

The Choice of Corporate Liquidity and Corporate Governance

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Abstract

This paper uses the second-generation antitakeover legislation as a natural experiment to understand corporate governance influence on managerial decisions, specifically by examining influences on firms' liquidity choices between cash and loan commitments. These choices differ primarily in the allocation of ex-post control rights of firms' liquidity reserves, which may lead to disagreement among stakeholders about firms' liquidity choices. The resulting decisions are strongly influenced by their relative bargaining powers, i.e., corporate governance. The introduction of antitakeover laws during the 1980s and 1990s weakened managerial discipline by reducing the threat of takeover. Subsequently, firms with bad internal governance tended to increase cash holdings relative to loan commitments, but this tendency was significantly weaker for firms with good internal governance. This is consistent with the optimizing behavior of management which balances private benefits of cash against fewer control challenges provided by increased oversight of loan commitments. Findings suggest the choice of corporate liquidity is a channel for corporate governance, and large cash holdings may be a sign of confidence in good management.

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1 Introduction

Loan commitments are popular forms of banks' commercial and industrial lending. According to the Federal Reserve statistical release (December, 2004), nearly 80% of all commercial and industrial loans are made under commitment contracts. Along with cash holdings, loan commitments constitute the primary means to meet firms' liquidity needs.¹ Despite such prevalent use, stakeholders often disagree on how to secure firms' liquidity needs between these two alternatives. For example, when Kirk Kerkorian attempted a takeover of Chrysler Motors, he proposed increasing shareholder value by returning most of Chrysler's \$7.5 billion cash to shareholders. In doing so, he argued that this deal wouldn't put Chrysler at risk, because its remaining \$2.5 billion in cash and \$2.5 billion in bank lines of credit would provide sufficient liquidity.² Chrysler's management, however, disagreed because they considered drawing on \$2.5 billion lines of credit during a pinch unrealistic, and they insisted on keeping the \$7.5 billion cash reserve.³ Although this takeover attempt did not succeed, Chrysler, pressured by this incident, decided to increase its level of loan commitments and lower its cash reserves by raising dividends.

This example suggests that management and shareholders may have conflicting preferences between cash and loan commitments, and the resulting composition is likely to be influenced by corporate governance. This paper tries to understand how corporate governance influences managerial decisions by examining how it influences the choice of corporate liquidity insurance. Specifically, I focus on firms' choices for either cash or loan commitments, which differ primarily in the discretion afforded to management. Cash gives managers more discretion and operational flexibility, but also exposes the firm to managerial opportunism. On the other hand, loan commitments limit managerial discretion through monitoring and covenants, but the firm also incurs banking costs (e.g., transaction costs, hold-up by the bank, and excessive creditor activism). In a firm with functioning internal governance (e.g., independent board and shareholder activism) to efficiently oversee a firm's operation and prevent opportunistic actions, shareholders need not worry too much about (ex-post) misuses of the cash retained as a liquidity reserve. However, in a firm with weak internal governance, shareholders anticipate management's misuse of cash and therefore want to limit management's discretion by

¹Outstanding unused loan commitments of U.S. corporations are \$1.7 trillion (as of December 31, 2004, www2.fdic.gov/SDI). Aggregate corporate cash holdings for public firms are \$1.67 trillion (sum of *item #1* for all firms in COMPUSTAT).

²"Kerkorian's Play for Chrysler Shows How He Became a Billionaire," Washington Post, April 18, 1995.

³"For Chrysler, A Question of How Much Cash Is Enough?," New York Times, April 20, 1995.

reducing cash and substituting it with loan commitments, which are monitored by banks and are subject to covenants. When a manager of such a firm decides to keep too much cash and too few loan commitments, shareholders may prefer costly actions to discipline (or replace) the manager. As a result, a manager of such a firm will choose the optimal mix of cash and loan commitments to balance private benefits provided by discretion of cash against the fewer control challenges provided by increased oversight of loan commitments. This suggests that a firm should consider loan commitments as part of its overall cash holding strategy, yet it is rare to find empirical research on corporate liquidity based on firm-level data that considers both cash and loan commitments.⁴

For this empirical study, I use loan commitment data from *Dealscan* for U.S. non-financial firms from 1987 through 1996. In this empirical study, I first explore stylized patterns of firms' liquidity choices. The media often claims that large corporate cash holdings are a manifestation of bad corporate governance, which implies that the fraction of cash in the liquidity reserve and bad corporate governance are positively correlated.⁵ However, if a firm with good internal governance (e.g., an independent board) can effectively oversee its operation and prevent a manager's opportunistic actions, then shareholders need not worry about keeping cash inside the firm. Hence, we expect shareholders of a well-governed firm to tolerate a large fraction of cash before taking costly actions to replace an incumbent manager. This implies that the fraction of cash in a firm's liquidity reserve and good corporate (internal) governance are positively correlated. Consistent with the latter view, the data suggest that large cash holdings are a sign of confidence in management rather than a sign of bad management. I.e., I find positive correlation between the fraction of cash in a firm's liquidity reserve (the sum of cash and loan commitments) and good internal governance. For example, the fraction of loan commitments in a firm's liquidity reserve decreases by 11% when the fraction of shares held by institutional investors increases by 10%. This result holds for a variety of measures of internal governance: shares held by institutional investors, 5% blockholders, and insiders.

In order to further test my predictions, I use the passage of antitakeover legislation as a natural experiment to infer firms' preferences on liquidity choices. This differences-in-differences

⁴Most empirical research on corporate liquidity focuses on firms' cash holding decisions (e.g., Kim, Mauer, and Sherman [1998]; Opler, Pinkowitz, Stulz, and Williamson [1999]; Faulkender and Wang [2005]; Almeida, Campello, and Weisbach [2004]; and Himmelberg, Love, and Sarria-Allende [2003]). A notable exception is Morgan (2002), where he shows that availability of loan commitments relaxes firm's cash management constraints. Also, Sufi (2005) studied the role of used and unused lines of credit in firms' capital structure decisions. While Sufi's work focuses on the differences in flexibility between lines of credit and arm's length debts, this paper focuses on the differences in ex-post control rights between loan commitments and cash.

⁵See, for example, "Microsoft can count. Intel can't," *Wall Street Journal*, July 22, 2004.

approach accounts for the endogenous nature of firms' liquidity choices and corporate governance; a firm's state of corporate governance may covary with unobserved heterogeneity such as a firm's unobservable investment opportunities. Hence, comparing liquidity choices between firms with good and bad corporate governance may capture the effect of this unobserved heterogeneity rather than the effect of corporate governance. Recent state-level adoption of antitakeover legislation increased the difficulty of successful takeovers, while weakening managerial discipline by removing or reducing the threat of takeover. Therefore, we would expect firms to increase the fraction of cash, because managers could maintain the prior level of control with an even larger fraction of cash in firms' liquidity reserves.

Consistent with this prediction, I find that firms with weak internal governance tended to increase their cash holdings relative to their loan commitments after the passage of the antitakeover laws. Furthermore, this preference for cash relative to loan commitments was stronger for poorly-governed firms than for well-governed firms. These findings are robust to various measures of corporate governance mentioned above. Evidence from the second-generation antitakeover legislation is broadly consistent with the optimizing behavior of managers trading off empire-building ambitions with the need to provide sufficient efficiency to avoid control challenges.

Prior studies on antitakeover laws suggest that these state-level laws substituted for firm-level takeover defenses (Karpoff and Malatesta, 1989; Garvey and Hanka, 1999), primarily affecting firms without prior defenses, because managers in firms with prior takeover defenses were already shielded from control challenges and these laws were considered redundant. Consistent with these studies, I find the increase in the fraction of cash to be concentrated in firms without poison pills, and find no significant influence of antitakeover laws on firms with poison pills.

Finally, I explore the potential consequences of keeping large fractions of cash in firms' liquidity reserves. I find that, after the passage of antitakeover laws, poorly-governed firms experienced declines in value and operating performance while increasing their acquisition activities when they increased their fractions of cash relative to loan commitments. These findings support the view that keeping large fractions of cash in liquidity reserves exposes firms vulnerable to opportunistic behaviors of entrenched managers with overinvestment biases. While these findings are strongly supported for firms with bad internal governance, I cannot find any significant evidence for firms with good internal governance. This is consistent with Dittmar and Mahrt-Smith (2005), who found good corporate governance is essential for restraining entrenched managers from squandering firms' cash to follow their empire building

ambitions.

To my knowledge, this paper is the first to empirically examine firms' tradeoffs between cash and loan commitments in meeting their liquidity needs, and to show how corporate governance influences such tradeoffs. From a broad perspective, this result complements the growing literature that relates corporate governance to firm value.⁶ An underlying idea of this literature is that governance affects value, and this paper contributes to the literature by identifying a specific channel through which corporate governance works. Since the composition of a firm's liquidity reserve reflects managerial discretion, any changes caused by corporate governance shocks provide insight into how corporate governance influences managerial discretion. With the introduction of antitakeover laws, which weakened managerial discipline, firms exploited this opportunity and increased discretion by holding more cash relative to loan commitments. However, internal governance typically constrains managerial opportunism, which limits the increase in cash relative to loan commitments. The pattern of firms' liquidity choices during the post-antitakeover legislation period is consistent with the complementary role of two different corporate governance mechanisms: Internal governance (shareholder activism) limits managerial opportunism caused by the weakened external governance (threat of takeovers).

In Section 2, I provide motivation for the empirical section of this paper by introducing a model of firms' trade-offs between holding cash or acquiring loan commitments from banks, and produce comparative statics that are used in empirical studies of the subsequent sections. Section 3 includes the dataset used for this study, summary statistics, and stylized patterns of firms' liquidity choices in the cross-section and within-firms panel regressions. In Section 4, I present the background of antitakeover laws, hypotheses on firms' liquidity choices associated with the antitakeover laws, and empirical evidence on the choice of corporate liquidity from antitakeover legislation. In Section 5, I describe the potential consequences of firms' compositions of liquidity reserves on acquisition activities, firms' values, and operating performances. In Section 6, I propose conclusions and future research directions.

2 Theory of Corporate Liquidity Choice

As a first step of the analysis, I present a theory of a firm's liquidity choice, where a self-interested manager chooses the optimal amount of managerial discretion by balancing empire

⁶See, for example, Gompers, Ishii, and Metrick (2003), Cremers and Nair (2005), and Bebchuk and Fried (2004).

building ambitions with sufficient efficiency to avoid control challenges.⁷ In this paper, the degree of managerial discretion is determined by the composition of a firm’s liquidity reserve, which is a mixture of cash and loan commitments.⁸ With cash, a manager can have a large amount of discretion and can freely seek his private benefits (Myers and Rajan, 1998). With loan commitments, a manager’s discretion is restricted since the loaning bank can monitor the firm (Diamond, 1984) and make the loans contingent on monitored signals (Berlin and Mester, 1992).⁹ Comparative statics derived from this model provide testable hypotheses for the subsequent empirical sections of this paper.

2.1 Model Setup

Consider a firm in a risk-neutral economy with a zero risk-free rate. The firm is owned by shareholders, but needs a manager with the necessary operational skills. The firm has assets in place, which generate a verifiable cash flow, $\pi_\delta = (1 + \delta) \cdot X$, at a final date (date 2). Here, $\delta > 0$ represents a synergy effect in productivity due to the manager’s firm-specific human capital applied to the firm’s assets in place. In addition to the assets in place, the firm sets aside funds (X_o) at date 0 as a liquidity reserve to prepare for a random investment opportunity that may arise at date 1 with probability, p .¹⁰ The quality of the investment

⁷In this paper, I use the threat of takeovers to discipline managers because the empirical part of this paper uses passage of antitakeover laws as natural experiments. In general, the threat of takeovers in this paper can be replaced by any kind of external market mechanisms (such as product market competition) that discipline a self-interested manager.

⁸Zwiebel (1996) and Morellec (2004) used a similar approach to explain firms’ leverage (debt vs. equity) decisions, where entrenched managers, pressured by threat of takeovers, voluntarily choose a positive amount of debt in order to ex-ante commit to constraining their future investment decisions.

⁹Benefits of loan commitments over cash have long been noted in the theoretical literature. Holmstrom and Tirole (1998) show that loan commitments can improve social welfare by redistributing excess liquidity through financial intermediaries. Boot, Thakor, and Udell (1987) show that a two-tiered fee structure can mitigate a manager’s risk-shifting behavior due to spot rate fluctuations. Also, legal procedures can differentiate a firm’s incentive to hold cash as opposed to buying loan commitments. For example, a bank, which secured its loan by a firm’s deposit, may not prevent the firm from using its deposit when a judge rules in favor of the firm; on the contrary, a judge cannot prevent a bank from shutting loan commitments off (11 U.S.C. Sec. 363 (c)(2)(B) and 11 U.S.C. Section 365 (c)(2)). The model in this paper focuses on differences in ex-post control rights between cash and loan commitments, and on influences of internal and external governances on the choices between these two alternatives.

¹⁰Since this paper focuses not on the size but on the composition of a firm’s liquidity reserve, the decision regarding the size of the liquidity reserve is assumed to be already made by the firm and exogenously given as X_o . Also, the spot market is assumed to be unavailable to the firm at future dates (date 1 and 2) and

project ($\tilde{\nu}$), which is non-verifiable information known only to the manager and not to the shareholders, can be either good (ν_G) with probability q or bad (ν_B) with probability $1 - q$. The return per unit investment is $H > 1$, when the quality of the project is good ($\tilde{\nu} = \nu_G$), and is $L < 1$ when the the quality of the project is bad ($\tilde{\nu} = \nu_B$).

Each firm is endowed with a *firm-level* internal governance λ_{int} where $0 \leq \lambda_{int} < 1$. Shareholders of a firm with internal governance, λ_{int} , correctly verify a bad quality project (ν_B) with probability λ_{int} and prevent further investment of this project. However, with probability $1 - \lambda_{int}$, a bad quality project (ν_B) is not verified and shareholders may not be able to prevent the manager from investing in this project. This internal governance can be interpreted as a well-functioning board or large shareholder activism that can detect and prevent a manager's opportunistic behavior without invoking external market disciplines (e.g., takeover).

There are two alternatives for meeting future liquidity needs to finance this random investment opportunity. The first is *cash*, which the manager has full discretion to use in financing the investment project. The other is a *loan commitment*, which is delegated to a bank that can monitor the manager.¹¹ In addition to the monitoring technology, the bank also possesses a covenant technology that generates an imperfect verifiable signal (\tilde{s}) regarding the quality of the investment project. The signal of the covenant can be either good (s_G) or bad (s_B), and their probabilities conditional on the true quality of the project ($\tilde{\nu}$) are given as follows.

$$\begin{aligned} Prob(\tilde{s} = s_B | \tilde{\nu} = \nu_G) &= \alpha_1 & Prob(\tilde{s} = s_G | \tilde{\nu} = \nu_G) &= 1 - \alpha_1 \\ Prob(\tilde{s} = s_G | \tilde{\nu} = \nu_B) &= \alpha_2 & Prob(\tilde{s} = s_B | \tilde{\nu} = \nu_B) &= 1 - \alpha_2 \end{aligned}$$

the firm's liquidity reserve is the only financing source for future investment projects. Firms may not wish to fully rely on future spot market when, for example, it is difficult to convince the market on the quality of an investment project, or when this convincing process is time consuming and may risk of leaking information to the competitors. For a general model that incorporates both quantity and composition of a firm's liquidity reserve, we should consider the probability of inaccessibility in the future spot market and associated costs for such inaccessibility. Such general treatment is beyond the scope of the model in this section, and is left as future work.

¹¹To simplify the analysis, I assume that a loan commitment is backed by a cash collateral. This assumption rules out default on loan commitments. I.e., in case of a bad project, the bank collects losses from a bad project by seizing the cash collateral, and shareholders take the full risk of the investment opportunity. In practice, a bank secures its loan commitments by collaterals or a bank is compensated for providing liquidity by holding a non-interest paying deposit, which may serve as the cash collateral. In a more general setting, we can allow banks to assume the risk of default by borrowers. In this case, banks make up for losses on defaulted loans by ex-ante charging higher rates. Since the main concern of this paper is monitoring benefits and not rates of loans, risky debts are not included in this model.

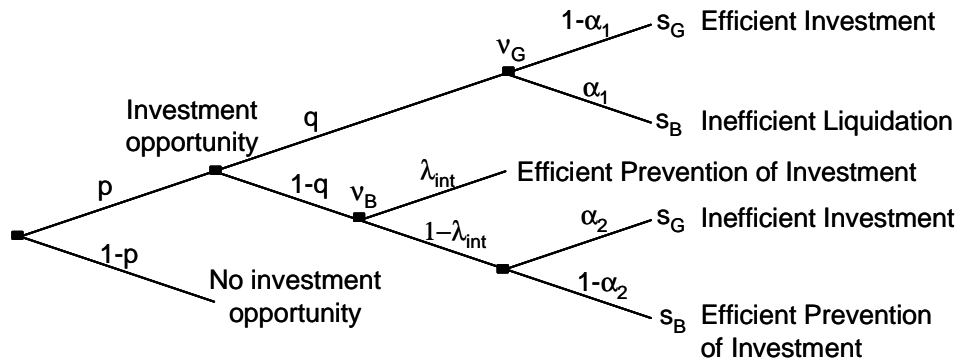


Figure 1: Game Tree for Investment Decision

Assume that signals are informative about true states, i.e., $\alpha_1 < \frac{1}{2}$ and $\alpha_2 < \frac{1}{2}$. A loan commitment contract requires the bank to lend a committed amount to a firm when the signal is good ($\tilde{s} = s_G$), but the bank refuses to lend when the signal is bad ($\tilde{s} = s_B$).¹²

Conflicts between a manager and shareholders are introduced by a manager's empire building desires. In particular, a manager has an investment bias and always wants to invest regardless of the quality of the investment project. Since the quality of the investment opportunity is not verifiable, allocation of control rights over investment project financing decisions influences the agency costs of managerial discretion. In this paper, I assume the manager has decision rights on financing and investment policies. So, for the cash kept inside the firm, the manager has full discretion on financing the non-verifiable investment project, and may even finance bad quality projects to fulfill his empire building desires. On the other hand, for loan commitments the manager has a limited degree of discretion because the manager needs approval from the loaning bank. As a result, a manager's choice of ex-ante composition of liquidity reserve (X_o) between cash and loan commitments has a strong impact on the ex-post use of the firm's resource (X_o) and the agency costs of managerial discretion. However, when a manager's ex-ante financing policies imply too much deviation from firm value maximizing policies, the manager may face a control challenge from an external source such as a corporate raider.¹³ I assume a threat of takeover attempt costs C to the bidder, and has probability of

¹²In this case, a hold up by bank as in Rajan (1992) may occur. Allowing this possibility does not alter the results of this section.

¹³In this paper, I consider the state-by-state passage of antitakeover legislation as an exogenous shock to changes in external governance (i.e., threat of takeovers). Hence, in this model I consider firms incorporated in the same state to have the same level of market discipline via threat of takeovers, i.e., a threat of takeover is considered to be a *state-level* external governance mechanism, which contrasts with previously mentioned

success λ_{ext} . Upon a successful takeover, the cash flow in the final period is $\pi_o = X$, because the new manager is assumed to have no firm-specific human capital. Also, the newly-replaced manager is assumed to act on behalf of the shareholders.¹⁴

Summarizing the main features of the model are as follows. In our model, we have a self-interested manager who controls the firm, including investment decisions. There are three governing mechanisms that can limit manager's excessively selfish behavior (i.e., overinvestment bias). The first mechanism is the creditor governance which is modeled as a bank with monitoring and covenants. This mechanism works through ex-ante contractual relationship, which is verifiable (i.e., covenant's signal) but may be excessively active (e.g., prevent good projects when the covenant's signal is bad). In practice, creditors often exhibit excessive activism such as liquidation bias to protect their interests, which may not necessarily result in firm value maximizing outcomes (Aghion and Bolton, 1992). The second mechanism is the internal governance. This mechanism is costless and fast, so that it can immediately prevent bad investment projects when they arise. However, it is imperfect and a fraction of the bad projects slip through. In practice, a functioning board is able to limit unjustifiable operations of the manager, but sometimes the board, who only visits the firm once in a while, may miss some of the bad decisions made by the manager. Also, in this model, internal governance is assumed to be exogenously given, and therefore is not a choice variable. This may reflect the fact that setting up a well-functioning board may require time for the system to settle, or acquiring a large stake at big corporations (such as firms in Compustat) to alter internal governance requires a lot of effort, and may occur only occasionally when the need for a change is very strong. Finally, the third mechanism is external governance (i.e., takeover). This mechanism is effective if it succeeds, but is costly and too slow to stop an investment once it arises. A hostile takeover attempt requires an acquisition of large shares and frequently involves proxy fights, both of which are time consuming. As a result of such sluggishness, external governance works mainly through ex-ante threats rather than ex-post (i.e., when investment opportunities arise) on-spot prevention of manager's misbehavior.

The timing of the game is as follows: At date 0, a manager decides on the the fraction of loan commitments in the liquidity reserve, β , where $(1 - \beta) \cdot X_o$ is stored in cash and $\beta \cdot X_o$ is reserved as a loan commitment. After observing the manager's financing policy, β , shareholders decide on whether to challenge control or not. At date 1, an investment

firm-level internal governance mechanisms such as well-functioning boards or large shareholder activism.

¹⁴As pointed out by Morellec (2004), this assumes there are more substitutes for the alternative manager without firm-specific human capital. As a result, the new manager has less discretion and less chance for empire building activities.

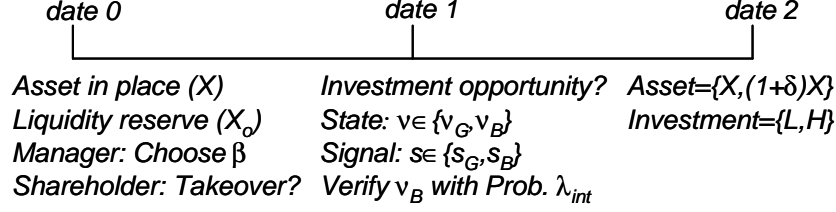


Figure 2: Timing of the Game

opportunity may arise, and the quality of this project is observed by the manager and the loaning bank. Upon receiving a bad quality project (ν_B), shareholders can verify this project with probability λ_{int} and prevent the manager from investing in this project. When the incumbent manager is in charge, he will make an investment decision to his best interest. When a new replacement manager is in charge, he will invest on behalf of shareholders' interest. At date 2, the cash flows from the assets in place, and the investment project is realized, and the proceeds are distributed as agreed at date 0.

2.2 Comparative Statics

In this model, the only decision to be made is β , the fraction of X_o to be stored in loan commitments. When an incumbent manager chooses β , the expected value of the firm at date 2 is

$$\begin{aligned}
 E[V_{IM}(\beta)] = & (1 + \delta)X + X_o + p \cdot X_o \{q \cdot (1 - \alpha_1)(H - 1) + \alpha_2 \cdot (1 - \lambda_{int})(1 - q)(L - 1) \\
 & + q \cdot \alpha_1 \cdot (H - 1)(1 - \beta) + (1 - \lambda_{int})(1 - q)(1 - \alpha_2)(L - 1)(1 - \beta)\}
 \end{aligned}$$

The first term represents cash flow from assets in place by the incumbent manager. The second term is the value of the liquidity reserve without further investing activities. The third through the sixth terms represent the net profits from further investment activities contingent on the true state ($\tilde{\nu}$) and the signal of the covenant (\tilde{s}). The difference between cash and loan commitments is reflected in the fifth and the sixth terms. The fifth term represents the expected profits from the investment opportunity of cash and loan commitments, when the true state is ν_G and the signal is s_B . In this case, the net profit from cash is positive ($H - 1$), while that from loan commitments is zero because the bank refuses to lend if the signal of the covenant is s_B . This can be interpreted as excessive termination of project by the creditors (i.e., the bank). The sixth term represents the expected profits from the investment

opportunity of cash and loan commitments, when the true state is ν_B and the signal is s_B . In this case, the net profit from cash is negative $(L - 1)$ due to the manager's empire building desire, while that from loan commitment is zero because the bank prevented the firm from investing in a negative NPV project. When the internal governance (λ_{int}) of a firm is too good, cash is always better than loan commitments, i.e., the manager and shareholders agree to hold cash and there is no conflict of interest. To avoid such a trivial situation, I assume that the internal governance is sufficiently poor to make loan commitments attractive to the firm-value maximizing shareholders.

Assumption $\lambda_{int} < \lambda_{int}^*$, where $\lambda_{int}^* = 1 - \frac{q \cdot \alpha_1 \cdot (H-1)}{(1-q) \cdot (1-\alpha_2) \cdot (1-L)}$.

Intuitively, λ_{int}^* is the value that makes firm-value maximizing shareholders indifferent between holding cash and acquiring loan commitments ($\frac{\partial E[V_{IM}(\beta)]}{\partial \beta} = 0$). For firms with lower λ_{int} than λ_{int}^* , increasing loan commitments in the liquidity reserve increases the expected value of the firm at date 2 ($\frac{\partial E[V_{IM}(\beta)]}{\partial \beta} > 0$), and a conflict between the manager and shareholders exists in liquidity choice between cash and loan commitments.

The manager, who faces a threat of takeover (small C and large λ_{ext}), can avoid control challenges when he sets the β such that the expected firm value with the incumbent manager is greater than the expected firm value of a replacement manager less the costs of control challenges.

$$E[V_{IM}(\beta)] \geq (1 - \lambda_{ext}) \cdot E[V_{IM}(\beta)] + \lambda_{ext} \cdot E[V_{RM}] - \frac{C}{\lambda_{ext}}$$

where $E[V_{RM}]$ is the expected value of the firm under the replaced manager who acts on behalf of the shareholders. The manager's decision is summarized in the following proposition:

Proposition 1 *When $\lambda_{ext} \geq \lambda_{ext}^*$, a manager who is constrained by a threat of takeover sets $\beta^c = \frac{p \cdot X_o \cdot (1-\lambda_{int})(1-q)(1-L) - \delta \cdot X - C/\lambda_{ext}}{p \cdot X_o \cdot \{(1-\lambda_{int})(1-q)(1-\alpha_2)(1-L) - q \cdot \alpha_1 \cdot (H-1)\}}$ to avoid control challenges. When $\lambda_{ext} < \lambda_{ext}^*$, a manager faces no credible takeover risks and sets $\beta^c = 0$, where $\lambda_{ext}^* = \frac{C}{p \cdot X_o \cdot (1-\lambda_{int})(1-q)(1-L) - \delta \cdot X}$.*

Figure 3 shows the results of Proposition 1. Intuitively, when the takeover threat is small ($\lambda_{ext} < \lambda_{ext}^*$), the manager will seek his empire building desires. On the other hand, when the takeover threat is significant ($\lambda_{ext} \geq \lambda_{ext}^*$), the manager will curtail his empire building desires and avoid control challenges. By taking a derivative of the resulting β^c with respect to λ_{int} , I obtain a comparative static that relates the cross-sectional distribution of firms' choices between cash and loan commitments with internal governance.

Corollary 2 β^c is nonincreasing in λ_{int} ($\frac{\partial \beta^c}{\partial \lambda_{int}} \leq 0$).

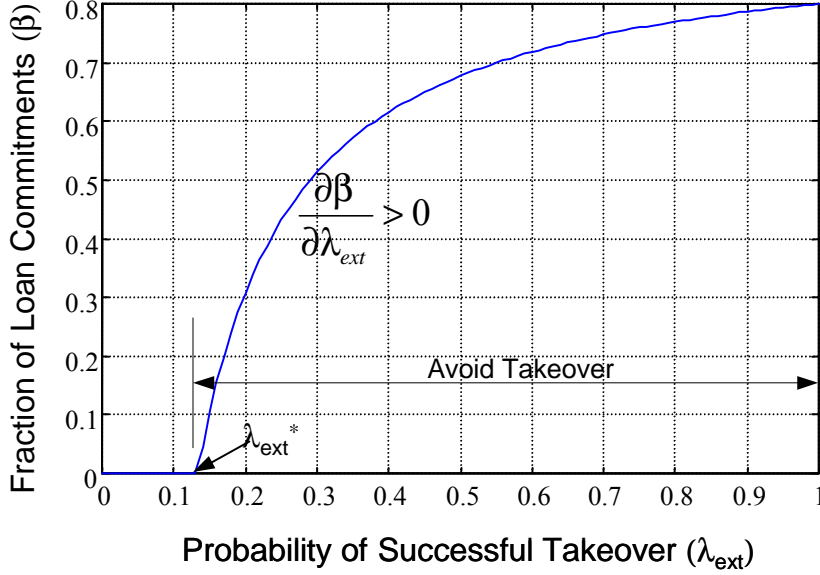


Figure 3: Manager's Liquidity Decision: $\alpha_1 = \alpha_2 = 0.25$, $p = q = 0.5$, $H = 2$, $L = 0.75$, $C = 0.1$, $\delta = 0.5$, $X = 1$, $X_o = 20$, $\lambda_{int} = 0$, $\lambda_{ext}^* = 0.13$.

Corollary 2 implies that firms with good internal governance (large λ_{int}) hold more of their liquidity reserves in cash than firms with bad internal governance do. Intuitively, shareholders of a firm with good external governance face less risk of manager's misuse of cash, and therefore will tolerate a larger fraction of cash in the liquidity reserve than those in a firm with bad internal governance.

Similarly, derivatives of β^c and $\frac{\partial \beta^c}{\partial \lambda_{int}}$ with respect to λ_{ext} give the following comparative statics that relate the changes in external governance to changes in firms' liquidity reserves.

Corollary 3 (a) β^c is nondecreasing in λ_{ext} ($\frac{\partial \beta^c}{\partial \lambda_{ext}} \geq 0$) and (b) $\frac{\partial \beta^c}{\partial \lambda_{ext}}$ is nonincreasing in λ_{int} ($\frac{\partial^2 \beta^c}{\partial \lambda_{ext} \partial \lambda_{int}} \leq 0$).

The first part of Corollary 3 shows that when the threat of takeover weakens (decrease in λ_{ext}), managers will increase the fraction of cash (and decrease the fraction of loan commitments) of the firm's liquidity reserve (X_o) to seek more empire building.¹⁵ The second part of Corollary 3 shows that the increase of cash in a firm's liquidity reserve (decreasing β) upon weakening threat of takeover (decrease in λ_{ext}) is less pronounced for firms with good

¹⁵Increasing takeover cost, C , also influences firms' liquidity composition in a similar manner as decreasing λ_{ext} does.

internal governance (high λ_{int}) than those with bad ones. In Section 4, I consider a natural experiment, where a threat of takeover weakened due to the passage of antitakeover laws. Corollary 3 provides predictions on how firms respond to this legal change by adjusting the composition of their liquidity reserves.

This paper recognizes two different shareholder governance mechanisms, internal and external governance, which are assumed to differ primarily in their timing of discipline. Corollary 2 and 3(a) highlight how differences in the timing of discipline of these two governance mechanisms lead to different impacts on the compositional choice between cash and loan commitments. Internal governance (shareholder activism) is an internal monitoring mechanism, which is fast and can stop bad investment decisions on spot. Hence, internal governance works as an ex-post prevention mechanism of bad managerial decisions. As a result, better internal governance grants more ex-ante managerial discretion (larger fraction of cash in the liquidity reserve), because it reduces the agency costs of ex-post moral hazard of a manager. On the other hand, external governance (takeover) is an external monitoring mechanism, which is sluggish and unable to prevent bad investment opportunities when they arise. Hence external governance works mainly as an ex-ante threat rather than an ex-post prevention mechanism. As a result, better external governance tends to grant less ex-ante managerial discretion (smaller fraction of cash in the liquidity reserve), because it can only act on ex-ante decisions and is powerless on ex-post managerial actions.

3 Data and Summary Statistics

3.1 Description of Data and Sample Selection

The primary source of data for this study is loan commitment contracts drawn from the January 2004 release of *Dealscan* by the Loan Pricing Corporation (LPC).¹⁶ *Dealscan* contains detailed information for approximately 130,000 loans, high-yield bonds, and private placements. According to LPC, loan data are collected from SEC filings,¹⁷ financial news, and reports from credit industries. The sample for this study consists of commitment contracts¹⁸

¹⁶Ideally, the theory presented in Section 2 applies to firms that have access to loan commitments and are able to choose between cash and loan commitments. Empirically, I consider only firms that are in *Dealscan*, which are likely to have good access to banks. In Panel A of Table 3 (in Section 4), I further narrow the sample to firms that had loan commitment history in the past and are likely to have access to loan commitments.

¹⁷SEC filings include 13Ds, 14Ds, 13Es, 10Ks, 10Qs, 8Ks, and registration statements.

¹⁸Contracts are considered as loan commitments if *Dealscan*'s "Structure-Specific Tranche Type" category belongs to one of the following: 364-day facility, acquisition facility, bridge loan, floating rate CD (loan

for future loans to non-financial firms (SIC 2000~5999) in the United States from 1987 to 1996.¹⁹ The second-generation antitakeover legislation ended in 1991, and I chose to end the sample period at 1996 to avoid excessively long post-event duration. For instance, Delaware validated the use of the poison pill in conjunction with a staggered board in the mid-1990s and altered the threat of takeover for firms incorporated in that state (Rauh, 2005). This event might have interfered with the antitakeover events considered in this paper after the mid-1990s, and therefore led me to exclude recent years.

Since LPC does not provide borrowers' financial information likely to affect their financing decisions, for each loan contract in *Dealscan*, either the borrower's name or ticker symbol was matched with *Compustat*. When the borrower's name is used, both *Dealscan*'s and *Compustat*'s borrower names were first converted into standardized words based on a conversion table provided by the Federal Reserve Bank of New York.²⁰ In this way, I improved the matching rate by approximately 20%, because the databases often have different conventions for abbreviating commonly used words, causing failures of the matching processes. After the automated matching process, each matched observation was manually inspected for mismatch due to pathologies of the matching algorithm. Once loan contracts were matched, they were aggregated for each borrower and for each fiscal year. Finally, extreme outliers that were inconsistent with various book values were trimmed to avoid undetected errors during the matching process or defective data of the original sources. This matching process yielded an unbalanced panel of 29,652 firm-year observations for 4,453 firms for any type of contract in *Dealscan*, and 5,611 firm-year observations for 2,695 firms for loan commitment type contracts in *Dealscan* during 1987~1996 fiscal years. Since *Dealscan* mostly covers loan contracts by banks, firms appearing in the *Dealscan-Compustat* intersection represent those with a history of bank borrowing and are considered to have bank relationships.

Aside from the loan commitment data, I used various proxies for internal governance to measure the agency problem of holding cash. Specifically, I used shares held by institutional investors, 5% blockholders, and insiders as measures for internal governance. The choice of these variables as measures for internal governance was motivated by existing theories.

style), floating rate certificate of deposit, guarantee, multi-option facility, performance standby letter of credit, revolver, revolver/term loan, standby letter of credit, or trade letter of credit.

¹⁹Data coverage of Dealscan in the late 1980s is incomplete (Dichev and Skinner, 2002). However, to study the impact of antitakeover laws that mainly occurred during mid 1980s through early 1990s, it was necessary to use the Dealscan data during 1980s as well as 1990s. In order to account for the incomplete data, I corrected for sample selection bias.

²⁰I am grateful for Charles Himmelberg for providing me this conversion table and relevant advice on manual matching of firms' names.

Coffee (1991) mentions that institutional investors such as pension funds actively monitor firms. Shleifer and Vishny (1986) show large shareholders are likely to monitor firms, as they can internalize the gains from costly monitoring. Also, insiders with large shares are likely to have incentives in-line with those of outside investors, as mentioned by Jensen and Meckling (1976). All of these variables are obtained from *Compact Disclosure*.

Finally, the passage years of antitakeover laws (business combination, fair price, and control share acquisition laws) for each state were obtained from Bertrand and Mullainathan (2003).

3.2 Summary Statistics

Table 1 presents the summary statistics for firms in the *Dealscan-Compustat* intersection. Since the firms in this sample are publicly traded (*Compustat*) and have bank relationships (*Dealscan*), they tend to be large firms. The mean value of assets for firms in the *Dealscan-Compustat* intersection is \$1,720.7 million, which is substantially larger than that of firms in *Compustat* (\$1,493.7 million).²¹ Also, the mean value of net sales for firms in *Dealscan-Compustat* intersection is \$1,532.1 million, while that for firms in *Compustat* is \$1,316.5 million. Compared to firms in *Compustat*, firms in the *Dealscan-Compustat* intersection are more profitable. The mean value of profitability measured by cash flow to asset ratio is 0.028 for firms in the *Dealscan-Compustat* intersection, which is larger than the mean for firms in *Compustat*, -0.077. Since firms in the *Dealscan-Compustat* intersection are likely to have good access to banks, they tend to hold less cash and more loan commitments as compared to firms in *Compustat*. However, both the firms in the *Dealscan-Compustat* intersection and in *Compustat* have similar investment levels (capital expenditure to asset ratio), leverage, and growth opportunity (Tobin's Q).

Among firms in the *Dealscan-Compustat* sample, firms that have a positive amount of loan commitments tend to be larger than the average firm in the sample. For example, the mean value of asset for firms with loan commitments is \$2,175.1 million, while that of the sample average is \$1,720.7 million. Also, the mean value of net sales for firms with loan commitments is \$2,063.3 million, which is larger than the sample average (\$1,532.1 million). Since loan commitments and cash are substitutes for liquidity demand, firms with loan commitments hold less cash than an average firm in the sample. So, the mean cash to asset ratio is smaller

²¹There is a concern that the liquidity choice may be driven by supply (a bank's willingness to sell loan commitment) rather than by demand (a firm's desire to buy loan commitments). However, typical firms in *Dealscan* are large firms which have good access to banks. Hence, I assume that firms in my sample are not limited by supply side constraints.

(0.07) and the loan commitment to asset ratio is larger (0.241) for firms with loan commitments than firms in the *Dealscan-Compustat* sample intersection. However, profitability (cash flow to asset ratio), level of investment (capital expenditure to asset ratio), leverage, and growth opportunity (Tobin’s Q) are similar for firms with and without loan commitments in the *Dealscan-Compustat* sample.

3.3 Stylized Facts of Firms’ Liquidity Choices

Before proceeding to the main test of this paper in the next section, I provide facts on how corporate governance and the equilibrium distribution of firms’ choices between cash and loan commitments are related. Despite endogeneity concerns²², it is instructive to observe such a correlation between internal governance and firms’ choices between cash and loan commitments, because the prediction of the theory of this paper may not necessarily agree with the commonly held view of corporate cash holdings (to be described below). A rigorous test that accounts for the endogenous nature of corporate governance and firms’ liquidity choices will be presented in Section 4.

A commonly held view is that large cash holdings are a manifestation of bad corporate governance.²³ In the context of liquidity choice between cash and loan commitments, this implies a positive correlation between the fraction of loan commitments in a firm’s liquidity reserve and good internal governance ($\frac{\partial \beta^c}{\partial \lambda_{int}} \geq 0$).

However, according to the theory of Section 2, a manager will choose an optimal mix of cash and loan commitments to make shareholders willing to either accept an incumbent manager’s liquidity choice (and assume the risk associated with the cash) or take costly actions to replace the incumbent manager (and decrease such risk). Shareholders of a firm with functioning internal governance can efficiently oversee the firm’s operation and prevent a manager’s opportunistic actions, and need not to be concerned with (ex-post) misuses of the cash retained as a liquidity reserve. On the other hand, shareholders of a firm with weak internal governance anticipate a manager’s ex-post misuse of cash, and therefore, want to limit the manager’s discretion by reducing cash and substituting it with loan commitments. When a manager of a firm with weak internal governance decides to keep too much cash (and too

²²It may not necessarily be the case that corporate governance influences firms’ liquidity choices. For example, in some industries (e.g. investment banking) it is necessary to hold a large amount of cash. Firms in these industries put a lot of effort to maintain good corporate governance to avoid control challenges from shareholders for their large cash holdings. In this case, large cash holding needs causes firms to maintain good corporate governance.

²³See for example, “Microsoft can count. Intel can’t,” *Wall Street Journal*, July 22, 2004.

few loan commitments), shareholders may find it better to take costly actions to replace the incumbent manager. So, as seen in Corollary 2, we expect the fraction of loan commitments in a firm’s liquidity reserve to be negatively correlated with good internal governance ($\frac{\partial \beta^c}{\partial \lambda_{int}} \leq 0$).

Panel A of Table 2 shows the results of panel regressions using the fraction of loan commitments (LC) of a firm’s liquidity reserve (sum of cash and loan commitments) as a dependent variable. Each regression is controlled for firm size measured by the logarithm of a firm’s asset ($SIZE$), leverage (LEV), and market-to-book value of a firm ($M2B$).²⁴ Standard errors are clustered by firm to address the serial correlation concerns (Petersen, 2005). To measure internal governance, I used the shares held by institutional investors ($INST$), 5% blockholders ($BLK05$), and insiders ($INSIDER$), where a larger value of each measure is expected to reflect better internal governance. As shown in Panel A, both the results from pooled regressions and those from within regressions support the predictions of Corollary 2: The coefficient estimates on internal governance for all three measures are negative and statistically significant. This implies that the fraction of loan commitments and good internal governance are negatively correlated. For example, as shown in Column 4, the fraction of loan commitments (cash holdings) of a firm’s liquidity reserve decreases (increases) by 11% when the fraction of shares held by institutional investors increases by 10% even after controlling for the time-invariant unobserved heterogeneity among firms (firm fixed effects) and the aggregate movements in the cross-section each year (year fixed effects).

Panel B shows correlations between internal governance and cash and between internal governance and loan commitments separately. The first three columns of Panel B show the results of panel regressions using cash-to-asset ratios. The coefficient estimates on internal governance are positive and statistically significant for all measures for internal governance, i.e., firms with good internal governance hold more cash relative to their assets than those with bad internal governance. The last three columns of Panel B contain the results of cross-sectional regressions using loan commitments-to-asset ratios. In this case, the coefficient estimates on internal governance for all three measures are negative and statistically significant except for $INST$. This implies that firms with good internal governance hold fewer loan commitments relative to their assets than those with bad internal governance. Results on cash-to-asset and loan commitments-to-asset ratios are also economically significant.

²⁴ *Dealscan* covers only a fraction of all commercial loans in the U.S. (Carey and Hrycay, 1999). Therefore, above panel regression is corrected for sample selection bias using procedures proposed by Wooldridge (1995). All regressions in this paper are corrected for sample selection bias, unless explicitly specified otherwise. Additional comments on the corrections to account for this nonrandom sampling process can be found in the appendix.

For example, using the median value of assets in the *Dealscan-Compustat* intersection (\$155 million), a 10% increase in shares held by institutional investors corresponds to a \$12 million (8% of asset) increase in cash holdings, and a \$5.5 million (3.6% of asset) decrease in loan commitments.

To sum up, stylized patterns support Corollary 2 and are consistent with the theory presented in Section 2. Specifically, firms with good internal governance hold more cash and fewer loan commitments relative to their assets than those with bad internal governance. Also, the fraction of loan commitments in a firm's liquidity reserve decreases with good internal governance. So, contrary to what the media often claims, the stylized patterns of firms' liquidity choices seem to support the view that firms' large cash holdings may be a sign of confidence in management rather than a sign of bad management.²⁵ More importantly, these stylized facts show that the endogeneity of firms' liquidity choices and corporate governance make the prediction of equilibrium compositional choice between cash and loan commitments nontrivial, and may sometimes lead to unexpected outcomes as shown in this section. The main test of this paper, which is presented in the next section, addresses this endogeneity concern in a natural experiment setting.

4 Evidence of Firms' Liquidity Choices from the Second-Generation Antitakeover Legislation

In this section, I consider an event study to account for unobserved heterogeneity and endogeneity concerns, which were not addressed in the cross-sectional regression. Specifically, I focus on the state-level passage of antitakeover legislation, which primarily caused an exogenous change in the threat of takeovers. By examining changes in the compositions of firms' liquidity reserves following this event, I can isolate the impact of changes in external governance on firms' preferences of cash or loan commitments.

4.1 Background

In the 1980s and 1990s, a number of states adopted laws to restrict hostile takeovers, collectively referred to as the second-generation antitakeover laws. Since detailed discussions of

²⁵Nielsen (2005) reaches similar conclusions in his study on corporate governance and dividend payout policy. He finds that firms with good corporate governance can hold on to their cash rather than immediately paying it out to shareholders.

these laws can be found in previous studies,²⁶ I will briefly summarize the key results of how the common provisions of these laws influenced takeover activities. The laws adopted during this period to deter hostile takeovers were business combination (BC), fair price (FP), and control share acquisition (CSA) laws. Business combination laws prohibit a potential bidder's attempt to take over for a pre-specified number of years before he becomes an interested shareholder, unless the directors of the target firm vote otherwise. Since incumbent managers can influence the board of directors, who decide whether to freeze takeover attempts for several years, business combination laws are likely to weaken managerial discipline provided by the threat of takeovers. Fair price laws require an acquirer to pay either the higher of any price paid for his shares or the current market price at the time of the combination. This law regulates the back-end price in two-tiered acquisitions, thereby making hostile takeovers through two-tier offers impractical. Finally, control share acquisition laws grant the target firm's disinterested shareholders the right to determine whether the bidders' control shares may count in a vote on a takeover. This provision adds difficulty for a raider in a proxy fight and makes hostile takeovers less likely to occur. To sum up, prior literature suggests that primary effects of the second-generation antitakeover laws were to deter takeovers and weaken managerial discipline. Also, as shown by Romano (1987), antitakeover laws were typically supported by a small number of exclusive groups of firms rather than by large coalitions. Hence, these legal changes should be regarded as exogenous events for most firms, and therefore can be used as natural experiments in cases where corporate governance was weakened for firms incorporated in the legislated states.

4.2 Testable Hypotheses

This section links the model's implications with empirical tests on firms' liquidity choices. As summarized above, the second-generation antitakeover legislation raised the level of difficulty in launching a successful takeover bid by restricting hostile takeovers of firms incorporated in the legislating states. In this paper's model, increased difficulty in hostile takeover is reflected by a decrease in λ_{ext} (a decrease in probability of success of a takeover attempt). According to Corollary 3(a), the fraction of loan commitments in a firm's liquidity reserve is positively correlated with the probability of success upon attempting a takeover ($\frac{\partial \beta^c}{\partial \lambda_{ext}} \geq 0$), i.e., when the probability of successful takeover decreases, a manager's optimal choice of the fraction of loan commitments decreases as well. Intuitively, increased difficulty in successful hostile

²⁶See Romano (1987), Karpoff and Malatesta (1989), Matheson and Olson (1991), Comment and Schwert (1995), Garvey and Hanka (1999), and Bertrand and Mullainathan (2003).

takeovers weakened managerial discipline. As a result, managers in the post-legislation period exploited the weakened discipline by increasing the fraction of cash in firms' liquidity reserves to increase their discretion. This leads to the following hypothesis on firms' behavior upon the passage of antitakeover laws.

Hypothesis 1 *In the post-antitakeover legislation period, increased difficulty in launching a hostile takeover weakened managerial discipline. Firms which maintained managerial discipline through the threat of takeover, increased the fraction of cash relative to loan commitments of their liquidity reserves (X_o), i.e., decreased β .*

Furthermore, according to Corollary 3(b), the passage of antitakeover laws affects firms disproportionately ($\frac{\partial^2 \beta^c}{\partial \lambda_{ext} \partial \lambda_{int}} \leq 0$), i.e., when states passed antitakeover laws, managers in firms with weak internal governance exploited weakened managerial discipline more than those in firms with strong internal governance. Hence, in the context of firms' liquidity choices between cash and loan commitments, we expect the following:

Hypothesis 2 *The increase in cash relative to loan commitments due to the passage of the antitakeover law is larger for firms with weak internal governance than those with strong internal governance.*

Using these two hypotheses, we can infer how corporate governance influences firms' preferences on liquidity choice by observing changes in β (fraction of loan commitments in firms' liquidity reserves) upon changes in legal environment. The second-generation antitakeover laws mainly affected costs of holding cash due to weakened managerial discipline, and changes in liquidity choices to this event reveal firms' preferences for discretion of cash.

4.3 Empirical Specification

The main difficulty in testing a firm's liquidity choice is unobserved firm heterogeneity and the endogenous nature of a firm's liquidity decisions. One way to cope with this problem is to conduct a test based on a structural equilibrium model that explicitly describes the relationship between these variables. Since this approach hinges on maintained assumptions of a specific model, misleading inferences may result if the model is misspecified. To avoid this problem, this paper follows an alternate model-free approach, a differences-in-differences methodology, to infer firms' preferences on liquidity choices, which are measured by β . According to the theory in Section 2, a firm's liquidity choice depends on the agency costs of cash and the banking costs of loan commitments. The second-generation antitakeover legislation

weakened managerial discipline and caused an exogenous shock to the agency costs of cash, while having no significant impact on the banking costs of loan commitments (Bertrand and Mullainathan, 2003).²⁷ According to Hypotheses 1 and 2, we expect firms with weak corporate governance to increase the fraction of cash in their liquidity reserves (decrease β) as the takeover threat weakens, because the self-interested manager tries to exploit this opportunity to seek more private benefits. Hence, the changes in the composition of liquidity reserves in response to the enactment of the antitakeover legislation reflect shifts in firms' preferences for cash due to changes in external governance.

The basic regression model to estimate the differences-in-differences effect of the antitakeover laws is

$$y_{it} = \alpha_i + \gamma_t + \delta'_x \cdot x_{it} + \delta_1 \cdot 1_{ATL,it} + \delta_2 \cdot 1_{ATL,it} \cdot IG_i + \epsilon_{it} \quad (1)$$

where i indexes firms, t indexes years, α_i and γ_t are firm and year fixed effects, x controls for firm characteristics, 1_{ATL} is a dummy variable that is one if an antitakeover law has been passed, IG measures pre-antitakeover level of internal governance, and ϵ is an error term.²⁸ This regression implements differences-in-differences methodology for multiple comparison groups, where α_i control for fixed differences between firms in the passing and the nonpassing states of the antitakeover law, and γ_t control for aggregate fluctuations (Bertrand and Mullainathan, 1999). The dependent variable (y) is the fraction of loan commitments (LC) among total liquidity reserve,

$$y = \frac{LC}{CASH + LC}$$

where LC is the total amount of loan commitments issued during the corresponding fiscal year.²⁹ This quantity, which was expressed as β in Section 2, is the main variable of interest for

²⁷In a related paper, "The Effect of Credit Market Competition on Corporate Loans: Evidence from the Choice of Corporate Liquidity", I consider the deregulation of bank branching restrictions, which increased inter-bank competition, thereby altering the costs of loan commitments.

²⁸Compact Disclosure data was available only after 1989. For firms that passed the antitakeover laws before 1989, the ex-ante measure for internal governance was not available. Hence, I used the median value for each firm over the sample period. This is not likely to influence my result because Section 4(b) shows that internal governance and antitakeover events were not significantly correlated. Also, I tested the results using firms that passed the laws after 1989 with pre-antitakeover measure of internal governance. Results were qualitatively similar as those using median values of internal governance.

²⁹Ideally, LC should be measured by the total amount of unused loan commitments. Given the limitations of the data, I approximated this ideal measure by the annual issuance amount. In doing so, I am underestimating the total amount of unused loan commitments after the first year of issuance. Dichev and Skinner (2002)

this paper and measures a firm’s preference for intermediated liquidity insurance among total liquidity insurance needs. One of the advantages of using the ratio of liquidity choice instead of the level of total liquidity demand (i.e., the sum of cash and loan commitments) is the ability to isolate systematic shifts in total liquidity demand from a preference for the composition of its liquidity reserve.³⁰ In this regression I control for various firm’s characteristics, which are firm size (*SIZE*), cash flow (*CF*), net property plant and equipment (*PPE*), R&D expenditure (*R&D*), leverage (*LEV*), cash amount (*CASH*) lagged by one period, market-to-book ratio (*M2B*), investment tax credit (*TAX*), working capital (*WC*), inventories (*INVT*), availability of senior debt (1_{DEBT_Rating}) and commercial paper ratings (1_{CP_Rating}), and regulated industry (1_{REG}). Most of these variables are frequently used to control for firm’s debt capacity (Titman and Wessels, 1988; Barclay and Smith, 1995a, 1995b). For example, R&D expenditure measures a firm’s intangible capital, and market-to-book ratio measures a firm’s growth opportunity. When firms have access to commercial paper, it may also serve as liquidity insurance, and therefore it could influence firms’ liquidity choice. Since this paper focuses on firms’ liquidity choices between cash and loan commitments, I controlled for firms’ availability to the commercial paper market by including a dummy variable for S&P commercial paper rating. Standard errors are clustered at the state level to account for the serial correlation concerns associated with a differences-in-differences estimation (Bertrand, Duflo, and Mullainathan, 2004).

For the baseline regression, the internal governance (*IG*) is measured by the shares held by institutional investors, *INST*. According to Coffee (1991), institutional investors typically hold a large fraction of a firm’s shares and are powerful enough to influence a firm’s governance. So, I expect firms are likely to be well-governed when institutional investors hold a large fraction of shares. In addition to the shares held by institutional investors (*INST*), the

show that these contracts are often renegotiated, which then would reappear in *Dealscan* as a new contract. Alternative approximation is to assume the contracted amount remains unused throughout the lifetime of the contract, which overestimates the actual amount of unused loan commitments. In this paper, I chose the (former) conservative approach, which underestimates the true unused amount of loan commitments.

³⁰For example, consider a firm which oversubscribes labor. After takeover, the raider lays off workers to improve productivity, which also results in a reduction of demand for liquidity due to lower wage costs. In this case, the restructuring after takeover affects a firm’s liquidity demand. Hence, in an economy where restructuring affects liquidity demands, the enactment of antitakeover legislation will affect not only a firm’s preferred form of liquidity reserve but also a firm’s demand. By normalizing the level of loan commitments by the total liquidity demand (the sum of cash and loan commitments), we can infer firms’ liquidity choices without worrying about structural shifts in demand. Similar normalization has been used in Kashyap, Stein, and Wilcox (1993), where their MIX variable normalized outstanding CP amount by total short-term loans.

fraction of shares held by 5% blockholders (*BLK05*) and by insiders (*INSIDER*) have also been used to ensure that the results obtained in the baseline regressions are not driven by a particular choice of measure for internal governance. Recent corporate governance literature considers these variables as a measure for internal governance (Cremers and Nair, 2005). Theoretically, one may also consider these variables as a measure of external governance. For example, blockholders can effectively discipline a manager through a threat of takeover, and therefore the presence of blockholders can be considered as a measure of strong external governance. However, such a discipline would be less effective when antitakeover laws are passed. Hence, we expect firms with blockholders to increase the fraction of cash more than those without one after the passage of antitakeover laws ($\frac{\partial^2 \beta^c}{\partial \lambda_{ext} \partial \lambda_{int}} \geq 0$), which contradicts the predictions of Corollary 3(b). However, as we will see in the following subsection, empirical evidence does not support such claims, and instead favors the predictions of Corollary 3(b). Therefore, considering *INST*, *BLK05*, and *INSIDER* as a measure for good internal governance rather than good external governance seems more appropriate.

4.4 Results

Tables 3 through 7 show how firms change the composition of their liquidity reserves in response to changes in state-level external governance (threat of takeover) caused by the enactments of antitakeover laws.

(a) Differential impact of antitakeover laws due to heterogeneity in internal governance

Table 3 shows the baseline regressions of testing the impact of antitakeover laws on firms' composition of cash and loan commitments.

Panel A shows changes in the average composition of firms' liquidity reserves due to antitakeover laws in a subsample of firms that had loan commitments in the past.³¹ Each antitakeover provision (business combination, fair price, and control share acquisition) is presented in a pair of columns, where the first column shows average changes due to antitakeover laws and the second column shows differences in these changes due to heterogeneity in firms' internal governance.

³¹These firms have past relationships with banks to get loan commitments and are covered by *Dealscan*. Hence, meaningful inferences can be made by looking at changes in means without further correction because nonrandom sampling by LPC is less likely than average firms in the whole sample of *Dealscan-Compustat* intersection. In fact, these firms are likely to have access to loan commitments and therefore are able to choose between cash and loan commitments, as assumed in the theory of Section 2.

For each antitakeover provision, the coefficient estimate on 1_{ATL} in the first column is negative and statistically significant, i.e., firms, on average, increased the fraction of cash (and decreased the fraction of loan commitments) in their liquidity reserves when managerial discipline through the threat of takeover weakened upon passage of antitakeover laws. For example, firms increased the fraction of cash by 6.3% when their incorporated states passed business combination laws. Although firms on average increased the fraction of cash upon passage of antitakeover laws, it is not clear whether antitakeover laws affected firms equally or differently due to heterogeneity of firms' characteristics. According to the theory in Section 2, internal governance has a great impact on how firms respond to antitakeover laws in adjusting the composition of their liquidity reserves. Hence, one might suspect variations in corporate governance as a cause of differences in firms' responses to the passage of antitakeover laws in their incorporated states; the weakened takeover threat had stronger adverse effects (i.e., increased managerial opportunism by decreasing β) for firms with weak internal governance than those with strong governance.

To further investigate the effect of antitakeover laws on firms' liquidity choices, I account for firms' heterogeneity in internal governance by measuring the differences-in-differences effect of antitakeover laws, the results of which are shown in the second column of each pair of antitakeover provision. Each firm's internal governance is measured by the shares held by institutional investors (*INST*). Larger shares of institutional investors are interpreted as better corporate governance because of increased institutional investors' activism on firms' activities. The main coefficient estimates of interest are those of 1_{ATL} and 1_{ATL} interacted with *INST*. In this regression, the coefficient estimate of 1_{ATL} measures the differences-in-differences effect of corresponding antitakeover laws for firms with no institutional investors, and the coefficient estimate of 1_{ATL} interacted with *INST* measures the incremental impact of institutional investors' shares on the differences-in-differences effect of corresponding antitakeover law. According to Hypothesis 1, we expect the coefficient estimates of 1_{ATL} to be negative, because managers in poorly-governed firms are likely to exploit weakened takeover threats (and managerial discipline) and further entrench themselves by increasing managerial discretion, i.e., increasing the fraction of cash in their liquidity reserves (decreasing β). Also, from Hypothesis 2, we expect such increased entrenchment by managers upon legal changes is likely to be more severe in poorly-governed firms than in well-governed firms. Hence, we expect the coefficient estimates of 1_{ATL} interacted with *INST* to be positive, because well-governed firms have less room to get further entrenched (i.e., increase cash relative to loan commitments) than poorly-governed firms. Results of the differences-in-differences regres-

sions for all three antitakeover provisions are consistent with this prediction. The coefficient estimates of 1_{ATL} are negative and statistically significant, and those of 1_{ATL} interacted with $INST$ are positive and statistically significant. For example, business combination laws caused firms with no institutional investors to increase the fraction of cash in their liquidity reserves (decrease β) by 15.9%. Such decrease in β diminishes as firms' shares held by institutional investors increase. Firms with 10% more institutional ownership shares will increase the fraction of cash 2.6% less than those without it.

The comparison of means in Panel A does not allow for other sources of variation that may influence the composition of firms' liquidity reserves, such as firm size, access to credit market, and growth opportunities. Panel B shows how antitakeover laws influenced firms' liquidity choice between cash and loan commitments in the *Dealscan-Compustat* intersection when various firm characteristics were taken into account. The whole *Dealscan-Compustat* intersection is considered to ensure that results from Panel A are not driven by a particular choice of subsample besides sample selection concerns for loan commitments data. As in the panel regressions in Section 2, I made corrections to account for potential sample selection concerns stemming from LPC's incomplete coverage of loan commitment data. As in Panel A, the main coefficient estimates of interest are those of 1_{ATL} , and those on 1_{ATL} interacted with $INST$, with the same interpretations of these estimates as before. Results for all three antitakeover provisions are consistent with Hypotheses 1 and 2: Coefficient estimates of 1_{ATL} are negative and statistically significant, and those of 1_{ATL} interacted with $INST$ are positive and statistically significant. I.e., managers in firms with weak internal governance exploited weakened takeover threats and increased managerial discretion by holding more cash, while such opportunistic behavior by managers was less severe in firms with strong internal governance. For example, when controlled for various factors shown in column 2, business combination laws caused firms with no institutional investors to increase the fraction of cash in their liquidity reserves (decrease β) by 16.7%. The decrease in β diminishes as firms' shares held by institutional investors increase. Firms with 10% more institutional ownership shares increased the fraction of cash 6.5% less than those without it. As shown in column 1 and 2, the result holds for different combinations of control variables. In general, as the number of variables to control for firm heterogeneity increases, the level of coefficient estimates decreases. The signs and statistical significance of these estimates, however, are not much influenced by the choice of control variables.

Findings from the compositional choice of firms' liquidity reserves are broadly consistent with those of prior studies; managers respond to increased protection from takeover by ad-

justing firms' financial structures. Garvey and Hanka (1989) find that firms protected by antitakeover laws reduce the use of debt, which serves as takeover defense. Cheng, Nagar, and Rajan (2005) find that managers hold fewer risky shares for maintaining control of firms when antitakeover laws provide added protection from takeover threat. Similarly, Rauh (2005) shows that passage of antitakeover laws was followed by a significant decline in employee ownership shares in their defined contribution plans, which are often used to defend firms against takeovers. Firms do respond to changes in state-level external governance by adjusting their liquidity choices between cash and loan commitments, i.e., firms consider the agency costs of cash in determining their composition of liquidity reserves. More fundamentally, these findings show how external governance influence managerial decisions, and thereby let us identify a channel through which corporate governance works.

(b) Is internal governance exogenous?

There is a concern that internal governance is endogenous to the changes in external governance (i.e., passage of antitakeover laws). For example, consider shareholders of a firm that relies mainly on external governance to discipline a manager. When the threat of takeover weakened after the passage of antitakeover laws, shareholders might have optimally decided to change internal governance to control the manager. This would cause the coefficient estimate on 1_{ATL} and $1_{ATL} \cdot INST$ to be biased, leading to false inferences of the effect of antitakeover laws on firms' liquidity choice between cash and loan commitments.

In order to ensure that the results obtained in this paper do not suffer from such endogeneity of internal and external governance, I examine whether internal governance systematically changed after the passage of antitakeover laws. In particular, I ran a regression of internal governance ($INST$) on the antitakeover law dummy variable (1_{ATL}) and check whether the coefficient estimate is statistically insignificant.

The results are shown in Table 4. The coefficient estimates of 1_{ATL} are statistically insignificant for all three antitakeover laws (business combination, fair price, and control share acquisition laws) considered in this paper. I.e., internal governance is not significantly correlated with the passage of antitakeover laws, and therefore the endogeneity of internal governance with the antitakeover laws are not a major concern. In Table 4, I used the same combination of control variables as in Table 3. Similar results have been obtained by using different combinations of control variables, but they are not shown in this paper.

Empirical evidence suggests that shareholders did not change internal governance or managerial discretion of their firm's liquidity reserve in response to changes in external governance

(i.e., threat of takeover). One possibility for such a lack of evidence in the changes in internal governance is the short time span of the panel used in this study: If changes in internal governance are a lengthy process then the post-legislation period covered in this study may not be long enough to observe changes in internal governance.

In my study, internal governance does not seem to be systematically correlated with the passage of antitakeover laws. Hence, internal governance can be considered as an exogenous variable for this event.

(c) Robustness check: Alternative measures for corporate governance

There is a concern that the nonlinear relation between institutional ownership shares and firms' liquidity choices might drive the results in the previous table. Hence, instead of using shares held by institutional investors (*INST*) to measure internal governance, I included a dummy variable for institutional ownership, which is shown in the first column of Table 5. The institutional investors' ownership dummy ($1_{\{INST>25\%}}$) is set to 1 if shares held by institutional investors exceed 25%, and zero if otherwise. The cut value (25%) is chosen to divide the sample into half. The result agrees with the previous case in Table 3 using *INST*, i.e., coefficient estimates of 1_{ATL} are negative and statistically significant, while those of 1_{ATL} interacted with $1_{\{INST>25\%}}$ are positive and statistically significant for each antitakeover law. This confirms that the result obtained in Table 3 is not driven by the nonlinearity of institutional investors' shares.

Also, there is a concern for the validity of measuring internal governance by the shares held by institutional investors, because the number of shares held by institutional investors may be related to unobservable factors besides internal governance, and therefore capture the effects of these factors rather than that of internal governance. To ensure that results obtained in the previous tables are not specific to the use of institutional investors shares, I tried two alternative measures for firms' state of corporate governance: shares held by 5% blockholders (*BLK05*) and shares held by insiders (*INSIDER*). Results from corporate governance theory such as Shleifer and Vishny (1986) show that large shareholders can internalize the benefit of costly monitoring and tend to actively monitor firms' activities. Hence, the presence of large shareholders can be used as a measure for governance. Column 2 shows the results of using shares held by 5% blockholders to measure corporate governance. Main variables of interests are 1_{ATL} and 1_{ATL} interacted with *BLK05*, where the coefficient on 1_{ATL} interacted with *BLK05* measures the incremental impact of 5% blockholders' shares on the differences-in-differences effect of business combination law. Results in column 2 generally agree with

those in Table 3, where firms with no 5% blockholder shares increased the fraction of cash in their liquidity reserves (decreased β) and differential impacts for increasing 5% blockholder shares on the differences-in-differences effect of business combination law are positive. For example, firms without 5% blockholder shares increased their fraction of cash (decreased β) by 9.4% when their incorporated states passed business combination laws, and such a decrease in β was weakened by 3.7% for every 10% increase of 5% blockholder shares.

The second alternative measure for internal governance is shares held by insiders (*INSIDER*). According to Jensen and Meckling (1976), agency problems are mitigated when insiders hold enough shares to internalize benefits from improving firms' values. Column 3 shows the results of using insider shares to measure internal governance. Interpretations of coefficient estimates are similar to those in Column 1 and Column 2, where coefficient estimates of 1_{ATL} measure the differences-in-differences effect of firms with no insider shares, and coefficient estimates of 1_{ATL} interacted with *INSIDER* measure the incremental impact of insider shares on the differences-in-differences effects of business combination law. The result in Column 3 is similar to Table 3, where firms with no insider shares increased the fraction of cash in their liquidity reserves (decreased β) after their incorporated states passed antitakeover laws, and this change is smaller for firms with larger insider shares. For example, firms with no insider shares increased the fraction of cash in their liquidity reserves (decreased β) by 1.6% when their incorporated states passed business combination laws, while such decrease in β decreased by 2.8% for every 10% of increase in insider shares.

To ensure that the results shown in Table 5 are not driven by the choice of control variables, I also tried the same regressions for these alternative measures for internal governance using only a few controls, and the results were qualitatively similar to those in Table 5. Also, results have been obtained for other antitakeover provisions (fair price and control share acquisition laws), and the results were qualitatively similar to those of business combination laws. Both the results on other combination of controls and on other antitakeover laws are not presented in the paper, but are available upon request.

(d) Robustness check: Effect of poison pills

There is a concern that pre-existing takeover defense features in firms' charters before the passages of antitakeover laws may weaken the result. For example, managers of firms with poison pills in their charter were already well protected from hostile takeovers prior to the passage of antitakeover laws, and the impacts of state-level antitakeover laws are likely to be insignificant. This may interfere with the natural experiment using antitakeover laws,

because firms in the treatment group with poison pills are not responding to legal change, which obscures the differences-in-differences results. Hence, I expect evidence in support of Hypotheses 1 and 2 to strengthen by excluding firms with poison pills, while I find no statistically significant evidences supporting these hypotheses for firms that had poison pills.

Table 6 shows the effect of poison pills using firm-level antitakeover defense data from the *Investor Responsibility Research Center (IRRC)* database. Column 1 considers all firms in the *IRRC* database that also appear in the *Dealscan-Compustat* intersection, and interact both 1_{ATL} and $1_{ATL} \cdot INST$ with 1_{NoPP} , where 1_{NoPP} is a dummy variable that is one if a firm does not have poison pills. Interpretation of 1_{ATL} and $1_{ATL} \cdot INST$ is similar to Table 3, except that it applies to firms that have poison pills, while $1_{ATL} \cdot 1_{NoPP}$ and $1_{ATL} \cdot INST \cdot 1_{NoPP}$ are the incremental impact of having no poison pills.³² The result shown in Column 1 is consistent with previous studies that find the effects of antitakeover legislation are mostly concentrated in firms without poison pills. Firms with poison pills did not show any significant changes in response to the passage of antitakeover laws. On the other hand, for firms without poison pills, firms with no insider shares increased the fraction of cash in their liquidity reserves (decreased β) after their incorporated states passed antitakeover laws, and this change is smaller for firms with larger insider shares. Columns 2 and 3 show the impact of antitakeover laws separately for firms without and with poison pills respectively. Consistent with the finding in Column 1, I find statistically significant evidence in support of Hypotheses 1 and 2 for firms without poison pills, while I find no such evidence for firms with poison pills. Finally, Columns 4 through 6 show results for similar regressions as in Columns 1 through 3, but with a different combination of controls. The results of Columns 4 through 6 are qualitatively similar to those in Columns 1 through 3, and confirm that the results are not due to the particular choice of controls.

Heterogeneous response to the passage of antitakeover laws further supports the theory that corporate governance plays a key role in firms' liquidity choices between cash and loan commitments. Antitakeover laws substantially weakened managerial discipline (through the threat of takeover) of firms without poison pills, and these firms significantly increased the fraction of cash when their firm-level corporate governance was weak. On the other hand,

³²The purpose of this regression is to show the difference between firms with and without poison pills. I.e., I need to show that firms with poison pills had insignificant changes, while firms without poison pills had significant changes in the composition of liquidity reserves after the passage of antitakeover laws. Hence, examining the difference of the differences-in-differences (DD) effect between these two groups is preferred to examining the differences-in-differences-in-differences (DDD) effect, which focuses on the impact of antitakeover laws only for firms without poison pills (and institutional ownership shares).

the increase in the fraction of cash was less severe when a firm already had a poison pill or when the firm-level corporate governance was strong.

(e) Robustness check: Variability of cash and loan commitments

Since this paper uses the ratio instead of the levels of cash and loan commitments as a dependent variable, there is a concern that the results obtained in the previous tables are driven by either cash or loan commitments, while the other remained constant. In this case, the results in the previous tables still show relative preferences between cash and loan commitments, but it is better (parsimonious) to describe the results in terms of only the one that varies significantly, while leaving out the constant.

Table 7 shows the variability of cash and loan commitments in terms of the differences-in-differences effect of antitakeover laws (1_{ATL}). The ratios of cash and loan commitments scaled by firms' tangible assets (PPE) are used as dependent variables to account for non-normal distribution of the levels of cash and loan commitments. For all three antitakeover provisions considered in this paper, the coefficient estimates on 1_{ATL} were statistically significant, which implies significant changes in both cash and loan commitments after the legal change. This justifies the inclusion of both in examining firms' liquidity choices between these two alternatives. Similar results have been obtained using total assets as a scale factor but are not reported in this paper. Results from the variability of cash and loan commitments suggest that firms actively choose both cash and loan commitments in managing their liquidity reserves.

5 Evidence of the Consequences of Firms' Liquidity Choices: Acquisition Activities, Firm Values, and Operating Performances

There is a large body of literature that relates cash holdings to firm performance.³³ In this section, I explore only a few things to see whether the consequences of firms' compositional choices of their liquidity reserves are consistent with this literature. Specifically, I examine whether firms' shifts toward cash were likely to be followed by managers' private benefit-seeking activities. Also, was having a lot of cash bad for all firms, and if not, when it was

³³See, for example, Blanchard, Lopez-de-Silanes, and Shleifer (1994), Dittmar and Mahrt-Smith (2005), and Faulkender and Wang (2005).

good or bad to have cash?

(a) *Acquisition activities*

Prior theories suggest managers' private benefits may derive from overinvestment and empire building activities.³⁴ In this section, I consider a particular mode of overinvestment: firms' acquisition activities. While prior studies have explored aggregate consequences of antitakeover laws on firms' acquisition activities (Garvey and Hanka, 1999; Daines, 2001), the differential impact of antitakeover laws on firms' acquisition activities due to heterogeneity in cash positions and internal governance has rarely been studied.

To examine the effect of firms' cash and loan commitments on their acquisition activities, I consider the differences-in-differences effect of antitakeover laws in a manner similar to the previous section, where the dependent variable is replaced by firms' acquisition activities. Firms' acquisition activities are measured by the number of annual acquisition announcements, collected from the *SDC Platinum* database. Since the differences-in-differences regressions already include firm and year fixed effects, unobserved heterogeneity of firms is less likely to be a concern. Therefore, only a few control variables are used to account for transitory effects of firm heterogeneity. The key control variables are firm size (*SIZE*), R&D expenditures scaled by total asset (*R&D*), leverage (*LEV*), and market-to-book ratio (*M2B*). The coefficient on the differences-in-differences variable (1_{ATL}) accounts for the unexpected changes in a firm's acquisition activities due to the adoption of the antitakeover law. To identify firms that increased the fraction of cash significantly, I constructed a low cash dummy ($1_{LowCash}$) that is one for the bottom 50% of firms that did not increase their fraction of cash upon the passage of antitakeover laws. The main coefficient estimates of interest are those on 1_{ATL} , and those on 1_{ATL} interacted with $1_{LowCash}$. The coefficient estimates on 1_{ATL} measure the differences-in-differences effects of antitakeover laws for firms that increased cash after the passage of antitakeover laws, and those on 1_{ATL} interacted with $1_{LowCash}$ measure the incremental differences-in-differences effects of antitakeover laws for firms that did not increase cash significantly after the passage of antitakeover laws.

Columns 1 and 2 of Table 8 show the resulting parameter estimates of the differences-in-differences effect of antitakeover laws on firms' acquisition activities.³⁵ In order to explore

³⁴For example, Jensen (1986), Zwiebel (1996), and Stein (1997). However, empire building is not the only possibility for managerial preference. Bertrand and Mullainathan (2003) show managers may prefer a quiet life to empire building activities.

³⁵Since all three antitakeover laws (business combination, fair price, and control share acquisition) considered for this study show similar results, only the case for business combination law is presented in this section.

the impact of internal governance on changes in acquisition activities upon the passage of antitakeover laws, I split the sample in half based on the number of shares held by institutional investors. Column 1 contains poorly-governed firms with fewer than 25% of shares held by the institutional investors. For these firms, the coefficient estimate on 1_{ATL} is positive (24.08) and statistically significant, while that on 1_{ATL} interacted with $1_{LowCash}$ is negative (-25.08) and statistically significant. I.e., among firms with weak internal governance, firms that significantly increased the fraction of cash (*high cash* firms) had on average 24 more annual acquisition announcements after the passage of antitakeover laws, while firms that did not increase cash (low cash firms) showed no significant increase in acquisition activities after this legal change.³⁶ Column 2 shows the case for well-governed firms with more than 25% of shares held by the institutional investors. Contrary to the case in Column 1, the coefficient estimates on 1_{ATL} and 1_{ATL} interacted with $1_{LowCash}$ for firms with good internal governance are both statistically insignificant, i.e., when firms have good internal governance, an increase in the fraction of cash in a firm's liquidity reserve upon passing the antitakeover laws has no significant impact on a firm's number of acquisition announcements. Although not shown in this paper, similar results have been obtained using the acquisition amount (Compustat item #129) scaled by tangible assets (*PPE*), i.e., an increase in the fraction of cash upon the passage of antitakeover laws (*high cash* firms) is followed by an increase in acquisition amount when a firm has bad internal governance, while antitakeover laws had no statistically significant impact on the acquisition amounts both for *high cash* and *low cash* firms when a firm has good internal governance.

Evidence from acquisition announcements shows that an increase in the fraction of cash in a firm's liquidity reserve is accompanied by increased acquisition activities only when a firm's internal governance is bad, and no significant changes occur when a firm's internal governance is good.

(b) Firm value and operating performance

As shown above, *high cash* firms increase acquisition activities more than *low cash* firms upon the passage of antitakeover laws when a firm has bad internal governance. This subsection examines whether such increases in acquisition activities were caused by legitimate reasons such as an increase in investment opportunities, or were motivated by managers' overinvestment desires that eroded firm value and operating performance.

³⁶For low cash firms, the increase in acquisition activities is $24.08 - 25.08 = 1.0$, and the t-statistic is $(24.08 - 25.08) / 6.821 = 0.1466$.

To examine the impact of compositional change in firms' liquidity reserves on firm value after the introduction of antitakeover laws, I consider the differences-in-differences effect of these laws, where the dependent variable is replaced by the Tobin's Q to measure a firm's value. Control variables are the same as in part (a) except that I used past Tobin's Q to control for the previous period's market firm value. As before, the sample is further divided into two groups based on firms' shares held by institutional investors. The main coefficient estimates of interest are those on 1_{ATL} and those on 1_{ATL} interacted with $1_{LowCash}$, where interpretations of these coefficient estimates are the same as in part (a).

Columns 3 and 4 of Table 8 show the resulting parameter estimates of the differences-in-differences effect of antitakeover laws on firm value. Column 3 shows the results for poorly-governed firms, whose shares held by institutional investors are fewer than 25%. The coefficient estimate on 1_{ATL} is negative and that on 1_{ATL} interacted with $1_{LowCash}$ is positive, where both are statistically significant. When states passed antitakeover laws, Tobin's Q for *high cash* firms decreased by -1.057, while that of *low cash* firms increased by 3.253 (i.e., $-1.057+4.310$). So, firm values of poorly-governed firms that also significantly increased the fraction of cash after the passage of antitakeover laws (*high cash* firms) were negatively affected by antitakeover laws. Column 4 considers well-governed firms with the institutional investors' share more than 25%. Contrary to the case of poorly-governed firms, the coefficient estimates on 1_{ATL} and 1_{ATL} interacted with $1_{LowCash}$ are both positive, which implies that the values of well-governed firms were not negatively influenced by the adoption of antitakeover laws. So, the increase in the fraction of cash had a significantly negative impact on firm value only for firms with bad internal governance, while such an increase does not have a negative impact for firms with good internal governance. This is consistent with findings by Dittmar and Mahrt-Smith (2005).

To examine the consequences of firms' liquidity choice on their operating performances, I consider the differences-in-differences effect of the antitakeover laws on the return on equity, which is measured by the operating income before depreciation divided by the book value of equity. Columns 5 and 6 of Table 8 show the resulting parameter estimates of the differences-in-differences effect of antitakeover laws on operating performances. Results from firms' operating performances are similar to those from firm value: The increase in the fraction of cash had a significantly negative impact on operating performances only for firms with bad internal governance, while such an increase did not have a negative impact for firms with good internal governance. For example, as shown in Column 5, for poorly-governed firms (i.e., firms with fewer than 25% of shares held by the institutional investors), *high cash* firms suffered

-1.123 decline in the return on equity, while *low cash* firms had a 2.221 (i.e., $-1.123+3.344$) increase in the return on equity.

To sum up, large increases in the fraction of cash in firms' liquidity reserves are accompanied by an increase in acquisition activities and a decline in firm values and operating performances when firms have bad internal governance. This is consistent with the view that the shift toward cash after legal changes to weaken the threat of takeover was, at least partly, driven by managers' overinvestment and empire building desires.

6 Conclusions

This paper provides insight into how corporate governance influences firms' choices between cash and loan commitments to meet their liquidity needs. I find that antitakeover laws, which tend to weaken corporate governance, caused poorly-governed firms to increase their cash relative to loan commitments, whereas I do not find such tendencies for well-governed firms. This suggests that firms take into account the discretion and managerial opportunism associated with cash when choosing how to compose their liquidity reserves. The empirical evidence is consistent with optimizing behavior of self-interested managers, who, in order to avoid control challenges from shareholders, will balance the private benefits of discretion against increased oversight by the bank. In the post-antitakeover legislation period, self-interested management exploits the reduced threat of takeover and increased discretion by holding more cash, thereby increasing private benefits. We can infer how firms meet their liquidity needs from the antitakeover law: Loan commitments not only substitute cash for liquidity, but also provide a unique function to limit managerial discretion on the use of liquidity reserves. Cash grants a manager a lot of discretion and flexibility but this might be limited by market discipline caused by fear of managerial opportunism. On the other hand, loan commitments tend to limit a manager's discretion, thereby reducing the moral hazard, but loan commitments are inflexible and typically incur banking costs. Hence, the optimal composition of firms' liquidity reserves should reflect the costs and benefits of these two alternatives.

The natural experiment using the second-generation antitakeover laws provide insight into how corporate governance works through a specific channel: controlling managerial discretion on the use of firms' liquidity reserve. Specifically, this paper considers how two different corporate governance mechanisms, external governance (market for corporate control) and internal governance (shareholder activism by institutional investors and block holders), inter-

act to influence firms' levels of managerial discretion (i.e., the composition of firms' liquidity reserves). When firms' external governance weakened due to the enactment of antitakeover laws, managers of firms with little or no institutional investors exploited this and further entrenched themselves by increasing their discretion on the use of firms' liquidity reserves. On the other hand, firms with a substantial number of shares held by institutional investors were able to limit managers' scope for opportunistic behavior, which would have been caused by weakened threat of takeover. In other words, managers of these firms were less able to exploit the weakened threat of takeover, and were less able to increase the fractions of cash in their liquidity reserves than those in firms with no institutional investors. The interaction between the weakened threat of takeover and the activism of institutional investors is consistent with the complementary role of the two mechanisms of corporate governance as documented by Cremers and Nair (2005).

This trade-off view of liquidity choice has several implications for a firm's cash holding and liquidity strategy. First, the trade-off view of a firm's liquidity choice provides a cash holding motivation for less financially constrained firms. The existing literature focuses mainly on explaining the cash holding motives of financially constrained firms; however, there is little explanation as to why less financially constrained firms would hold cash, despite the fact that, in practice, these firms do.³⁷ This paper shows that both cash and loan commitments incur costs, and a firm's choice depends on the relative magnitude of the marginal costs and benefits of these two alternatives. Hence, when the marginal costs of loan commitments are higher than those of holding cash, firms may voluntarily diversify away from banks by holding cash and reducing their loan commitments.

Second, this trade-off view of liquidity strategies provides an operational rationale for firms to hold cash besides mere managerial opportunism. The recent trend of large corporations to accumulate cash holdings while limiting dividend payouts has led to concerns that large cash holdings might be an indicator of poor corporate governance.³⁸ However, holding cash can be a shareholder value-maximizing decision when the associated agency costs are smaller than the alternatives. The proper assessment of the relationship between corporate cash holding and corporate governance requires a better understanding of a firm's cash holding motives and corporate liquidity strategy. For example, the current large cash holding pattern of publicly traded, well-known firms requires further careful examination before condemning it as mere managerial opportunism.

³⁷See for example, "Don't Expect Rush to Copy Microsoft", *Wall Street Journal*, July 22, 2004.

³⁸See for example, "Microsoft Can Count. Intel Can't", *Wall Street Journal*, July 22, 2004.

Finally, this trade-off view shows the importance of considering alternatives to cash in understanding firms' liquidity strategies. Since the decision to hold cash is jointly determined with its alternative (i.e., loan commitments in this paper), firms' cash holdings by themselves are not accurate measures of their liquidity states, and therefore, can lead to misleading inferences being made regarding firms' true liquidity state.

Results of this paper can be extended to consider the relationships between financing constraints and firms' behavior for financially less constrained firms that have good access to banks' loan commitments. For these firms, the sum of cash and loan commitments should account for their true liquidity demand instead of mere cash holding amount. Therefore, we expect activities such as investment and cash holding decisions could be better measured by the sum of cash and loan commitments rather than by cash or cash flow only.

Appendix 1. Notes on Corrections for Sample Selection Bias

According to Carey and Hrycay (1999), *Dealscan* covers only a fraction of all commercial loans in the U.S. Under this circumstance, a zero value in the loan commitment data could imply either that the corresponding firm had no loan commitment or that the firm had loan commitments but Loan Pricing Corporation (LPC) did not collect this data. Both cases are indistinguishable to an econometrician. By ignoring the possibility of LPC's missed collection of data and by regarding a zero value in the loan commitment data as the corresponding firm having no loan commitment, parameter estimates will understate loan commitments' influence.

In order to account for this bias, I followed a two-step procedure that identified LPC's nonrandom sampling of the loan commitment data (Wooldridge, 1995). The first step was to run a probit regression on an indicator variable, which is one if the loan commitment amount in the corresponding data is positive and zero if otherwise. This step identified the factors that determined inclusion of the loan commitment data in *Dealscan*, summarized in the *inverse Mill's ratio*.³⁹ The second step augmented the *inverse Mill's ratio* to the existing regressors

³⁹Since the purpose of probit regression in the first stage is to generate a (nonlinear) proxy (*inverse Mill's ratio*) that will be linearized in the second stage regression, its specification need not be precise (Wooldridge, 1995). Also, notice that decisions to include loans in *Dealscan* are made by LPC, while those to get loans are made by firms before LPC's decisions. Hence, firm fixed effects are not included in the probit regression because firms' idiosyncratic effects are not likely to influence LPC's decisions to cover the loans of those firms. Similarly, the decision to make economic policy that influences year-specific economy-wide effects is not made by LPC, who decides to cover loans in a given year. Hence, year-fixed effects are excluded in the probit regression, because year-specific economy-wide idiosyncratic effects are not likely to influence LPC's decision to cover loan commitments.

to obtain the parameter estimates of interest. Intuitively, the original regression model with nonrandom sample selection can be viewed as an omitted variable problem. The *inverse Mill's ratio* obtained from the probit regression is a proxy that describes the nonrandom sampling process, and linear approximation of this proxy leads to the modified second stage regression that augments the *inverse Mill's ratio* to the original regressors.

Table A1 explores the effect of corrections for sample selection bias on the results presented in the main text. Since most of the results are similar, I present only the baseline cases that use shares held by institutional investors to measure firms' internal governance and consider business combination laws for antitakeover events. Panel A shows the results for cross-sectional regressions presented in Table 2 of Section 3. In Column 1, I consider a plain OLS regression for the whole sample that includes all firms in the *Dealscan-Compustat* intersection.⁴⁰ Contrary to the result in Table 2 (and Corollary 2), the coefficient on *INST* is positive and statistically significant, which implies the fractions of cash in firms' liquidity reserves are negatively correlated with internal governance. However, as shown in Column 3, when the nonrandom selection process is taken into account, the correlation between the fraction of cash and internal governance reverses to become positive and agrees with Corollary 2. Notice that the *inverse Mill's ratio* is statistically significant to indicate that the adjustments to account for nonrandom sampling process are necessary. As an alternative approach to correction for sample selection bias, Column 4 considers a subsample that is less likely to suffer from sample selection bias. This subsample considers only firm-year observations that had a positive number of loan commitments in the past. In this case, the plain OLS yields qualitatively similar results as in Column 3 (OLS with corrections for sample selection bias): The coefficient estimate on governance (*INST*) is negative and statistically significant, which agrees with Corollary 2.

Panel B shows the results for the event study using antitakeover laws presented in Table 3 of Section 4. As in Panel A, three cases are considered: plain OLS (Column 1), OLS with corrections for sample selection bias (Column 2 and 3), and OLS for a subsample that is less likely to suffer from sample selection bias (Column 4). General implications of the findings are similar to those in cross-sectional studies: Results from plain OLS (Column 1) do not agree with the hypotheses (Hypotheses 1 and 2) predicted by the theory in Section 2. However, when the nonrandom sampling process is taken into account (Column 3), the results support

⁴⁰To be strict, the number of observations of the sample considered here is slightly less (27779) than those in the main text (29652). This discrepancy arises because the plain OLS of this appendix imposes an additional restriction for observation: to have a positive amount of cash or loan commitments. Otherwise, the dependent variable (β) is ill-defined.

these hypotheses, which predict the fraction of loan commitment in firms' liquidity reserves to decrease as the threat of takeover weakens and such a decrease is more pronounced when internal governance is weak. As in Panel A, the *inverse Mill's ratio* is statistically significant, and therefore, corrections for nonrandom selection process are necessary for proper inference. Column 4 shows results using a subsample of firm-year observations with loan commitment history. Unlike results using the whole sample, results using this subsample agree with those of Column 3, accounting for the nonrandom sample selection process.

To sum up, empirical analyses, both from a subsample where nonrandom sampling is not severe and from the whole *Dealscan-Compustat* intersection with corrections for nonrandom sampling, give qualitatively similar results that support the theory of this paper. This implies that corrections for nonrandom sampling process are important in making proper inferences on firms' liquidity decisions using the *Dealscan-Compustat* sample. Also, the particular choice of empirical specification for the nonrandom sampling process is not likely to have influenced the conclusions of this paper.

Appendix 2. Proof of Proposition

Proposition 1 *When $\lambda_{ext} \geq \lambda_{ext}^*$, a manager who is constrained by a threat of takeover sets $\beta^c = \frac{p \cdot X_o \cdot (1 - \lambda_{int})(1 - q)(1 - L) - \delta \cdot X - C / \lambda_{ext}}{p \cdot X_o \cdot \{(1 - \lambda_{int})(1 - q)(1 - \alpha_2)(1 - L) - q \cdot \alpha_1 \cdot (H - 1)\}}$ to avoid control challenges. When $\lambda_{ext} < \lambda_{ext}^*$, a manager faces no credible takeover risks and sets $\beta^c = 0$, where $\lambda_{ext}^* = \frac{C}{p \cdot X_o \cdot (1 - \lambda_{int})(1 - q)(1 - L) - \delta \cdot X}$.*

Proof. The manager, who faces a threat of takeover (small C and large λ), can avoid control challenges when he sets the β such that the expected firm value with the incumbent manager is greater than the expected firm value of a replacement manager less the costs of control challenges.

$$E[V_{IM}(\beta)] \geq (1 - \lambda_{ext}) \cdot E[V_{IM}(\beta)] + \lambda_{ext} \cdot E[V_{RM}] - \frac{C}{\lambda_{ext}}$$

where $E[V_{RM}]$ is the expected value of the firm under the replaced manager who acts on behalf of the shareholders. This can be simplified to

$$E[V_{IM}(\beta)] \geq E[V_{IM}(\beta)] - \frac{C}{\lambda_{ext}}$$

A manager who prefers to invest as much as possible will choose the maximum amount of cash that will deter control challenge, which can be achieved by choosing a β that makes above inequality to bind. Simple algebra leads to

$$\beta^c = \frac{p \cdot X_o \cdot (1 - \lambda_{int})(1 - q)(1 - L) - \delta \cdot X - C / \lambda_{ext}}{p \cdot X_o \cdot \{(1 - \lambda_{int})(1 - q)(1 - \alpha_2)(1 - L) - q \cdot \alpha_1 \cdot (H - 1)\}}$$

However, when λ_{ext} is too small, any value of β^c between zero and one will make shareholders better off keeping the incumbent manager. Specifically, any value of λ_{ext} that makes β^c less than zero will result in such situation. Hence, when $\lambda_{ext} < \lambda_{ext}^*$, the manager will face no credible threat of takeover, and will choose to hold all cash, where $\lambda_{ext}^* = \frac{C}{p \cdot X_o \cdot (1 - \lambda_{int}) \cdot (1 - q) \cdot (1 - L) - \delta \cdot X}$ is the value of λ_{ext} that makes β^c equal to zero. ■

Corollary 2 β^c is nonincreasing in λ_{int} ($\frac{\partial \beta^c}{\partial \lambda_{int}} \leq 0$).

Proof. When $\lambda_{ext} < \lambda_{ext}^*$, $\beta^c = 0$ and $\frac{\partial \beta^c}{\partial \lambda_{int}} = 0$. When $\lambda_{ext} \geq \lambda_{ext}^*$, taking the derivative of β^c with respect to λ_{int} gives

$$\frac{\partial \beta^c}{\partial \lambda_{int}} = \frac{-(1 - q)(1 - L) \cdot \{\Delta_d + (1 - \alpha_2) \cdot \Delta_n\}}{p \cdot X_o \cdot \{(1 - \lambda_{int})(1 - q)(1 - \alpha_2)(1 - L) - q \cdot \alpha_1 \cdot (H - 1)\}^2} < 0.$$

where $\Delta_n = p \cdot X_o \cdot (1 - \lambda_{int})(1 - q)(1 - L) - \delta \cdot X - C/\lambda_{ext} \geq 0$ (because $\lambda_{ext} \geq \lambda_{ext}^*$), and $\Delta_d = p \cdot X_o \cdot \{(1 - \lambda_{int})(1 - q)(1 - \alpha_2)(1 - L) - q \cdot \alpha_1 \cdot (H - 1)\} \geq 0$ (because, by Assumption, $\lambda_{int} < \lambda_{int}^*$). Combining both cases gives $\frac{\partial \beta^c}{\partial \lambda_{int}} \leq 0$. ■

Corollary 3 (a) β^c is nondecreasing in λ_{ext} ($\frac{\partial \beta^c}{\partial \lambda_{ext}} \geq 0$) and (b) $\frac{\partial \beta^c}{\partial \lambda_{ext}}$ is nonincreasing in λ_{int} ($\frac{\partial^2 \beta^c}{\partial \lambda_{ext} \partial \lambda_{int}} \leq 0$).

Proof. Following similar steps as in Corollary 2, it is straightforward to obtain the claimed results, and therefore, the detail steps of the proof are omitted. ■

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Table 1
Summary Statistics

All data are from the *Dealscan-Compustat* intersection. The sampled firms include only non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. All data included had positive assets (#6) for the given firm-year. Loan commitment (LC) is the aggregate annual issuance for each firm and is obtained from *Dealscan*. Other variables are obtained from *Compustat*: cash balance (#1), total asset (#6), net sales (#12), cash flow (#14+#18-#19-#21), capital expenditure (#128), leverage ((#9+#34)/#6), Tobin's Q ((#6+#199*#25-#60)/#6).

	All Firms in <i>Dealscan-Compustat</i> Observations: 29652			Firms in <i>Dealscan-Compustat</i> with Positive Loan Commitments Observations: 5611			All Firms in <i>Compustat</i> Observations: 51113		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
LC/Asset	0.046	0.124	0	0.241	0.186	0.193	0.026	0.097	0
Cash/Asset	0.106	0.156	0.041	0.070	0.106	0.028	0.139	0.200	0.052
Asset (\$MM)	1720.7	7242.2	155.0	2175.1	7488.4	324.1	1493.7	6979.0	78.5
Net Sales (\$MM)	1532.1	5960.2	192.2	2063.3	6618.1	412.3	1316.5	6186.1	95.5
Cash Flow/Asset	0.028	0.243	0.066	0.049	0.142	0.067	-0.077	1.994	0.055
Cap Exp/Asset	0.068	0.067	0.051	0.068	0.063	0.051	0.066	0.083	0.047
Leverage	0.303	0.270	0.276	0.338	0.258	0.316	0.489	14.6	0.261
Tobin's Q	1.652	1.819	1.231	1.563	1.107	1.277	2.728	74.0	1.233

Table 2
Panel Regressions of Firms' Liquidity Choices

All data are from the *Dealscan-Compustat* intersection. The sampled firms include only non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Internal governance has been measured by the fraction of shares held by institutional investors (INST), 5% blockholders (BLK05), and insiders (INSIDER). The panel regressions are controlled for firm size (SIZE), leverage (LEV), and market-to-book (M2B), and are corrected for sample selection bias. Standard errors are clustered at the firm level.

<i>Panel A</i>	<i>Dependent Variable: Loan Commitments/(Cash+Loan Commitments)</i>					
	<i>Pooled Regressions</i>			<i>Within Regressions</i>		
<i>Governance:</i>						
INST	-1.553*** (0.114)			-1.132*** (0.299)		
BLK05		-1.688*** (0.229)			-0.780*** (0.234)	
INSIDER			-2.025*** (0.217)			-1.166*** (0.298)
<i>Controls:</i>						
SIZE	-0.302*** (0.021)	-0.482*** (0.063)	-0.531*** (0.055)	-0.220*** (0.056)	-0.223*** (0.066)	-0.308*** (0.077)
LEV	-0.773*** (0.081)	-0.834*** (0.169)	-0.928*** (0.140)	-0.458** (0.228)	-0.166 (0.175)	-0.362* (0.196)
M2B	-0.002 (0.005)	-0.025*** (0.004)	-0.024*** (0.004)	0.014** (0.007)	-0.002 (0.006)	-0.002 (0.006)
Firm & Year FE	No	No	No	Yes	Yes	Yes
Adjusted R ²	0.294	0.294	0.299	0.619	0.618	0.620
Observations	5430	5430	5430	5430	5430	5430

Standard errors are in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 2 (continued)
Panel Regressions of Firms' Liquidity Choices

All data are from the *Dealscan-Compustat* intersection. The sampled firms include only non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Internal governance has been measured by the fraction of shares held by institutional investors (INST), 5% blockholders (BLK05), and insiders (INSIDER). The panel regressions are controlled for firm size (SIZE), leverage (LEV), and market-to-book (M2B), and are corrected for sample selection bias. Standard errors are clustered at the firm level.

<i>Panel B</i>	<i>Dependent Variable: Cash/Asset</i>			<i>Dependent Variable: Loan Commitments/Asset</i>		
	<i>Within Regressions</i>			<i>Within Regressions</i>		
<i>Governance:</i>						
INST	0.796*** (0.138)			-0.355 (0.270)		
BLK05		0.472*** (0.119)			-0.636*** (0.241)	
INSIDER			0.517*** (0.137)			-0.769*** (0.280)
<i>Controls:</i>						
SIZE	0.149*** (0.026)	0.132*** (0.033)	0.134*** (0.036)	-0.0843* (0.051)	-0.193*** (0.068)	-0.211*** (0.073)
LEV	0.399*** (0.103)	0.143* (0.086)	0.138 (0.090)	-0.174 (0.204)	-0.362** (0.176)	-0.395** (0.183)
M2B	-0.009** (0.004)	0.003 (0.003)	0.002 (0.003)	0.011* (0.006)	0.005 (0.006)	0.005 (0.006)
Firm & Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R ²	0.806	0.803	0.803	0.427	0.429	0.429
Observations	5430	5430	5430	5430	5430	5430

Standard errors are in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 3
Differences-in-Differences Regression: Baseline Regressions

All data are from the *Dealscan-Compustat* intersection, which also had loan commitments in the past. The sampled firms include only non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Antitakeover laws include business combination (BC), fair price (FP), and control share acquisition (CSA). Antitakeover dummy (1_{ATL}) is one if the corresponding firm's incorporated state passed the antitakeover law. INST is the shares held by institutional investors. Standard errors are clustered at the state level.

<i>Panel A</i>	<i>Dependent Variable: Loan Commitments/(Cash+Loan Commitments)</i>					
	(1) BC	(2) FP	(3) CSA	(4) BC	(5) FP	(6) CSA
<i>Laws:</i>						
1_{ATL}	-0.063*** (0.019)	-0.159*** (0.023)	-0.065*** (0.031)	-0.136*** (0.026)	-0.055* (0.033)	-0.093*** (0.031)
$1_{ATL} * INST$		0.259*** (0.049)		0.189** (0.073)		0.108 (0.073)
Firm/Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R ²	0.113	0.113	0.112	0.112	0.112	0.112
Observations	11566	11566	11566	11566	11566	11566

Standard errors are in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 3 (continued)
Differences-in-Differences Regression: Baseline Regressions

All data are from the *Dealscan-Compustat* intersection. The sampled firms include non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Results are corrected for sample selection bias and standard errors are clustered by state. Accounting variables (CF, PPE, R&D, CASH, TAX, WC, INVT) are scaled by firm's asset. Antitakeover laws include business combination (BC), fair price (FP), and control share acquisition (CSA). Antitakeover dummy (1_{ATL}) is one if a firm's incorporated state passed the antitakeover law. INST is the shares held by institutional investors.

Panel B	Dependent Variable: Loan Commitments/(Cash+Loan Commitments)					
	(1) BC		(2) FP		(3) CSA	
<i>Laws:</i>						
1_{ATL}	-0.809** (0.319)	-0.167** (0.085)	-1.113*** (0.377)	-0.348** (0.163)	-1.345*** (0.358)	-0.095** (0.049)
$1_{ATL} * INST$	3.469*** (1.342)	0.651** (0.313)	3.771*** (1.259)	0.583** (0.287)	4.673*** (1.217)	0.612*** (0.235)
<i>Controls:</i>						
CASH _{t-1}	-6.306*** (2.241)	-2.413** (0.936)	-7.389*** (2.228)	-2.551*** (0.943)	-8.570*** (2.186)	-2.568*** (0.927)
SIZE _t		0.395** (0.167)		0.423** (0.169)		0.433** (0.169)
CF _t		0.269** (0.125)		0.264** (0.117)		0.293** (0.124)
PPE _t		-0.307 (0.330)		-0.340 (0.329)		-0.388 (0.338)
R&D _t		0.361*** (0.074)		0.225** (0.109)		0.382*** (0.073)
LEV _t		0.789*** (0.280)		0.833*** (0.284)		0.806*** (0.265)
M2B _t		0.007 (0.011)		0.010 (0.011)		0.011 (0.012)
TAX _t		-41.7** (16.58)		-47.0*** (18.02)		-45.77*** (17.03)
WC _t		-0.079 (0.116)		-0.055 (0.097)		-0.082 (0.101)
INVT _t		1.306*** (0.326)		1.341*** (0.318)		1.302*** (0.297)
$1_{DEBT_Rating,t}$		-0.067 (0.093)		-0.078 (0.096)		-0.104 (0.090)
$1_{CP_Rating,t}$		-0.297 (0.255)		-0.303 (0.256)		-0.334 (0.255)
$1_{REG,t}$		-1.272*** (0.490)		-1.379*** (0.482)		-1.321*** (0.488)
Firm/Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	0.563	0.613	0.564	0.613	0.565	0.613
Observations	5430	5430	5430	5430	5430	5430

Standard errors are in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 4
Differences-in-Differences Regression:
Exogeneity of Internal Governance

All data are from the *Dealscan-Compustat* intersection. The sampled firms include non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Results are corrected for sample selection bias and standard errors are clustered by state. Accounting variables (CF, PPE, R&D, CASH, TAX, WC, INVT) are scaled by firm's asset. Antitakeover provisions include business combination (BC), fair price (FP), and control share acquisition (CSA) laws. Antitakeover dummy (1_{ATL}) is one if a firm's incorporated state passed the antitakeover law.

<i>Dependent Variable</i>	<i>Fraction of shares held by institutional investors ($INST_{it}$)</i>		
	(1) BC	(2) FP	(3) CSA
<i>Laws:</i>			
1_{ATL}	-0.011 (0.015)	0.032 (0.039)	-0.005 (0.025)
<i>Controls:</i>			
$SIZE_t$	0.105 (0.084)	0.085 (0.085)	0.096 (0.084)
CF_t	0.023 (0.075)	0.011 (0.070)	0.017 (0.074)
PPE_t	0.174 (0.168)	0.209 (0.165)	0.192 (0.170)
$R\&D_t$	0.061 (0.170)	0.066 (0.169)	0.057 (0.170)
LEV_t	-0.169 (0.124)	-0.197 (0.126)	-0.181 (0.124)
$CASH_t$	0.260 (0.461)	0.371 (0.466)	0.307 (0.458)
$M2B_t$	0.027*** (0.008)	0.025*** (0.007)	0.026*** (0.008)
TAX_t	4.852 (9.066)	7.149 (9.583)	5.733 (9.019)
WC_t	0.055 (0.087)	0.070 (0.082)	0.064 (0.087)
$INVT_t$	-0.002 (0.152)	-0.037 (0.152)	-0.017 (0.151)
$1_{DEBT_Rating,t}$	-0.074 (0.097)	-0.066 (0.098)	-0.073 (0.098)
$1_{CP_Rating,t}$	-0.237 (0.192)	-0.236 (0.189)	-0.244 (0.191)
$1_{REG,t}$	-0.092 (0.407)	-0.058 (0.409)	-0.075 (0.407)
Firm/Year FE	Yes	Yes	Yes
Adj. R ²	0.667	0.667	0.667
Observations	5430	5430	5430

Standard errors are in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 5
Differences-in-Differences Regression (Business Combination Law):
Alternative Measures for Corporate Governance

All data are from the *Dealscan-Compustat* intersection. The sampled firms include non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Results are corrected for sample selection bias and standard errors are clustered by state. Accounting variables (CF, PPE, R&D, CASH, TAX, WC, INVT) are scaled by firm's asset. Antitakeover dummy (1_{ATL}) is one if a firm's incorporated state passed the antitakeover law. $1_{\{INST>25\}}$ is one if shares held by institutional investors exceeds 25%. BLK05 is the shares held by 5% blockholders. INSIDER is the shares held by insiders.

	<i>Dependent Variable: Loan Commitments/(Cash+Loan Commitments)</i>					
	(1)		(2)		(3)	
	<i>coeff</i>	<i>s.e.</i>	<i>coeff</i>	<i>s.e.</i>	<i>coeff</i>	<i>s.e.</i>
<i>Laws:</i>						
1_{ATL}	-0.132**	(0.065)	-0.094**	(0.048)	-0.016	(0.025)
$1_{ATL} * 1_{\{INST>25\}}$	0.307**	(0.135)				
$1_{ATL} * BLK05$			0.369**	(0.158)		
$1_{ATL} * INSIDER$					0.279*	(0.155)
<i>Controls:</i>						
$SIZE_t$	0.420**	(0.169)	0.452***	(0.169)	0.442**	(0.179)
CF_t	0.290**	(0.126)	0.307**	(0.125)	0.298**	(0.131)
PPE_t	-0.353	(0.334)	-0.360	(0.313)	-0.364	(0.339)
$R\&D_t$	0.388***	(0.071)	0.486***	(0.073)	0.461***	(0.070)
LEV_t	0.811***	(0.276)	0.784***	(0.245)	0.778***	(0.261)
$CASH_{t-1}$	-2.534***	(0.939)	-2.582***	(0.890)	-2.532***	(0.942)
$M2B_t$	0.010	(0.011)	0.014	(0.013)	0.013	(0.013)
TAX_t	-44.7***	(16.98)	-46.5***	(16.68)	-46.3***	(17.92)
WC_t	-0.093	(0.111)	-0.026	(0.084)	-0.033	(0.093)
$INVT_t$	1.336***	(0.321)	1.286***	(0.283)	1.259***	(0.288)
$1_{DEBT_Rating,t}$	-0.086	(0.091)	-0.077	(0.080)	-0.071	(0.085)
$1_{CP_Rating,t}$	-0.319	(0.254)	-0.309	(0.248)	-0.315	(0.263)
$1_{REG,t}$	-1.314***	(0.494)	-1.313***	(0.470)	-1.327***	(0.487)
Firm/Year FE	Yes		Yes		Yes	
Adj. R ²	0.613		0.614		0.613	
Observations	5430		5430		5430	

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table 6
Differences-in-Differences Regression (Business Combination Law):
Effect of Poison Pill

All data are from the Dealscan-Compustat intersection, which also appear in the IRRC database. The sampled firms include only non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Results are corrected for sample selection bias. Accounting variables (CASH, WC, INVT) are scaled by firm's asset. Antitakeover dummy (I_{ATL}) is one if corresponding firm's incorporated state passed the antitakeover law. I_{NoPP} is one if a firm has no poison pills in the corresponding year.

	<i>Dependent Variable: Loan Commitments/(Cash+Loan Commitments)</i>					
	(1) All	(2) No PP	(3) Only PP	(4) All	(5) No PP	(6) Only PP
<i>Laws:</i>						
I_{ATL}	0.264 (0.216)		-0.481* (0.252)	0.196 (0.274)		0.207 (0.257)
$I_{ATL} * INST$	-0.030 (0.349)		0.306 (0.314)	-0.269 (0.505)		-0.408 (0.604)
$I_{ATL} * I_{NoPP}$	-2.249*** (0.677)	-1.277** (0.541)		-1.686** (0.753)	-1.128* (0.630)	
$I_{ATL} * INST * I_{NoPP}$	2.405** (1.069)	1.605* (0.844)		2.049* (1.184)	1.624* (0.993)	
<i>Controls:</i>						
$CASH_{t-1}$	-17.8*** (6.505)	-2.631 (7.924)	-24.5*** (8.865)	-1.161 (1.602)	-4.358 (3.409)	-1.927 (2.196)
$I_{REG,t}$	-9.919*** (2.826)	-0.514 (0.987)	-2.392 (2.461)	-2.679 (3.713)	5.299 (3.914)	-0.606 (2.829)
$SIZE_t$				0.038 (0.268)	0.744 (0.637)	0.124 (0.336)
LEV_t				0.120 (0.944)	1.940 (1.694)	0.474 (1.332)
$M2B_t$				0.003 (0.041)	-0.091 (0.082)	0.048 (0.138)
WC_t				-0.529 (0.332)	-0.639 (0.908)	-0.668* (0.359)
$INVT_t$				1.568 (1.405)	5.485 (3.819)	1.926 (1.431)
$I_{CP_Rating,t}$				-0.677 (0.643)	-2.281* (1.345)	1.148 (1.116)
Firm/Yr FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	0.693	0.741	0.673	0.697	0.755	0.668
Observations	622	214	408	622	214	408

Standard errors are in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 7**Differences-in-Differences Regression: Variability of Cash & Loan Commitments**

All data are from the *Dealscan-Compustat* intersection. The sampled firms include non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Results are corrected for sample selection bias and standard errors are clustered by state. Accounting variables (CF, PPE, R&D, CASH, TAX, WC, INVT) are scaled by firm's asset. Antitakeover laws include business combination (BC), fair price (FP), and control share acquisition (CSA). Antitakeover dummy (1_{ATL}) is one if a firm's incorporated state passed the antitakeover law. INST is the shares held by institutional investors.

<i>Dependent Variables</i>	<i>Cash/PPE</i>			<i>Loan Commitments/PPE</i>		
	BC	FP	CSA	BC	FP	CSA
<i>Laws:</i>						
1_{ATL}	0.207*** (0.050)	-0.330*** (0.092)	0.240*** (0.072)	0.404*** (0.103)	-0.436*** (0.165)	0.460*** (0.127)
Firm/Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R ²	0.574	0.574	0.574	0.297	0.297	0.297
Observations	5423	5423	5423	5423	5423	5423

Standard errors are in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table 8
Consequences of Firms' Liquidity Choices (Business Combination Laws)

All data are from the Dealscan-Compustat intersection. The sampled firms include only nonfinancial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. The sample is divided into two groups: bad governance (INST<25%) and good governance (INST>25%), where INST is the fraction of shares held by institutional investors. Results are corrected for sample selection bias. Return on equity is operating income before depreciation divided by book value of equity. Antitakeover dummy (I_{ATL}) is one if corresponding firm's incorporated state passed the antitakeover law. Low cash dummy ($I_{LowCash}$) is one for bottom 50% firms that did not increase cash relative to loan commitments upon passing the antitakeover laws.

<i>Dependent Variables</i>	<i>Annual No. of Acquisition Announcements</i>		<i>Tobin's Q</i>		<i>Return on Equity</i>	
	Bad Governance	Good Governance	Bad Governance	Good Governance	Bad Governance	Good Governance
<i>Laws:</i>						
I_{ATL}	24.08*** (6.656)	0.065 (0.915)	-1.057** (0.550)	0.450*** (0.057)	-1.123** (0.472)	0.519*** (0.161)
$I_{ATL} * I_{LowCash}$	-25.08*** (6.821)	-0.821 (0.610)	4.310*** (1.518)	2.587*** (0.309)	3.344*** (0.834)	1.066*** (0.335)
<i>Controls:</i>						
SIZE	8.181*** (1.914)	-0.473 (1.000)	4.086* (2.287)	1.655*** (0.211)	3.334** (1.305)	1.38*** (0.435)
R&D	-26.67*** (7.484)	7.695 (4.983)	-19.90* (10.90)	-3.680*** (1.035)	-18.23*** (4.780)	-4.980*** (1.506)
LEV	13.36*** (3.554)	-7.580 (5.031)	6.881* (3.904)	9.756*** (1.267)	11.41*** (4.175)	11.56*** (3.381)
M2B ⁽¹⁾	-0.405*** (0.131)	-0.064 (0.198)	0.023 (0.101)	-0.070 (0.074)	0.085 (0.057)	0.561*** (0.151)
Firm & Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	0.136	0.462	0.741	0.730	0.988	0.476
Observations	2123	3307	1967	3175	2081	3268

(1) For the second regression with Tobin's Q as a dependent variable, Q_{t-1} is used instead of market-to-book.

(2) Standard errors are in the parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A1
Differences-in-Differences Regression (Business Combination Law):
Effect of Sample Selection

All data are from the *Dealscan-Compustat* intersection. The sampled firms include only non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. INST is the shares held by institutional investors.

<i>Panel A</i>	<i>Dependent Variable: Loan Commitments/(Cash+Loan Commitments)</i>			
	(1) OLS	(2) OLS with Sample Selection Correction (i) Selection (Probit)	(ii) Regression (OLS)	(3) OLS (LC History)
<i>Governance:</i>				
INST	0.067*** (0.015)	0.547*** (0.038)	-1.199*** (0.262)	-0.064** (0.030)
<i>Controls:</i>				
SIZE	0.039*** (0.004)	0.097*** (0.005)	-0.231*** (0.049)	-0.024** (0.011)
LEV	0.090*** (0.009)	0.425*** (0.027)	-0.566*** (0.208)	0.163*** (0.025)
M2B	0.001 (0.001)	-0.005 (0.006)	0.011** (0.005)	-0.001 (0.005)
Inv. Mill's Ratio			-2.950*** (0.633)	
Firm & Year FE	Yes	Yes	Yes	Yes
Adjusted R ²	0.620		0.620	0.620
Observations	27779	27779	5430	11566

Standard errors are in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A1 (continued)
Differences-in-Differences Regression (Business Combination Law):
Effect of Sample Selection

All data are from the *Dealscan-Compustat* intersection. The sampled firms include only non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Accounting variables (CF, PPE, R&D, CASH, TAX, WC, INVT) are scaled by firm's asset. Antitakeover dummy (1_{ATL}) is one if corresponding firm's incorporated state passed the antitakeover law. INST is the shares held by institutional investors.

Panel B	Dependent Variable: Loan Commitments/(Cash+Loan Commitments)							
	(1) OLS		(2) OLS with Sample Selection Correction				(3) OLS (LC History)	
	coeff	s.e.	(i) Selection (Probit)		(ii) Regression (OLS)		coeff	s.e.
coeff			s.e.	coeff	s.e.			
<i>Laws:</i>								
1_{ATL}	0.007	0.012	-0.088***	0.024	-0.167***	0.042	-0.150***	0.038
$1_{ATL} * INST$	0.069**	0.027	0.333***	0.052	0.646***	0.141	0.215***	0.081
<i>Controls:</i>								
SIZE _t	0.060***	0.004	0.172***	0.006	0.392***	0.074	0.003	0.012
CF _t	-0.024**	0.012	0.130**	0.060	0.259***	0.065	0.017	0.033
PPE _t	0.011	0.027	-0.364***	0.055	-0.345**	0.160	0.088	0.071
RND _t	0.042	0.041	0.017	0.146	0.319*	0.164	0.083	0.147
LEV _t	0.050***	0.012	0.284***	0.036	0.793***	0.123	0.081***	0.032
CASH _{t-1}	-0.050***	0.016	-1.004***	0.095	-2.528***	0.452	-0.134***	0.051
M2B _t	0.001	0.001	0.008	0.006	0.004	0.006	-0.007	0.005
TAX _t	0.841	1.434	-16.82**	7.091	-41.83***	8.051	3.701	4.125
WC _t	0.023	0.025	-0.185**	0.073	-0.115	0.095	0.052	0.051
INVT _t	0.152***	0.043	0.279***	0.084	1.286***	0.148	0.617***	0.106
$1_{Debt_Rating,t}$	0.230	1.427	-0.126***	0.026	-0.065	0.095	3.047***	0.438
$1_{CP_Rating,t}$	0.210	6.493	-0.253***	0.036	-0.305*	0.185	-0.928	0.715
$1_{Reg,t}$	-1.817	7.099	-0.319***	0.042	-1.285***	0.39215	-1.884	1.759
Inv. Mill's					2.819***	0.561		
Firm/Yr FE	Yes		Yes		Yes		Yes	
Adj. R ²	0.183				0.613		0.127	
Observations	27779		27779		5430		11566	

*** significant at 1%; ** significant at 5%; * significant at 10%.

Table A2
Differences-in-Differences Regression (Business Combination Law):
Alternative Measures for Corporate Governance (G-Index)

All data are from the *Dealscan-Compustat* intersection. The sampled firms include only non-financial corporate businesses (SICs 2000 to 5999) and the sample period is from 1987 to 1996. Corrected for sample selection bias. Accounting variables (CF, PPE, R&D, CASH, TAX, WC, INVT) are scaled by firm's asset. Antitakeover dummy (1_{ATL}) is one if corresponding firm's incorporated state passed the antitakeover law. $1_{\{INST>25\}}$ is one if shares held by institutional investors exceeds 25%. BLK05 is the shares held by 5% blockholders. INSIDER is the shares held by insiders. *G* is the *Governance Index*.

Panel B	Dependent Variable: Loan Commitments/(Cash+Loan Commitments)							
	(1)		(2)		(3)		(4)	
	coeff	s.e.	coeff	s.e.	coeff	s.e.	coeff	s.e.
<i>Laws:</i>								
1_{ATL}	-0.132**	(0.065)	-0.094**	(0.048)	-0.016	(0.025)	-7.7***	(2.249)
$1_{ATL} * 1_{\{INST>25\}}$	0.307**	(0.135)						
$1_{ATL} * BLK05$			0.369**	(0.158)				
$1_{ATL} * INSIDER$					0.279*	(0.155)		
$1_{ATL} * (25-G)$							0.338***	(0.098)
<i>Controls:</i>								
SIZE _t	0.420**	(0.169)	0.452***	(0.169)	0.442**	(0.179)	0.741***	(0.217)
CF _t	0.290**	(0.126)	0.307**	(0.125)	0.298**	(0.131)	0.404***	(0.142)
PPE _t	-0.353	(0.334)	-0.360	(0.313)	-0.364	(0.339)	-0.527	(0.332)
R&D _t	0.388***	(0.071)	0.486***	(0.073)	0.461***	(0.070)	0.069	(0.321)
LEV _t	0.811***	(0.276)	0.784***	(0.245)	0.778***	(0.261)	0.571***	(0.102)
CASH _{t-1}	-2.534***	(0.939)	-2.582***	(0.890)	-2.532***	(0.942)	-2.661***	(0.804)
M2B _t	0.010	(0.011)	0.014	(0.013)	0.013	(0.013)	0.006	(0.012)
TAX _t	-44.7***	(16.98)	-46.5***	(16.68)	-46.3***	(17.92)	-59.6***	(17.5)
WC _t	-0.093	(0.111)	-0.026	(0.084)	-0.033	(0.093)	-0.0004	(0.153)
INVT _t	1.336***	(0.321)	1.286***	(0.283)	1.259***	(0.288)	2.541***	(0.562)
$1_{DEBT_Rating,t}$	-0.086	(0.091)	-0.077	(0.080)	-0.071	(0.085)	-0.124	(0.265)
$1_{CP_Rating,t}$	-0.319	(0.254)	-0.309	(0.248)	-0.315	(0.263)	-2.702***	(0.788)
$1_{REG,t}$	-1.314***	(0.494)	-1.313***	(0.470)	-1.327***	(0.487)	-2.223***	(0.495)
Firm/Yr FE	Yes		Yes		Yes		Yes	
Adj. R ²	0.613		0.614		0.613		0.651	
Observations	5430		5430		5430		1306	

*** significant at 1%; ** significant at 5%; * significant at 10%.