase in Tobin's Q in the next period.

As high executive ownership helps to relieve agency problems, it may serve as a complement to the control effect of market discipline (Jensen, 1993). Therefore, if the change in legal environment does increase managerial discretion, it should be more influential among low managerial ownership firms. As a result, if we measure pre-event average executive holdings and separate firms into subgroups, we should observe:

H2. The entrenched behaviors on corporate financing and investment and value reduction are more significant for firms with low managerial ownerships before the antitakeover regime shift.

3.3. The impact of institutional holdings

A large body of studies on corporate control has noticed the monitoring effect from active investors. Among them, institutions play an important role, because their high amount of holdings will easily lead to economies of scale in monitoring, making the benefit of monitoring overwhelms its cost. Previous studies have confirmed the effects of institutional ownership. For example, high proportion of institutional shares is associated with high Tobin's Q (McConnell and Servaes, 1990), better operating performance (Cornett, Marcus, Saunders and Tehranian, 2007) and high post acquisition stock returns that is recognized by the market (Chen, Harford and Li, 2007). Also, Hartzell and Starks (2003) find that the presence of institutional investors increases pay-for-performance sensitivity of executives, acting as a relief of conflict of interests.

As a result, if the change of takeover environment leads to further entrenchment and high agency costs, we should expect its impact is greater to firms without or with less institutional monitoring. An illustration could be seen from Agrawal and

Mandelker (1990) and Borokhovich, Brunarski, Parrino and Harman (2006). Both papers study stock performance around firm's adoption of antitakeover amendments and find that low institutional holding firms experienced higher negative abnormal returns. Our hypothesis therefore is:

H3. The entrenched behaviors on corporate financing and investment and value reduction are more significant for firms with low institutional holdings before the antitakeover regime shift.

4. Data and Methodology

4.1. Data source

We combine several data sources to construct our sample. Sample period is from 1990 to 2006. Specifically, staggered board information is obtained from IRRC which consists of detailed corporate governance provisions of individual firm. The sample included around 1500 large US traded firms before 1995 and it expanded itself by more than 300 smaller firms afterwards. Totally, IRRC accounts for 90% of market capitalization of US stocks. Because IRRC is not published in consecutive years[2], the missing data needs to be completed by hand. Follow Gompers, Ishii and Metrick (2003), we assume that firms' board structure would not be changed until the dataset was updated. Therefore, data of absent year is filled in by its information of previous year, e.g. board structure of 1994 is supplemented by that of 1993, and so on. Indeed, this could bring us measurement errors if the dataset cannot reflect timely changes in firm information. But since such errors should by no means be systematic, we expect our empirical results be consistent.

In addition, one critical issue in the natural experiment setting is to identify whether a firm had a staggered board structure around the year of exogenous shock. Our main measure of board information uses the IRRC data in 1994, which is one year before the regime shift. Namely, a firm is identified to have a staggered board only if such information is revealed in 1994. The same method is adopted by Low (2009). By doing this, we exclude the possibility of board structure change due to firms' self-selection, because it is possible that firms switched to staggered board after

[2] During our sample period, IRRC has been published for the year of 1990, 1993, 1995, 1998, 2000, 2002, 2004 and 2006.

1995 as they saw the impact of legislation on takeover protection. Another benefit of using 1994 board information is that it enables us to only include firms that survived right before law shift. That is, because of the data requirement of regression analysis, firms that did not have 1994 board information for reasons of either exiting early or emerging late are dropped.

Besides, information related to firms' state of incorporation is also taken from IRRC. Among the sample, we observe that 167 out of 3816 firms are recorded as having reincorporated, while one firm switches its state of incorporation twice. These firms are not included in our study, because reincorporation is also likely to result from a self-selection process.

In addition, accounting and stock return data comes from Compustat and Center for Research in Securities Prices (CRSP), respectively. Level variables, such as book assets and market assets, are all deflated by 2000 GDP deflator[3]. We do not limit each firm to have complete information for all years. The reason is that data loss from firms' birth and death may bring survivorship bias. In addition, such constraint reduces our sample size by more than 50%. Moreover, we exclude firms in financial (SIC Code 6000-6999) and utilities industry (SIC Code 4900-4999), which is because the exposure to government regulations may bring them characteristics that are different from firms in other industries. Finally, matching all the above data sources, we construct a sample of 1227 firms, with a total of 15489 observations. We trim all the independent variables at both upper and lower 0.5 percentile.

Since we also examine corporate decision among firms with different managerial incentive plans as well as firms with different outside monitoring effects, information on equity ownership structure are needed. On one hand, executive holdings data is approached from Execucomp. We measure managerial incentive in two ways. The first one is the percentage of top five manager stock holdings and the second one is CEO stock holdings. On the other hand, institutional holdings data is reported on Form 13F with the SEC, which is electronically accessible from CDA Spectrum. Our main measure of institutional monitoring is the percentage of shares hold by the largest five institutional investors. Chen, Harford and Li (2007) find that most of monitoring efforts come from independent institutions that do not have business

[3] GDP deflator is obtained from DataStream.

relationship with the firm, so we use the top five independent institutional holdings as an alternative.

4.2. Data definition

We define variables to reflect corporate financing and investment decision, and the firm value aspect. Each of them serves as dependent variable in regression analysis.

First, in the study of corporate financing decision, we follow Garvey and Hanka (1999) to define the adjustment of leverage ratio as the net effect of debt and equity issues, i.e.

$$\Delta Lev_t = \frac{Debt_{t-1} + Debt\_issuance_t}{Asset_{t-1} + Debt\_issuance_t + Equity\_issuance_t} - \frac{Debt_{t-1}}{Asset_{t-1}} \qquad (1)$$

where Debt issuance is the net of debt issuances, derived from debt issues minus debt reduction. Equity issuance is the difference between equity sales and repurchases. Equation (1) essentially expresses the leverage change in time t as a result of net debt and equity adjustment in concurrent period, based on the previous leverage level. Furthermore, as theory of managerial entrenchment provides explicit prediction on debt usage of managers, we also use Debt issuance as dependent variable instead of examining the aggregate effect of debt and equity issuance.

Second, following Gompers, Ishii and Metrick (2003), we use capital expenditure (scaled by assets) as our main proxy in examining investment behavior. It presents total cash outflow for the use of Property, Plant and Equipment (PPE). Besides, Richardson (2005) suggests that agency problem is more intensively reflected the abnormal component of investment, which is derived as subtracting expected investment from the realized level.[4] We take it as an alternative test. Still, we also study acquisition behavior. However, one problem is that acquisition does not happen frequently in each year, so the acquisition expense item in Compustat may not provide sufficient information for DDD analysis.[5] Therefore, we obtain acquisition information from SDC Platinum. We identify all acquisition for each firm, regardless

[4] The definition of unexpected investment and its derivation will be given in Section 5.2.

[5] In the DDD analysis, the creation of various dummy interaction terms raises rigorous requirement on information containing of the model. Otherwise, if the dependent variable fails to provide much information, it is likely that we will meet multi-collinearity problem.

of whether the value of transaction is disclosed or not. The count of acquisition attempts is then used as dependent variable, and the model is specified below.

Finally, firm value is measured by Tobin's Q that defined as market value of assets over book assets. Market value of assets is calculated as book assets plus market value of common stock minus book value of common stock and deferred tax. Tobin's Q reflects how the market evaluates the assets of a firm, especially intangible assets. Therefore, a high value of Tobin's Q could result from a high market evaluation of the managerial dedication. Nevertheless, Tobin's Q could be a noisy measure, as the market estimation of firm assets, especially intangible assets, is different across different industries. We also examine industry-adjusted Tobin's Q as an alternative, which is calculated by subtracting firm's Q by its 2-digit industry median.

4.3. Summary statistics

Table 1 presents summary statistics, in which firms are divided into four groups according to their state of incorporation and board structure. The first column is treatment group, consisting of Delaware firms with staggered board. Firms in the other three columns are controls. As indicated by the last row of Table 1, the total number of Delaware incorporated firms is similar to that of non-Delaware firms (52% versus 48%). When comparing across the dimension of board structure, firms with staggered board account for about 60% of sample observations while firms without staggered board account for around 40%, and the percentage is similar both inside and outside Delaware.

Then, we look at the three target variables in our study. Statistical numbers are with-group average of firm's characteristic before 1994, so that they reflect the pre-event sample feature. First, the leverage adjustment rate for Delaware firms with staggered board is 0.33% per year before 1994 (ΔLev), which is higher than the middle two groups while lower than non-Delaware firms without staggered board. With respect to leverage level, treatment group is found to be higher levered, as their group mean of leverage is 27.75%. Second, all investment proxies are similar among four groups. For each sub-group, the mean of capital expenditure to assets ratio is between 6% and 7%, and firms on average involve in acquisition more than once per

year. Finally, regardless of being incorporated in or out of Delaware, Tobin's Q of staggered board firms is smaller than that of corresponding non-staggered board firms. This statistics is consistent with previous findings that cross-sectionally staggered board is always associated with lower firm value.

Concerning other firm characteristics, we find that Delaware firms with staggered board have similar profitability (ROA), stock returns and undistributed cash flow, when compared with the other three groups. However, Delaware firms with staggered board are smaller in terms of total book value of assets than their counterparts, and they are slightly younger.

To show a basic pattern of capital structure, in Figure 1 we plot firms' leverage level against year. In order to make the graph more intuitive, we re-divide firms only into two groups, i.e. firm that in Delaware and with staggered board (protected firms), and firm that not in Delaware or without staggered board or both (unprotected firms). As it shows, the average book leverage is higher for treatment group across entire sample period, which is consistent with the findings of Garvey and Hanka (1999). However, starting from 1995, the gap has been shortened. Meanwhile, the general pattern of investment decision could be revealed from Figure 2, in which vertical axis represents the within-group mean of capital expenditure over book assets. While the investment ratio of two firm groups keeps close to each other in the beginning period, investment of protected firms goes up sharply around the year of 1996.

4.4. Empirical methodology

The Delaware's mid-1990s validation of poison pill in conjunction with a staggered board completely immunes Delaware firms with staggered board from hostile takeovers and provide no protection to non-Delaware firms or Delaware firms without a staggered board. Therefore, we deem Delaware firms with staggered board as treatment group and refer to them as protected firms. Other firms are classified into control group and referred as unprotected firms.

Our baseline regression uses the following specification:

$$
\begin{aligned}
y_{it} = {} & a_0 + a_{123} Delaware_i \times Staggered_i \times After + a_{12} Delaware_i \times Staggered_i \\
& + a_{13} Delaware_i \times After + a_{23} Staggered_i \times After + a_1 Delaware_i \\
& + a_2 Staggered_i + a_3 After + \beta X_{it} \left(+ FE_{\_Industry} / FE_{\_Firm} + FE_{\_Year} \right) + \varepsilon_{it}
\end{aligned} \tag{2}
$$

where i indexes firm and t indexes time. y_{it} is the dependent variable of interest, such as corporate financing (changes in leverage ratio, or changes in debt and equity issuance), corporate investment (capital expenditure and the occurrence of M&A), and firm value (Tobin's Q). $Delaware_i$ is a dummy variable indicating whether a firm is incorporated in Delaware. $Staggered_i$ is a dummy variable indicating whether a firm has a staggered board structure. *After* is a dummy variable indicating whether an observation is recorded after the year of 1995, exclusively. X_{it} is a vector of control variables, which is different according to different dependent variables of interest. The industry/firm and year fixed effects ($FE_{\_Industry}$/$FE_{\_Firm}$ and $FE_{\_Year}$) are added where appropriate. ε_{it} is an error term allowing for residual heteroskedasticity and clusters at the level of state of incorporation (e.g. Peterson, 2007). This type of specification is common in the labor economics and public finance literature (e.g., Gruber, 1994) and is known as a triple-difference or DDD specification, since there are three levels of "differences": Delaware vs. non-Delaware, staggered board vs. non-staggered board, and before vs. after the Delaware's antitakeover regime shift in 1995. Rauh (2006) and Low (2009) use the similar specification to study the impacts of the Delaware's antitakeover regime shift on employee's holdings of company stock in 401(k) plan and on managerial risk-taking behavior, respectively. The coefficient of interest here is α_{123}, which estimate the impacts of the regime shift on protected firm. The inclusion of ($Delaware_i \times After$) and ($Staggered_i \times After$) allows the Delaware firms and the firms with a staggered board to have different levels of the dependent variable before and after the regime shift, for reasons unrelated to the regime shift. Likewise, the inclusion of ($Delaware_i \times Staggered_i$) allows Delaware firms with a staggered board to have different levels of the dependent variable of interest from non-Delaware firms without a staggered board.

5. Empirical results

5.1. Corporate financing decision

5.1.1. Basic regression

Studies on corporate financing decision of entrenched management predict that debt usage will be lower in the presence of manager's discretion, so that debt issuance will be lower in terms of both amount and frequency. Our primary proxy for capital structure (y_{it}) is according to equation (1), which follows Garvey and Hanka (1999): the change of leverage is a result of net debt and equity issuance. In order to make our result comparable to that of Garvey and Hanka, We first follow them to define control variables (X_{it}). Firm size proxies, such as $\text{Log}(\text{Asset}_{t-1})$, Asset_{t-1} and $\Delta\text{Log}(\text{Asset}_{t-1})$, are used to present scale effect. Previous period return on assets (ROA_{t-1}) and the change in return on assets (ΔROA_t) are considered as profitability measures, and a net income loss dummy indicates earnings condition (equals one if last year net income is negative). Previous year stock return is controlled for the possibility that manager target on market rather than book leverage. Beside, Industrial mean of leverage change is included to control for the cross-industry difference. It is calculated as the arithmetic average of dependent variable among firms within the same 2-digit SIC code area. Finally, lagged leverage level is added to control for potential leverage mean-reverting.

Basic regression results are shown in Table 1. In column 1, we control for industry effect, while in column 2 firm-level fixed effect is added. The inclusion of firm fixed effect enables us to drop dummy terms that consists of only state of incorporation and board structure, i.e. $Delaware_i \times Staggered_i$, $Delaware_i$ and $Staggered_i$. This is because all of the three terms are almost time invariant, so that they are perfectly correlated with firm fixed effect.

Both column 1 and 2 demonstrate a negative coefficient of α_{123} which is statistically significant at 1% level. It indicates that compared to unprotected firms, Delaware firms with staggered board relatively reduced their leverage after the year of 1995. Considering the sample average leverage ratio was 26.7% before 1995, the magnitude of α_{123} (-0.09 in column 1) implies a downward leverage adjustment by around 3.4 percentage. Therefore, if the regime shift was the only driven of such adjustment, the result would be consistent with agency cost prediction of Jensen (1986): managers would like to avoid debt to increase their financing discretion, and they would do so when market discipline was weak.

[Insert Table 2 here]

This result is robust under various tests, although for space reason we do not

report them in tables. First, as noted by Low (2009), the change of Delaware takeover environment was likely to occur across a period of time rather than a clear event date. The potential effective time spanned from the beginning to the end of 1995. To account for this, we redefine the event year as 1994 so that dummy variable *After* equals one after the year of 1994 instead of 1995.

Second, we adopt different sampling method to avoid selection bias. Concerning firm's entry and exit effect, we follow Garvey and Hanka (1999) to include firms in the sample only if they exit throughout the pre-event period[6]. However, all results do not alter under this specification. Besides, it is noticed that our sample is not balanced in terms of pre- and post- event period, i.e. 5-year pre-event vs. 12-year post-event period. Thus, we also curtail our sample period to only include the time span from 1990 to 2000 with 1995 as the effective date. Still, the industry fixed effect model shows a very consistent result as before, although a_1 in the firm fixed effect regression becomes insignificant.

Finally, as it is likely that manage targets on market leverage, we also replace it as dependent variable. The definition of change in market leverage is similar to that of book leverage in equation (1), except book assets is substituted with market assets. In the unreported result, we still find a downward market leverage adjustment for Delaware firms with staggered board.

5.1.2. Robustness tests

Above analysis closely follows Garvey and Hanka (1999). Besides, we add additional controls to leverage adjustment specification, with which we further prove the robustness of agency cost in capital structure adjustment.

Adjustment Cost

Studies on dynamic capital rebalancing conclude that firms may not achieve first-best capital structure in the presence of transaction cost (e.g. Leary and Roberts, 2005). That is, managers might not choose to rebalance leverage level, if adjustment cost overweighs the following benefit. As found in our sample, the credit rating of treatment firms is better than that of their counterpart. With such difference, it is likely that control firms will not adjust leverage after regime shift only for reasons that such

[6] However, we do not require firms to exist after 1995. Otherwise, survivorship bias could be aroused.

adjustment is costly.

Thus, we add debt and equity issuance cost as additional controls in equation (2). On one hand, a credit rating dummy is adopted as proxy of debt issuance cost. We follow Frank and Goyal (2003) to define rating dummy as one if either Compustat item Domestic Issuer Credit Rating or Subordinated Debt Rating is below 13 (investment grade), and it equals zero if both rating items are above 13 or both of them are missing. In this way, a higher value of rating dummy will imply a lower debt issuance cost. On the other hand, we use firm's annual average stock turnover as proxy of costs related to net equity issuance. Leary and Roberts (2005) argue that stock turnover could be one proxy for equity repurchases cost, because higher turnover indicates that firms can easily buy back stocks. Overall, we predict that a greater value of either credit rating dummy (easy debt issuance) or turnover (easy stock repurchase) will result in higher leverage ratio.

As shown in column 3 of Table 2, both the additional variables are significant at 1% level. The coefficient of credit rating is positive, indicating that lower debt issuance cost leads to a higher usage of debt in capital structure, when other things being equal. In contrast, turnover is negatively correlated to leverage, which is inconsistent with the prediction. One explanation is that turnover ratio does not only reflect repurchases cost. Bharath, Pasquariello and Wu (2009) show that since stock turnover is associated to market liquidity, i.e. higher turnover means less information asymmetry, it thus has a negative relationship with leverage as firms with less information asymmetry are able to issue higher equity at low cost. Noticeably, the negative consequence of takeover impediment on leverage ratio still holds without losing any economic or statistical significance.

Leverage trade-off and pecking order hypothesis

As shown in Figure 1, leverage level for the treatment group was always higher than that of the control group. It is possible that the downward leverage adjustment for Delaware-staggered board firms only reflected firms' efforts in returning debt ratio to what is 'optimal', as it is suggested by leverage trade-off theory. Thus, by assuming the existent of target leverage, we add the deviation of leverage as control.

The definition of leverage deviation follows Fama and French (2002). Deviation at time t equals the difference between firm's target (TL_t) and actual lagged leverage

L_{t-1}. TL_t is obtained as the fitted value of equation (3) below:

$$\begin{aligned} L_{it} = {} & b_0 + b_1 M/B_{i,t-1} + b_2 ROA_{i,t-1} + b_3 ASSET_{i,t-1} + b_4 DEPRE_{i,t-1} \\ & + b_5 PPE_{i,t-1} + b_6 R\&D_{i,t-1} + b_7 R\&D\_dummy_{i,t-1} \\ & + b_8 Ind\_median\_Leverage_{t-1} + FE_{\_Firm} + \varepsilon_{it} \end{aligned} \quad (3)$$

where L_t is actual leverage ratio, $DEPRE_{it}$ is depreciation, PPE_{it} is tangible assets, $R\&D_{it}$ is R&D expense. Because R&D expenses are reported as missing for more than 50% of firms-year observations, we replace them as zero and correspondingly add a R&D missing dummy in the model. All variables are scaled by book assets. Lagged industry median leverage (using 2-digit SIC code) is added to control for industrial characteristics (e.g. Flannery and Rangan, 2005). Firm fixed effect controls for unobservables that cannot be explained by traditional variables (e.g. Flannery and Rangan, 2005; Lemmon, Roberts and Zender, 2008).

Next, we also consider implications from pecking order theory (Myers 1984, Myers and Majluf 1984). It says that because of information asymmetry, firms will choose to issue debt before equity when internal financing is inadequate. Indeed, our concern comes from the sample observation that Non-Delaware-staggered board firms faced a more serious financial deficit condition (defined below) than Delaware firms with staggered board, after the year of 1995. If pecking order theory is true, firms in control group would be expected to use more debt in capital structure decision. Thus, the relative decreased leverage for treatment group might be only due to their relative loosened financing situation. Hence, we incorporate a financial deficit (DEF_{it}) variable as control. It is defined from Frank and Goyal (2003):

$$DEF_{it} = DIV_{it} + INV_{it} + \Delta W_{it} - CASH_{it} \quad (4)$$

where DIV_{it} represents cash dividend, INV_{it} represents net investment, ΔW_{it} is change in working capital and $CASH_{it}$ is cash flow after interest and taxes. All variables are scaled by book assets.

Both proxies of leverage deviation and financial deficit are added into the regression. Result that combines both trade-off and peck order consideration is shown in column 4 of Table 2. Coefficients of leverage deviation and financial deficit are significant at 1% level. On one hand, the coefficient of leverage deviation equal 0.036. It indicates that firms do positively adjust their capital structure toward some target: a

one unit of downward departure of actual leverage from optimal will be reversed by 3.6% in the next period. The adjustment speed is lower than that in Fama and French (which is 7% - 15% per year), because our definition of dependent variable is not identical. However, it is consistent with our concern that part of the leverage decrease for protected firms is not related to the regime shift, but rather it is raised by the fact that Delaware-staggered board firms have a higher level of pre-event leverage. On the other hand, the coefficient of DEF_{it} implies an even stronger impact on determining leverage adjustment, i.e. increasing one unit of financial deficit will let leverage adjustment to increase by 14.4%.

Compared to column 1, column 4 shows an improved explanatory power to the model that R-square increases from 0.26 to 0.32. Nevertheless, despite the newly added controls, our main hypothesis of agency cost cannot be rejected. Although the coefficient of α_{123} decreases to 6 percentage point, it is still significant at 5% level. The robustness of our result shows that Delaware firms with staggered board did reduce their leverage level, when they were protected by antitakeover provisions

5.1.3. Debt and equity issuance

A direct testable hypothesis of agency cost of capital structure lies in corporate debt policy, i.e. entrenched managers tend to avoid debt usage. Therefore, only looking at firms' leverage adjustment may not be enough, because a decreasing in leverage could either result from a decrease in debt level or from an increase in equity. As a result, we study debt and equity behavior separately. Dependent variable is substituted by either net debt or equity issuance (both are scaled by book assets), while we keep control variables the same as before. In Table 3, our hypothesis of agency cost is confirmed by the fact that that Delaware firms with staggered board relatively decrease their debt usage by 0.008 after the law (column 1). In contrast, equity issuance is also raised by 0.007 correspondingly (column 2), which indicates that the increase in equity issuance does help to explain a downward adjustment of leverage ratio for treatment firms.

Still, we control for issuance cost, leverage deviation and financial deficit in debt / equity issuance regression, whose result is shown in the last two columns. All of additional controls are significant at 1% level. One interesting thing is that the coefficient of financial deficit (DEF_{it}) in column 3 is comparable to that of Frank and

Goyal (2003). Although the magnitude of DEF_{it} is far away from unit, it contributes much to explain firm's debt policy. However, even after we control this situation, a significant decrease level of debt is still observable for protected firms.

[Insert Table 3 here]

5.2. Corporate investment decision

5.2.1. Basic regression

We continue our analysis to study firm's investment behavior around the regime shift. The model is still specified as that in equation (2). Our main proxy of investment (y_{it}) is capital expenditure over book assets, as it is used by Pugh, Page and Jehare (1992), and Gompers, Ishii and Metrick (2003). It reflects firms' new investments in physical assets, the increase of which is possibly to be operationally inefficient under conflict of interests.

The presence of antitakeover provision protects managers from market discipline, leading to their discretionary investments. Therefore, we should observe an increased investment level for protected firms, according to the prediction of agency cost of free cash flow. However, one concern is that firms' investment opportunities might have altered along with the regime shift, making the investment change not only a result of law pass. If so, we might not conclude agency cost story. Thus, we add Tobin's Q in lagged period ($Q_{i,t-1}$) to control for the change of investment opportunities. It is calculated as market assets over book assets, where market assets equal book assets plus calendar year end market value of equity minus fiscal year end book equity and balance sheet deferred taxes.

Also, literatures on investment highlight the importance of internal cash flow, such as Kaplan and Zingales (1997), Almeida and Campello (2004). This issue obfuscates our prediction of agency cost on investment, because we cannot identify whether the increase of capital expenditure is a result of over-investment or just a relief of firms' financing condition which occurred simultaneously with the event. Alternatively, we might underestimate the impact of agency cost, as some firms would like to increase investment but did not do so in the presence of financing pressure. Therefore, we include concurrent period cash flow in the model, and it is derived as

operating income before depreciation minus taxes, interests and dividend of preferred and common stock (e.g. Lang, Stulz and Walking, 1991). It is also normalized by book assets.

Table 4 summarizes the result of investment regression. Column 1 and 2 uses either industry or firm level fixed effect to control for unobservable, and year dummy always presents. In column 3 and 4, Tobin's Q and cash flow are also included. All columns show positive coefficients of the triple difference term, which are statistically significant from the level of 1% to 5%. It indicates that the removal of takeover threat enables entrenched manager to undertake extra projects, while other things being equal. The impact is not economically insignificant by any means. For example, the magnitude of α_{123} is 0.007 in the first column. Considering the pre-event sample average investment ratio for Delaware-staggered board firm is 0.066, the pass of legislation leads to an increase of capital investment by more than 10% for protected firms. In Table 4, the coefficient of Tobin's Q shows a significant control effect, which indicates that investment had a positive relationship with opportunities. On the other hand, the coefficient of cash flow is very large in magnitude, implying that investment was constrained by firm's ability of generating internal cash. However, adding these controls does not alter our conclusion on agency cost of investment.

[Insert Table 4 here]

Again, our result is robust under various sampling procedures as we do in the leverage regression section, including altering the event year to 1994, adjusting firms' entry and exit effect, adopting a balanced sample period from 1990 to 2000.

5.2.2. Other investment channels

Aggregate investments and unexpected investments

Further, we check other channels from which entrenched manages could adjust their investment behavior. Specifically, we adopt different investment proxies as our dependent variable in equation (2), while controls of investment opportunities and cash flow are still kept. To reserve space, only the coefficient of triple difference term is reported in Table 5.

First, instead of capital investment, we aggregate total investment expenditures

into one item. It is defined as cash flow item capital expenditure plus acquisition minus sales of PPE[7] and scaled by total assets. As shown in first row of Table 5, the result is still consistent.

In addition, as argued by Titman, Wei and Xie (2004) and Richardson (2006), the abnormal part of investment should be more related to managerial discretion. In contrast, if increased investment is foreseeable according to firm's characteristics such as prospects and profitability, it may not have impact on firm performance. Therefore, we adopt the method of Richardson (2006) to separate out potentially discretionary investment from expected part. That is, we first regress total capital investment on a set of firm characteristics:

$$\begin{aligned} Investment_{it} = {} & d_0 + d_1 M/B_{i,t-1} + d_2 Leverage_{i,t-1} + d_3 Cash_{i,t-1} + d_4 Age_{i,t-1} + d_5 Size_{i,t-1} \\ & + d_6 Stock\_return_{i,t-1} + d_7 Investment_{i,t-1} + FE_{\_Year} + FE_{\_Industry} + \varepsilon_{it} \end{aligned} \quad (5)$$

At each time t-1, next period investment can be predicted by the fitted value of equation (5). Therefore, the unexpected component is obtained as the model residual, and it is treated as dependent variable in the DDD regression, and the result is shown in row 2 of Table 5. The coefficient of triple difference term is significant at 5% level and its magnitude is even larger than that in Table 4. It indicates that our previous use of total capital investment could have underestimated the impact of weakened market control, which is because the change of total investment might still reflect contemporaneous shift in its expected component. Not surprisingly, since we are using the model residual of equation (5) as dependent variable, the explanatory power of DDD regression is low in the sense that R-square equals only 0.02.

[Insert Table 5 here]

Acquisitions

In studying agency cost of investment, acquisition is recognized as one of the most often used mechanisms by which entrenched management participates in diversification purpose investment (e.g. Jensen and Meckling, 1976; Lang, Stulz and Walking, 1991; Masulis, Wang and Xie, 2007). Thus, it is expected that the adoption of antitakeover law would lead to increased acquisition attempts of protected firms.

[7] Several studies on aggregate investment also include R&D expense. But since R&D is known to have many missing observations, we prefer to separate it out.

We identify all acquisition activities from SDC Platinum.[8] From 1990 to 2006, there are totally 6653 acquisition transactions relating to 813 firms that could be matched with our original sample. The value of transaction is either disclosed or not. Because of the missing value, OLS regression may not be appropriate for yielding a consistent estimate of legislation effect. Instead, we follow Gompers, Ishii and Metrick (2003) to adopt Poisson regression, in which the dependent variable is the count of transactions for each firm in each year regardless of the value. Independent variables consist of seven dummy terms that in a standard DDD regression as well as controls, i.e. Tobin's Q and cash flow.

The marginal impact of regime shift on firm's acquisition decision could be seen from the interaction effect, i.e. $Delaware_i \times Staggered_i \times After$, the sign of which indicates whether firms will increase or decrease acquisition attempts when takeover threats are removed. However, one thing to be noticed is that while the interaction effect is proxied by the coefficient of triple difference term in a linear model, this is not true for nonlinear models, i.e. Poisson regression.[9] Rather, we compute the interaction effect by following the nonlinear differences-in-differences method of Ai and Norton (2003) and Norton, Wang and Ai (2004). A simple illustration of this method is given in Appendix B.

Row 3 of Table 5 represents interaction effect. The positive sign, although marginally insignificant, shows that Delaware firms with staggered board increase the attempts of acquisitions, after being protected against hostile takeover. If the legislation shift only enhanced entrenchment, such result will indicate managerial empire-building and risk diversification. The finding is consistent with Gompers, Ishii and Metrick (2003) that acquisition is positively related to entrenchment index. More often than not, agency cost of investment will bring in inefficiency of projects.

5.2.3. Overinvestment or elimination of managerial myopia

The DDD regression shows an increased level of investment for protected firms, which is supportive to agency cost hypothesis of entrenched management. However,

[8] Garvey and Hanka study acquisition expenditure, using data from Compustat. But because more than 50% firms did not have acquisition expense in each year, most of the item's value is zero. Therefore, the lack of variation in this expenditure item makes it not informative enough for DDD analysis.

[9] The reason is shown in Appendix B.

at current stage we cannot exclude ‘managerial myopia’ hypothesis by Stein (1988). That is, the presence of hostile takeover drives managers to emphasize current profit, while the removal of takeover threats enables them to take care of firms’ strategic plan in a longer term, so that managers may increase capital and R&D investment. Therefore, if antitakeover legislation helps eliminate managerial myopia, this in turn could also lead to an increase in capital expenditure level.

Although we cannot completely rule out this possibility, our result seems to be inclined to the agency cost story. First, in an unreported table, DDD regression is adopted to study the change of operating profitability (i.e. Δprofitability as dependent variable). Inconsistent with managerial myopia hypothesis, we find that increments of both ROA and ROE decreased for treatment firms after 1995, indicating that the marginal investment is performance destroying than enhancing.

Alternatively, we directly test investment behavior under agency cost of free cash flow (Jensen, 1986). Specifically, we examine the impact of regime shift on firms with different investment opportunities and cash reserves. On one hand, Cash reserves grants managerial discretion and increases the probability of wasteful projects, because manager with substantial internal cash is allowed to make investments that they may not otherwise be financed from capital market. Direct evidence could be seen from Blanchard, Lopez-de-Silanes, and Vishny (1994). They study a sample of eleven firms that received cash windfall in the form of lawsuit and show that nine of the firms participated in acquisition subsequently. Also, Harford (1999) finds the probability of diversifying acquisition is higher for firms that are characterized by cash-rich, and these acquisitions are always followed by decline in operating performance.

On the other hand, however, the increased discretion may not be value destroying if all projects are likely to have positive NPV. According to Jensen, agency cost of free cash flow is the highest if firm does not have good investment opportunities. He uses the example of oil industry between 1970 and 1980s as an illustration and says that when facing tremendous profits yet shrinking opportunities, petroleum firms tended to waste money on inappropriate acquisitions.

Therefore, we independently sort firms into 2×2 groups based on their pre-event cash reserve and investment opportunities. Then, DDD regression is adopted within

each subsample. The use of pre-event criteria allows us to distinguish the ex-ante potential of managerial discretion. Cash reserve is defined as cash holding over total assets[10]. For each firm, we average its cash reserve between the beginnings of sample period (i.e. 1990) to 1994 to reflect a general pre-event cash level. Investment opportunities is proxied by pre-event sample average of Tobin's Q.

Table 6 shows the coefficients of triple difference term from separate DDD regression, and it strongly supports agency cost of free cash flow hypothesis. The increase of investment behavior is only found in high cash and low Tobin's Q group. In contrast, none of the three other groups show a significant triple difference term.

Noticeably, the insignificance of interaction term of other subgroups does not indicate a constant investment level of protected firms around the law shift. Rather, it means that investment did not change relatively between treatment and control firms. For example, $Delaware_i \times Staggered_i \times After$ is not significant in low cash reserve group, regardless of whether Tobin's Q is high or low. It is possible that managerial discretion was restricted due to the limitation of financing, so protected managers could not over-invest even though the absence of market discipline allowed them to do so. On the contrary, within the high cash and low Tobin's Q firm group, the coefficient of $Delaware_i \times Staggered_i \times After$ is significant at 5% level and its magnitude is much larger than that of when we use the entire sample regression. The explanation is that when future investment return is expected to be low, money is not supposed to be distributed on extra inefficient projects. However, a self-dealing entrenched manger would do so to reinforce his profits, so the relative investment gap between takeover protected firms and non-protected firms is magnified.

5.3. Firm value

With observed adjustments in capital structure and investment decisions for protected firms, we then test how the antitakeover regime shift have impacts on the value aspect. If agency cost leads to both financing and operational inefficiency, one would expect to see reduction in firm value when market discipline is weak. The negative relationship between firm value and managerial entrenchment is showed by Gompers, Ishii and Metrick (2003), Bebchuk and Cohen (2005) and Faleye (2006),

[10] We also define cash reserves as cash over non-cash assets (total assets minus cash), and results do not change.

among others. But as the author says, potential endogeneity from a self-selection problem could exist to weaken the cross-sectional conclusion, as it could also be possible that managers of low value firms tend to adopt the corporate amendments that are in favor of entrenchment. In contrast, our use of natural experiment could provide a better insight of whether the lack of market control is value destroying.

Following previous study, we use Tobin's Q as proxy of firm valuation. Control variables include logarithm of firm size and age, ROA, capital expenditure (scaled by assets), leverage level, R&D (scaled by assets) and R&D dummy (it equals one if R&D is missing). Moreover, either industry or firm-level fixed effect is controlled for unobservables, while year fixed effect always presents.

Regression results are summarized in Table 7. As shown in the first column, the coefficient of triple difference term is negative and significant at 5% level. Considering the sample average Q was 1.57 before 1995, it means that the pass of legislation brings Delaware-staggered board firms a relative value reduction by more than 10%. Such magnitude is similar to previous findings (e.g. Bebchuk and Cohen, 2005) and it is remarkable in terms of economically significance. In addition, the result is robust when we control for firm fixed effect in column 2.

Besides, since the market evaluation of firm assets, especially intangible assets, is different according to industrial characteristics, comparison of Tobin's Q inter-industrially may be misleading. Therefore, we also adopt industry adjusted Q as alternative measure of firm value. It is defined by subtracting firm's Q by its 2-digit industry median. As shown in the last two columns, the significance level of $Delaware_i \times Staggered_i \times After$ decreases. Nevertheless, the negative sign still confirms value destroying effect of entrenched management.

[Insert Table 7 here]

6. Can internal control systems serve as a remedy?

The market for corporate control is restricted by legal issue, discretionary power of entrenched management increases as a consequence. However, we should expect the influence of takeover impediment be not identical for firms with other ways of corporate control. Could an effective control system serve as a complement, the loss

of market discipline may not necessarily lead to value destroying behavior. So the magnitude of managerial agency cost could be underestimated. Therefore, in this section, we group firms according to ownership structure, i.e. managerial ownership and institutional ownership. Different types of ownership reflect ways of corporate control. Results are shown in the following paragraphs.

6.1. Executive equity holdings

According to our hypothesis H2, equity based compensation drives managers' interest closer to that of shareholders, providing managers higher incentives to achieve firm value maximization. Therefore, conflict of interests tends to be less severe among firms with higher executive holdings. To reflect the role of managerial compensation, we calculate the total percentage of shares that hold by top five executives, and then sort firms into two groups based on their average pre-event holdings[11]. In this setting, firms in the below median group are considered having more intensive conflict of interests, whereas agency problem is assumed to be relieved among firms in the above median group. Finally, DDD regression is adopted within subgroup, separately.

The use of pre-event average holding as threshold reflects the magnitude of internal control through contractual incentive. As noted by Zhou (2001), the time to time changed executive shares include systematic component described by contract provision, as well as unsystematic component which may not have impact on firm performance. Therefore, by averaging executive holding within pre-event period, we tend to obtain a stable measure of managerial incentive before the time when antitakeover legislation becomes effective.

Dependent variables in sub-group regression are the same as before, as we study corporate financing and investment decisions and the impact on firm value. Control variables are the same as those in previous corresponding regressions. In panel A of Table 8, we only report the coefficient of triple difference terms for space reason. First, protected firms reduced their usage of debt, but the coefficient of $Delaware_i \times Staggered_i \times After$ is only significant within low executive holding group. The magnitude of debt avoidance (-0.013) increases by 60% than that of column 1 of

[11] Time series averaging includes years from 1992, which is the first year of data availability in Execucomp, to 1994 which is the last year before the pass of legislation.

Table 3 (-0.08). Consistently, we find the increase of capital investment, as well as the destroying of firm value, is only found in low executive holdings firms.

Besides, as CEOs are the most powerful in making corporate decisions, we also use CEO compensation as reference to divide firm groups. The result is shown in panel B of Table 8, which is similar as before. We interpret this as follows: when provided sufficient incentive, manager may not behave in a way to reduce firm value even the lack of market discipline allows them to do so. Otherwise, manager's own share will be devalued along the decrease of firm value.

[Insert Table 8 here]

Indeed, it is arguable that our result cannot distinguish the non-monotonic effect of executive ownership (Morck, Shleifer and Vishny, 1988; Stulz, 1988; Cho, 1998). That is, concentrated executive ownership could serve as incentive to relieve conflict of interests. But when shares as well as voting power are highly convergent, managers may get more entrenched against hostile takeover. So the impotency of legislation effect could come from the fact that the law added no significant marginal benefit to managers who held a large number of shares and had already been entrenched enough to stay far away from takeover.

However, Morck, Shleifer and Vishny (1988) find that greater executive ownership may have inverse impact on firm value, only when it reaches a high enough threshold. In contrast, the relationship between ownership and firm value is positive around low level of executive holdings. Therefore, if we only compare the results for low holdings groups to previous results when we regress on the entire sample, all abnormal performances are more remarkable in absolute value. It confirms the impact of executive ownership on convergence of interest, when such ownership is low.

6.2. Institutional monitoring

We test whether the existence of institutional shareholders could serve as a relief to agency problem. Large institutions could play an active role in monitoring managers' behavior, even though antitakeover provision exempts managers from market discipline. If so, we would expect that the monitoring effect could help offset

negative impact of manager entrenchment.

We calculate for each firm the top five institutional ownerships and divide firms into subgroups based on their pre-event average holdings. As noted by Chen, Harford and Li (2007), institutional influence is not a linear function of absolute value of holdings. Instead, there is a threshold above which influence of institutions will be significant. Therefore, we follow their study to divide firms into quintiles based on top five institutional ownerships and to define firms in the largest quintile as high monitoring group. Finally, DDD regression is adopted within each subsample, and results are shown in Table 9.

As shown in panel A, firms in low institutional group reduces their usage of debt when protected against hostile takeover. The magnitude is 33% larger than that in Table 2. In contrast, firms under intensive monitoring even increases debt level, although the coefficient is not significant. Also, the increase of capital investment is only found among low institutional holding group, while the regime shift has almost no impact on investment decisions of firms in the other group. With respect to firm value, antitakeover provision results in value destroying for all protected firms regardless of their pressure from outsiders. But the magnitude of value reduction is much larger within low monitoring group.

In panel B of Table 9, we sort firms according to the ownership of top five independent institutional investors. Our concern is that grey institutions, such as banks and insurances, may not exert influence on firms because of their business relationship. They thus cannot generate the same monitoring effect as that of independent institutions. The identification strategy of independent investors is the same as that in Chen, Harford and Li (2007). It includes all CDA Spectrum Types 3 and Type 4 firms, and public pension funds among Type 5 firms. However, the use of independent institutional does not improve our results.

[Insert Table 9 here]

7. Conclusion

In 1995, Delaware Supreme Court validated the poison pill in conjunction with a staggered board, which completely immunes Delaware firms with a staggered board

from hostile takeovers. This paper adopts this mid-1990s antitakeover regime shift as an exogenous shock to study impacts of takeover impediments on managers' corporate financing and investment decisions, as well as implications on firm value. Our empirical results show that when shielded from hostile takeovers, managers will decrease the use of debt and increase corporate investment, which leads to a reduction of firm value. Furthermore, the value destroying behaviors are more pronounced in firms that lack of internal control systems such as low managerial ownerships and institutional holdings. Our results lend supports to models of capital structure with managerial entrenchment, Jensen (1986)'s agency theory of free cash flows and Jensen (1993)'s views that effective internal control systems can serve as remedies of weak capital market controls.

Appendix

Appendix A. Variable definition

In this study, staggered board and state of incorporation information come from Investor Responsibility Research Center (IRRC). Accounting and stock information come from Compustat and Center for Research in Securities Prices (CRSP), respectively. Acquisition information comes from SDC Platinum. Executive Compensation is from Execucomp, and Institutional holdings from CDA Spectrum. All level variables, such as book and market assets, are deflated by 2000 GDP deflator.

Table A1. Definition of Variables

Variable	Definition
Dummy Variables constituting Differences-in-Differences-in-Differences term	
$Delaware_i$	$Delaware_i$ =1 if firm is incorporated in Delaware
$Staggered_i$	$Staggered_i$ =1 if firm has staggered board provision
After	*After* =1 for years after 1995, exclusively
Leverage Regression	
Debt issuance	long term debt issuance (Data 111) + increase in current debt (Data 301^{+})
Debt retirement	long term debt reduction (Data 114) + decline in current debt (Data 301^{-})
Net debt issuance	debt issuance - debt retirement
Net equity issuance	sale of common and preferred stock (Data 108) - repurchase of common and preferred stock (Data 115)
Total debt	long term debt (Data 9) + debt in current liabilities (Data 34)
Total assets	Data 6
Leverage change$_t$ (dependent variable of Table 2)	$\Delta Lev_t = \frac{Debt_{t-1} + Debt\_issuance_t}{Asset_{t-1} + Debt\_issuance_t + Equity\_issuance_t} - \frac{Debt_{t-1}}{Asset_{t-1}}$

Leverage level	total debt / total assets
ROA	operating profitability, Data 13 / Data 6
Stock Return	continuously compounded return calculated from monthly stock return
Credit rating	=1 if senior debt rating (Data 280) <13 or subordinate debt rating (Data 320) <13. Credit rating=0 if otherwise or both data is missing.
Stock turnover	$yearly\_turnover_i = \sum_{s=1}^{12} T_{i,t+s-12}$, where $T_{i,t}$ is monthly turnover
Leverage deviation$_t$	target leverage$_t$ – leverage$_{t-1}$, where target leverage is the fitted value of equation (3)
Financial deficit	cash dividend + net investment + change in working capital – cash flow after interest and tax (from Frank and Goyal 2003)
Investment regression	
Capital investment (dependent variable of Table 4)	capital expenditure (Data 128) / Data 6
Tobin's Q	equals market assets divided by book assets, where market assets = book assets (Data 6) + market value of common stock (Data 24 × Data 25) - book value of common stock (Data 60) - deferred taxes (Data 74)
Cash flow	operating income before depreciation (Data 13) - (income taxes (Data 16) - change in deferred tax (Data 35)) - interest expense (Data 15) - preferred dividend (Data 19) - common dividend (data 21)
Cash reserve	cash (Data 1) / Data 6
Aggregate investment	(capital expenditure (Data 128) + acquisition (Data 129) - sales of PPE (Data 109)) / Data 6
Unexpected investment	capital investment minus expected investment which is the fitted value of equation (5)
Count of acquisition	number of acquisitions, including transactions with both disclosed value and undisclosed value (from SDC)
Value Regression	
Tobin's Q (dependent variable of Table 7)	same as above

Industrial adjust Tobin's Q	Tobin's Q minus its industry median (2 digit SIC code)
Firm age	time span starts from the first yeas when price data is available at CRSP and ends at current fiscal year
R&D	R&D expense (Data 46), =0 if missing
R&D dummy	=1 if R&D is reported as missing
Ownership structure	
Top executive ownership	sum of top five executive stock holdings divided by total shares outstanding (from Execucomp)
CEO ownership	CEO stock holdings divided by total shares outstanding
Institutional ownership	sum of top five institutional stock holdings divided by total shares outstanding (from CDA Spectrum)
Independent Institutional ownership	sum of top five independent institutional stock holdings divided by total shares outstanding, where independent institutions are either CDA Type 3 or Type 4 or public pension fund among Type 5 firms

Appendix B. Calculating interaction effect in nonlinear models

In row 3 of Table 5, we adopt nonlinear DDD regression (Poisson) to show how the mid-1990s antitakeover regime shift affects firm's acquisition decision. Because of model nonlinearity, the coefficient of triple difference term cannot be interpreted as marginal effect of the law pass on protected firms. Thus, the interaction effect reported in row 3 is calculated based on the method of Ai and Norton (2003) and Norton, Wang and Ai (2004).

First, we illustrate why the coefficient of triple difference term is not a valid proxy of marginal effect of law pass. Suppose the expected value of dependent variable y is a function as:

$$\begin{aligned} & E[Y \mid X_1, X_2, X_3, Z] \\ & = \phi(\beta_{123} X_1 X_2 X_3 + \beta_{12} X_1 X_2 + \beta_{13} X_1 X_3 + \beta_{23} X_2 X_3 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \gamma Z) \qquad \text{(A1)} \\ & = \phi(u) \end{aligned}$$

where X_1, X_2 and X_3 are the three components of DDD regression and Z represents other controls. When $\phi(u)$ is a linear transformation of u, the marginal effect of interaction is simply the coefficient of triple difference term. But obviously, this is not true for nonlinear model, because neither $\phi'(u)$, $\phi''(u)$ or $\phi'''(u)$ is necessarily equal to zero.

To correct for this, the marginal effect of law could be calculated as follows. Here we only illustrate the situation when X_1, X_2 and X_3 are discrete variables. One can imagine it as the three dummy variables used in this study, i.e. $Delaware_i$, $Staggered_i$ and *After*.

$$
\begin{aligned}
\frac{\Delta^3\phi(u)}{\Delta X_1\Delta X_2\Delta X_3} &= \frac{\Delta^2\phi(\beta_{123}X_2X_3+\beta_{12}X_2+\beta_{13}X_3+\beta_{23}X_2X_3+\beta_1+\beta_2X_2+\beta_3X_3+\gamma Z)}{\Delta X_2\Delta X_3} \\
&\quad -\frac{\Delta^2\phi(\beta_{23}X_2X_3+\beta_2X_2+\beta_3X_3+\gamma Z)}{\Delta X_2\Delta X_3} \\
&= \frac{\Delta\phi(\beta_{123}X_3+\beta_{12}+\beta_{13}X_3+\beta_{23}X_3+\beta_1+\beta_2+\beta_3X_3+\gamma Z)}{\Delta X_3} \\
&\quad -\frac{\Delta\phi(\beta_{13}X_3+\beta_1+\beta_3X_3+\gamma Z)}{\Delta X_3} \\
&\quad -\frac{\Delta\phi(\beta_{23}X_3+\beta_2+\beta_3X_3+\gamma Z)}{\Delta X_3} \\
&\quad +\frac{\Delta\phi(\beta_3X_3+\gamma Z)}{\Delta X_3} \\
&= \ldots\ldots \\
&= \phi(\beta_{123}+\beta_{12}+\beta_{13}+\beta_{23}+\beta_1+\beta_2+\beta_3+\gamma Z) \\
&\quad -\phi(\beta_{12}+\beta_1+\beta_2+\gamma Z)-\phi(\beta_{13}+\beta_1+\beta_3+\gamma Z)-\phi(\beta_{23}+\beta_2+\beta_3+\gamma Z) \\
&\quad +\phi(\beta_1+\gamma Z)+\phi(\beta_2+\gamma Z)+\phi(\beta_3+\gamma Z) \\
&\quad -\phi(\gamma Z)
\end{aligned}
\tag{A2}
$$

where Δ indicates discrete difference when Xs change from zero to one. For example, the first equality holds when we explicitly calculate the fitted value of Y conditional on X_1=1 minus that conditional on X_1=0.

Finally, the impact of law pass on protected firms could be obtained by calculating the fitted value of Y conditional on the eight terms implied by the last equality of equation (A2). For a comprehensive review of the method, please see Ai and Norton (2003) and Norton, Wang and Ai (2004).

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Table 1. Summary statistics of sample firms before 1994

Data consists of firm-year observations with all complete Compustat, CRSP and IRRC information. Firms are divided into four groups based on their board structure and State of incorporation, i.e. the first group consists of firms that incorporated in Delaware and with staggered board, and the second group consists of firms incorporate in Delaware but without staggered board, and so on. Summary statistics are within group average of firm level variables between the year of 1990 and 1994. Leverage change is calculated according to equation (1); debt issuance is net debt issues over book assets and equity issues is net equity issuance over book assets; leverage level is defined as total debt over book assets. Investment is proxied by cash flow items: capital expenditure, acquisition expenditure, sales of PPE, respectively. Tobin's Q is measured by firms' market assets to book assets and it is used to proxy firm value. Other firm characteristics are obtained from either Compustat or CRSP, and their definitions could be found in Appendix A.

	Delaware firms with staggered board		Delaware firms without staggered board		Non Delaware firms with staggered board		Non Delaware firms without staggered board	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Leverage								
Leverage change (ΔLev) (%)	0.33	-0.09	-0.14	-0.49	0.22	-0.09	0.51	0.00
Debt issuance (over Assets) (%)	0.20	-0.09	-0.21	-0.48	0.34	-0.06	0.56	0.00
Equity issuance (over Assets) (%)	0.29	0.00	0.61	0.03	0.06	0.01	0.32	0.01
Leverage level (%)	27.75	27.00	24.23	21.94	25.80	27.01	28.18	27.75
Investment								
Capital expenditure / Assets (%)	6.59	5.44	6.97	5.66	6.57	5.90	6.41	5.52
Acquisition expenditure / Assets (%)	1.43	0.00	1.79	0.00	1.11	0.00	1.45	0.00
Acquisition (attempts per year)	1.52	1.00	1.65	1.00	1.56	1.00	1.54	1.00
Firm Value								
Tobin's Q	1.56	1.06	1.72	1.35	1.478	1.20	1.52	1.19
Firm characteristics								
Size ($1,000M)	3.70	0.97	4.59	0.97	3.99	1.02	5.46	1.35
ROA	0.13	0.13	0.13	0.14	0.14	0.14	0.12	0.12
Stock return	0.15	0.08	0.18	0.10	0.16	0.11	0.16	0.10
Cash flow	0.07	0.06	0.07	0.08	0.07	0.07	0.06	0.06
Firm age	23.16	20.00	21.98	18.00	28.00	23.00	28.58	22.00
Number of firms	373		265		359		230	

Table 2. Regression of change in leverage

Data consists of firms-year observations with complete Compustat, CRSP and IRRC data. Dependent variable is the change in book leverage according to equation (1). *Delaware*, *Staggered* and *After* are dummy variables, *Delaware* =1 if firm is incorporated in Delaware; *Staggered* =1 if firm has staggered board; *After* =1 for year after 1995 exclusively. Industry mean of dependent variable is the average of leverage change of other firms in the same 2-digit SIC code. Loss dummy equals one if firms previous year's net income was negative, zero otherwise. Level variables ($Log(Asset_{t-1})$, $Asset_{t-1}$, $\Delta Log(Asset_{t-1})$ are deflated by 2000 GDP deflator. In column 3, we add adjustment costs proxy (credit rating and stock turnover) as controls. In column 4, we further control for leverage deviation from target and financial deficit, which serve as test for optimal leverage and pecking order hypothesis, respectively. All independent variables are trimmed at upper and lower 0.5 percentile. Standard error is reported as White robust standard error, and it is clustered in incorporation level. T-value is shown in parenthesis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

	Dependent Variable: change in book leverage			
	(1)	(2)	(3)	(4)
$Delaware_i \times Staggered_i \times After$	-0.009***	-0.008***	-0.009***	-0.008***
	(-4.23)	(-2.86)	(-4.19)	(-3.28)
$Delaware_i \times Staggered_i$	0.009***		0.009***	0.008***
	(5.78)		(5.72)	(4.58)
$Delaware_i \times After$	0.009***	0.007**	0.009***	0.009***
	(3.99)	(2.37)	(3.71)	(3.89)
$Staggered_i \times After$	0.006**	0.006**	0.006**	0.004*
	(2.52)	(2.21)	(2.67)	(1.70)
$Delaware_i$	-0.006***		-0.005***	-0.005***
	(-3.34)		(-2.89)	(-2.89)
$Staggered_i$	-0.004**		-0.005***	-0.004**
	(-2.49)		(-2.98)	(-2.20)
After	-0.003	-0.002	-0.001	0.001
	(-1.22)	(-0.53)	(-0.34)	(0.46)
Industry mean of dependent variable (2-digit SIC code)	0.300***	0.283***	0.296***	0.272***
	(12.88)	(11.01)	(13.23)	(11.10)
$(Debt/Asset)_{t-1}$	-0.052***	-0.172***	-0.053***	-0.040***
	(-11.70)	(-24.59)	(-14.19)	(-7.76)
ROA_{t-1}	-0.013	-0.094***	-0.018	0.008
	(-0.90)	(-8.61)	(-1.32)	(0.90)
ΔROA_t	-0.239***	-0.241***	-0.244***	-0.130***
	(-12.44)	(-21.26)	(-13.62)	(-8.34)
loss dummy, =1 if previous year net income is negative	-0.001	0.001	0.002	-0.001
	(0.25)	(0.71)	(1.35)	(-0.97)
Stock $Return_{t-1}$ (from CRSP)	-0.004***	-0.003**	-0.001	-0.001
	(-3.11)	(-2.20)	(-1.31)	(-0.54)
$Log(Asset_{t-1})$	0.002***	0.002	0.001*	0.001*
	(3.37)	(1.20)	(1.95)	(1.96)
$Asset_{t-1} \times 10^6$	-0.167***	-0.230**	-0.180***	-0.178***
	(-4.28)	(-2.26)	(-4.52)	(-3.75)
$\Delta Log(Asset_{t-1})$	0.139***	0.144***	0.143***	0.128***
	(28.02)	(24.74)	(26.37)	(19.50)
Credit $rating_t$			0.004***	0.004***
			(3.91)	(4.16)
Stock $turnover_t \times 10^2$			-0.043***	-0.040***
			(-10.10)	(-10.34)

Leverage deviation$_t$				0.026***
				(3.48)
Financial deficit$_t$				0.140***
				(11.02)
Fixed effect	Industry	Firm	Industry	Industry
R^2	0.260	0.370	0.269	0.321
Num. of Obs.	11250	11250	11233	10201

Table 3. Regression of change in Debt/ Equity issuance

Data consists of firms with all complete Compustat, CRSP and IRRC information. Dependent variable is either debt issuance or equity issuance (both scaled by total book assets). In the first two columns, independent variables are the same as that in Garvey and Hanka (1999). In the last two columns, additional controls are added for robustness check. These controls are: credit rating, stock turnover, leverage deviation from target and financial deficit. We only report the coefficient of key variables for space reservation. All independent variables are trimmed at upper and lower 0.5 percentile. Standard error is reported as White robust standard error, and it is clustered in incorporation level. T-value is shown in parenthesis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

	Debt issue (1)	Equity issue (2)	Debt issue (3)	Equity issue (4)
$Delaware_i \times Staggered_i \times After$	-0.008**	0.008**	-0.009**	0.006**
	(-2.55)	(2.64)	(-2.39)	(2.01)
$Delaware_i \times Staggered_i$	0.007**	-0.005*	0.007***	-0.002
	(2.66)	(-1.77)	(2.86)	(-0.89)
$Delaware_i \times After$	0.011***	-0.011***	0.011***	-0.009***
	(3.51)	(-4.48)	(3.65)	(-3.68)
$Staggered_i \times After$	0.007**	<-0.001	0.005	-0.002
	(2.12)	(-0.06)	(1.38)	(-0.53)
$Delaware_i$	-0.005**	0.002	-0.004**	0.001
	(-2.18)	(0.86)	(-2.04)	(0.30)
$Staggered_i$	-0.003	<0.001	-0.004	0.001
	(-1.21)	(0.14)	(-1.48)	(0.21)
After	-0.008**	-0.007***	-0.003	-0.008***
	(-2.45)	(-3.32)	(-1.05)	(-3.69)
Credit rating$_t$			0.004***	-0.003***
			(2.92)	(-5.76)
Stock turnover$_t \times 10^2$			-0.040***	0.050***
			(-9.33)	(11.98)
Leverage deviation$_t$			0.034**	0.029***
			(2.62)	(2.80)
Financial deficit$_t$			0.235***	0.136***
			(15.22)	(13.32)
Other controls variables in Garvey and Hanka (1999)	Controlled	Controlled	Controlled	Controlled
Fixed effect	Industry	Industry	Industry	Industry
R^2	0.327	0.240	0.428	0.298
Num. of Obs.	11250	11250	10201	10201

Table 4. Regression of Investment

Data consists of firms with all complete Compustat, CRSP and IRRC information. Dependent variable is the measure of capital investment, which is calculated as capital expenditure over total book assets. In the first two columns, DDD regression is adopted with industry level and firm level fixed effect, respectively. In the last two columns, we add additional controls that include beginning-of-period market to book assets and current period undistributed cash flow. All independent variables are trimmed at upper and lower 0.5% level. Standard error is reported as White robust standard error, and it is clustered in incorporation level. T-value is shown in parenthesis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

	Dependent Variable: Investment			
$Delaware_i \times Staggered_i \times After$	0.007***	0.007**	0.005**	0.007**
	(3.00)	(2.51)	(2.00)	(2.28)
$Delaware_i \times Staggered_i$	-0.010***		-0.009***	
	(-4.65)		(-3.78)	
$Delaware_i \times After$	-0.005*	-0.005*	-0.004*	-0.005*
	(-1.86)	(-1.80)	(-1.73)	(-1.91)
$Staggered_i \times After$	-0.005*	-0.003	-0.003	-0.003
	(-1.91)	(-1.12)	(-1.36)	(-1.02)
$Delaware_i$	0.009***		0.009***	
	(3.51)		(3.82)	
$Staggered_i$	0.006***		0.006***	
	(2.90)		(2.63)	
After	-0.012***	-0.015***	-0.013***	-0.015***
	(-3.11)	(-4.18)	(-3.49)	(-4.70)
Tobin's Q_{t-1}			0.005***	0.006***
			(7.10)	(7.44)
Cash $Flow_t$			0.084***	0.023
			(3.38)	(0.74)
Fixed effect	Industry, Year	Firm, Year	Industry, Year	Firm, Year
R^2	0.331	0.621	0.336	0.630
Num. of Obs.	13202	13202	13202	13202

Table 5. Regression of other Investments

Data consists of firms with all complete Compustat, CRSP and IRRC information. In the first row, dependent variable is total investment, which is calculated as capital expenditure plus acquisition minus sales of PPE and then scaled by book assets. In row 2, dependent variable is the portion of unexpected investment. In row 3, dependent variable is the count of acquisition for each firm in each year and maximum likelihood Poisson regression is adopt to study the probability of acquisition. In each regression, independent variables consist of seven dummy terms in DDD regression plus control variables, i.e. beginning-of-period market to book assets and current period undistributed cash flow. In the first two rows, interaction effect is simply the coefficient of triple difference term in DDD regression i.e. $Delaware_i \times Staggered_i \times After$, and standard error is reported as White robust standard error, clustered in incorporation level. In the last row, interaction effect is calculated using the nonlinear DDD method of Ai and Norton (2003) and Norton, Wang and Ai (2004), and standard error is bootstrapped with 1000 replications. All independent variables are trimmed at upper and lower 0.5% level. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

Dependent Variable	Interaction effect	Model	R^2	Num. of Obs.
Aggregate investment	0.023*	OLS	0.102	13202
	(1.81)			
Unexpected investment	0.010**	OLS	0.002	11301
	(2.13)			
Acquisition	0.249	Poisson	-	3634
	(1.53)			

Table 6. Investment regression by Tobin's Q and cash reserve group

Data consists of firms with all complete Compustat, CRSP and IRRC information. Dependent variable is the measure of capital investment, which is calculated as capital expenditure over total book assets. We independently sort firms into four groups based on their pre-1994 (inclusive) average Tobin's Q and cash reserve. DDD regression is then adopted within each group. All the control variables are the same as those in Table 4, yet we only report the coefficient of triple-difference term. Standard error is reported as White robust standard error, and it is clustered in incorporation level. T-value is shown in parenthesis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

	Low Cash Reserve		High Cash Reserve	
	Low Tobin's Q	High Tobin's Q	Low Tobin's Q	High Tobin's Q
$Delaware_i \times Staggered_i \times After$	-0.005	-0.005	0.031**	-0.003
	(-0.95)	(-0.94)	(2.21)	(-0.60)
Fixed effect	Industry, Year	Industry, Year	Industry, Year	Industry, Year
R^2	0.528	0.479	0.370	0.354
Num. of Obs.	4218	2516	2203	4045

Table 7. Regression of Firm value

Data consists of firms with all complete Compustat, CRSP and IRRC information. In the left panel, dependent variable is a proxy of Tobin's Q that measured by firms' market assets to book assets. In the right panel, dependent variable is industry adjusted Q. Independent variables are logarithm of firm size and age, ROA, capital expenditure (scaled by assets), R&D (scaled by assets) and leverage level. R&D dummy equals one if firms R&D expense is missing. Firm- and year- fixed effect are adopted to control for unobservable factors. All independent variables are trimmed at upper and lower 0.5% level. Standard error is reported as White robust standard error, and it is clustered in incorporation level. T-value is shown in parenthesis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

	Dependent Variable:			
	Tobin's Q		Industry adjusted Tobin's Q	
$Delaware_i \times Staggered_i \times After$	-0.162**	-0.138**	-0.108*	-0.087
	(-2.63)	(-2.50)	(-1.83)	(-1.58)
$Delaware_i \times Staggered_i$	0.151***		0.131**	
	(2.78)		(2.50)	
$Delaware_i \times After$	0.114**	0.097**	0.059	0.048
	(2.29)	(2.15)	(1.14)	(1.11)
$Staggered_i \times After$	0.060	0.005	0.054	0.010
	(1.04)	(0.10)	(0.95)	(0.19)
$Delaware_i$	-0.081		-0.061	
	(-1.46)		(-1.14)	
$Staggered_i$	-0.109**		-0.109**	
	(-2.22)		(-2.30)	
After	0.103*	0.185***	0.080	0.024
	(1.83)	(3.65)	(1.33)	(0.45)
$\log(age_{t-1})$	-0.052	-0.021	-0.059	-0.054*
	(-1.25)	(-0.67)	(-1.37)	(-1.82)
$\log(asset_{t-1})$	0.019	-0.109***	0.022*	-0.115***
	(1.46)	(-2.83)	(1.84)	(-3.31)
ROA_t	5.868***	4.389***	5.634***	3.957***
	(16.36)	(18.12)	(16.50)	(17.17)
Capital $expenditure_t$ / $Assets_t$	-0.234	0.954***	-0.295	0.787***
	(-0.51)	(4.23)	(-0.68)	(4.17)
$R\&D_t$ / $Assets_t$	7.180***	4.451***	7.258***	4.716***
	(8.84)	(4.37)	(8.72)	(4.92)
R&D Dummy (if R&D missing)	0.053	0.044	0.055	0.041
	(0.96)	(1.08)	(1.00)	(1.21)
$Leverage_t$	-0.580***	-0.482***	-0.532***	-0.345***
	(-7.66)	(-5.76)	(-7.38)	(-4.11)
Fixed effect	Industry Year	Firm Year	Industry Year	Firm Year
R^2	0.410	0.708	0.308	0.663
Num. of Obs.	11031	11031	11031	11031

Table 8. Regression by executive ownership group

Data consists of firms with all complete Compustat, CRSP and IRRC information. For each firm, we measure executive holdings by the percentage of firm shares hold by top five executives (Panel A), or the percentage of firm shares hold by CEO (Panel B). Then, firms are sorted into two groups based on their pre-1994 (inclusive) average executive holdings. The high holding group consists of firms with executive holdings above the median, while low holding group consists of firms with holdings below the median. DDD regression is then adopted within each group. In the first column, dependent variables are debt issue, while control variables are the same as those in first column of Table 3. In the second column, dependent variable is investment that calculated as capital expenditure over book assets, and control variables are corresponding to column 3 of Table 4. In the last column, dependent variable is firm value that proxied by Tobin's Q, whereas control variables are corresponding to Table 6. We only report the coefficient of triple-difference term. All independent variables are trimmed at upper and lower 0.5 percentile. Standard error is reported as White robust standard error, and it is clustered in incorporation level. T-value is shown in parenthesis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

Panel A

Dependent Variable	Debt issue		Capital investment		Firm value	
	Low holdings	High holdings	Low holdings	High holdings	Low holdings	High holdings
$Delaware_i \times Staggered_i \times After$	-0.013**	-0.007	0.010***	0.002	-0.266***	-0.143
	(-2.21)	(-0.79)	(3.08)	(0.25)	(-3.77)	(-1.15)
R^2	0.327	0.389	0.437	0.372	0.600	0.437
Num. of Obs.	3771	3506	4491	4352	3822	3609

Panel B

Dependent Variable	Debt issue		Capital investment		Firm value	
	Low holdings	High holdings	Low holdings	High holdings	Low holdings	High holdings
$Delaware_i \times Staggered_i \times After$	-0.009*	-0.008	0.016***	-0.005	-0.186*	-0.093
	(-1.94)	(-0.90)	(3.47)	(-1.03)	(-1.73)	(-0.074)
R^2	0.335	0.374	0.372	0.423	0.557	0.440
Num. of Obs.	4058	3787	4834	4720	4090	3839

Table 9. Regression by institutional holdings group

Data consists of firms with all complete Compustat, CRSP and IRRC information. For each firm, we measure institutional holdings by the percentage of firm shares hold by top five institutions (Panel A), or the percentage of firm shares hold by top five independent institutions (Panel B). Then, firms are sorted into quintiles based on their pre-1994 (inclusive) average institutional holdings. The high holding group consists of firms in the largest quintiles, while low holding group consists of firms with holdings in the first four quintiles. DDD regression is then adopted within each group. In the first column, dependent variables are debt issue, while control variables are the same as those in first column of Table 3. In the second column, dependent variable is investment that calculated as capital expenditure over book assets, and control variables are corresponding to column 3 of Table 4. In the last column, dependent variable is firm value that proxied by Tobin's Q, whereas control variables are corresponding to Table 6. We only report the coefficient of triple-difference term. All independent variables are trimmed at upper and lower 0.5 percentile. Standard error is reported as White robust standard error, and it is clustered in incorporation level. T-value is shown in parenthesis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

Panel A

Dependent Variable	Debt issue		Capital investment		Firm value	
	Low holdings	High holdings	Low holdings	High holdings	Low holdings	High holdings
$Delaware_i \times Staggered_i \times After$	-0.012***	0.009	0.007*	-0.002	-0.165**	-0.127
	(-3.64)	(0.87)	(1.86)	(-0.27)	(-2.54)	(-1.05)
R^2	0.324	0.374	0.380	0.397	0.412	0.494
Num. of Obs.	9124	2126	10740	2462	8864	2167

Panel B

Dependent Variable	Debt issue		Capital investment		Firm value	
	Low holdings	High holdings	Low holdings	High holdings	Low holdings	High holdings
$Delaware_i \times Staggered_i \times After$	-0.009***	-0.005	0.008**	-0.004	-0.156**	-0.244
	(-2.99)	(-0.49)	(2.39)	(-0.65)	(-2.23)	(-1.66)
R^2	0.327	0.365	0.364	0.462	0.428	0.458
Num. of Obs.	9258	1992	10857	2345	9005	2026

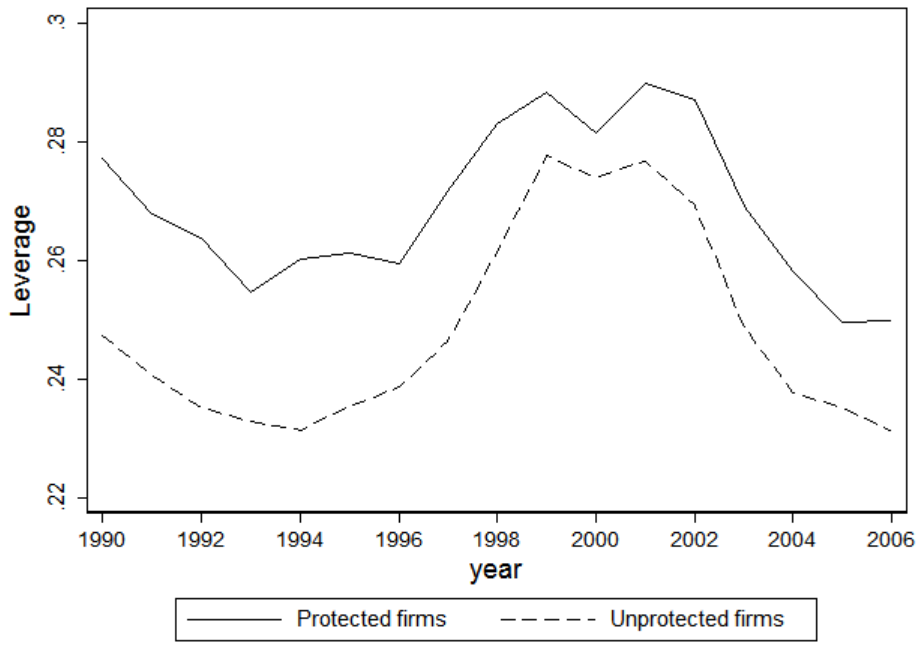

Figure 1. Leverage pattern across year. The sample covers firm-year observations that have complete IRRC data and leverage information. Sample period is from 1990-2006. Firms are divided into two groups based on their board structure and state of incorporation, i.e. firms that in Delaware and with staggered board (Protected), and firms that not in Delaware or without staggered board or both (Unprotected). Y-axis represents book leverage that is calculated as total debt over book assets and is averaged within groups.

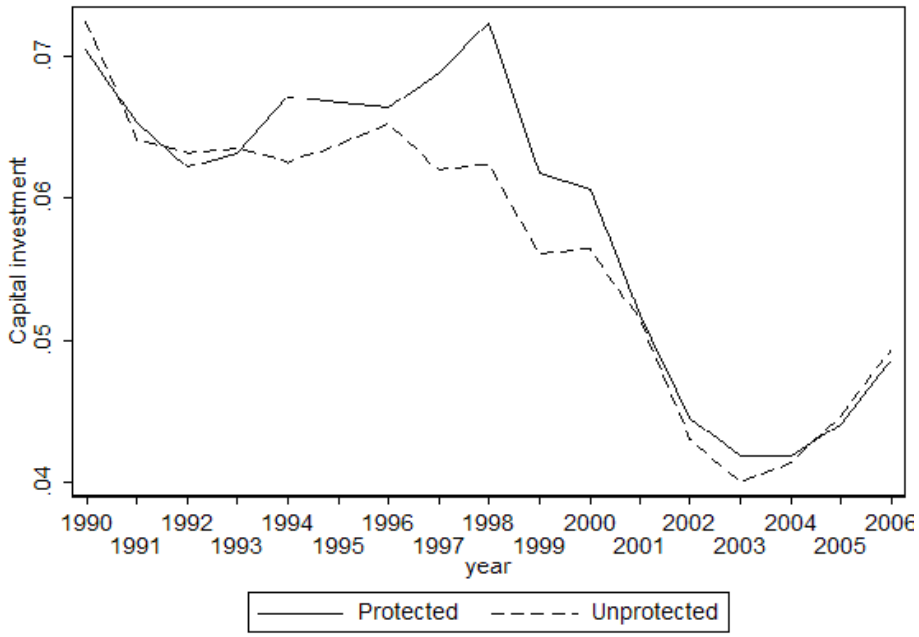

Figure 2. Investment pattern across year. The sample covers firm-year observations that have complete IRRC data and capital investment information. Sample period is from 1990-2006. Firms are divided into two groups based on their board structure and state of incorporation, i.e. firms that in Delaware and with classified board (Protected), and firms that not in Delaware or without classified board or both (Unprotected). Y-axis represents capital investment that is defined as capital expenditure over total assets and is averaged within groups.