

The Impact of the Insider Share Pledging Regulation on Stock Trading and Firm Valuation

Yu-Chun Wang[†]

Department of Finance
Ming Chuan University, Taiwan
Phone: 886-2-28824564#2861
Fax: 886-2-28809730
E-mail: ycw@mail.mcu.edu.tw

Robin K. Chou^{*}

Department of Finance
National Chengchi University, Taiwan
Phone: 886-2-29393091 #81016
Fax: 886-2-29393394
E-mail: rchou@nccu.edu.tw

[†] Yu-Chun Wang acknowledges the support from a grant of the Taiwan Ministry of Science and Technology. (MOST 104-2410-H-130-002).

^{*} Robin K. Chou gratefully acknowledges financial support from the Taiwan Ministry of Science and Technology. (MOST 104-2410-H-004-017-MY2) and from the National Natural Science Foundation of China (No: 71232004 and 71373296).

The Impact of the Insider Share Pledging Regulation on Stock Trading and Firm Valuation

Abstract

Previous research suggests that insiders' shareholding pledges are associated with agency problems. However, how investors evaluate and react to such behavior is less clear. We investigate the stock market reactions to three insiders' shareholding pledging regulatory events in Taiwan. The first event in 2007 limited the amount of bank loans as a percentage of insiders' stock pledging value (the pledge value rule event). The second event is the first reading of the 2011 Company Act amendment (the first reading event), which was an attempt to improve minority shareholder protection by restricting the voting rights of pledged shares exceeding one-half of the shares held by a director on election. The third event is the passage of the amendment (the passage event). We show that firms with insiders making share pledges experience significantly higher stock returns around events compared to those without such insiders. In addition, the results are more significant for firms with small board of directors' shareholdings, when the agency problem is likely to be more severe. These results are consistent with the alignment hypothesis that firms that are less compliant with the rules benefit more from legislative changes. We also find that institutional investors increased their shareholdings of pledging (less compliant) firms after the passage event, indicating that a reduction in agency problems increases institutions' willingness to hold shares of less compliant firms. Our results have important implications on how ameliorating the legal system can help to improve investor protection.

Keywords: Share pledges, Regulation, Investor protection, Institutional investment
JEL classification: G14, G34, K22

1. Introduction

Lending banks usually require collateral in loan contracts to help mitigate the risk of information asymmetry between the bank and the borrower (Berger et al., 2011). When banks are uncertain of whether borrowers will engage in morally hazardous activities, the collateral serves as an insurance against unfavorable conditions. In line with this argument, previous studies report that collateral is most often related to borrowers with higher default risk (Berger and Udell, 1990; Coco, 2000; Menkhoff et al., 2006). In addition, when the top management of a firm creates a pledge on shareholdings for bank loans, the agency costs of outside investors can increase. Thus, the literature characterizes these pledges as a weak form of corporate governance (Lee and Yeh, 2004). However, few studies examine how investors evaluate and react to insider share pledges. We address this issue by examining the market reactions to three share pledging-related regulatory change events in Taiwan.

Insiders' share pledging for bank loans is a long-standing corporate governance issue in Taiwan. Some legislators argue that share pledging reflects the degree to which insiders increase leverage, specifically in using less personal funds, to fight for control rights. When managers anticipate a change in management rights are expected due to potential variation in the ownership structure, incumbent executives can use high leverage to increase shareholdings and defend their seats (Stulz, 1988). Thus, insiders can use share pledges as a tool for entrenchment. In addition, regulators argue that insiders who pledge stocks may engage in activities that are harmful to the wealth of minority shareholders.

For example, when insiders create a pledge on shareholdings for bank loans, they must assume a maintenance margin similar to mortgage loans. Insiders are informed through margin calls if the market value of pledged stocks falls below the maintenance requirement. If the required margin is not met, banks can sell the pledged stocks, which results in a further decrease in stock price. Insiders who pledge shares are more likely to manipulate stock prices through stock repurchases to meet the margin requirement (Chan et al., 2015). In the worst

case, insiders who intend to tunnel the companies do not pay back the loan and leave “a shell company.”¹ Thus, the insiders’ share pledging is likely to deteriorate corporate governance and is so costly to minority stockholders that regulators have called for increased regulations (Lee and Yeh, 2004).

To improve the protection of minority shareholders, the Financial Supervisory Commission, the regulatory body of the financial industries in Taiwan, instituted a series of new rules and regulations. It announced in January 2007 a rule which limited the amount of a bank loan backed by insiders’ pledged shares of listed firms to 60% or less of the market value of the pledged shares (hereafter, the pledge value rule event).² At the end of 2010, regulators advocated for additional rules on directors who pledge stocks (hereafter, the first reading event).³ After a 10-month debate, the Legislative Yuan amended Article 197–1 of the Company Act on October 25, 2011 (hereafter, the passage event) to prohibit the exercise of voting rights of “excessive pledged shares,” defined as pledged shares that exceed one-half of the shares held by a director on election. See the appendix for the full text of Article 197–1.

This study examines whether insider pledging affects investors’ evaluation of a firm by examining stock market reactions to insider share pledging regulatory changes. First, based on the argument that firms with directors who pledge shares for bank loans suffer from more agency problems (Lee and Yeh, 2004), we hypothesize that these firms experience higher stock returns after the proposal of regulations against insider share pledges. To test this hypothesis, we examine the market reactions to the three relevant regulatory events. Second, we investigate

¹ Prior studies (e.g., Johnson et al., 2000b) use the term “tunneling” to describe the transfer of assets and profits from firms for the benefit of those who control them. In an emerging market such as Taiwan, which features family-controlled firms and directors participating in management, dominant insiders are more likely to take risks in entities where their cash flow rights are low and then siphon out proceeds to entities where their cash flow rights are high. See Lee and Yeh (2004), who indicate that stock pledge is one of the key characteristics of financially distressed firms in Taiwan.

² The insiders herein include directors and supervisors.

³ “First reading” indicates the first time that proposed bills are listed on the agenda for report in the Legislative Yuan (the equivalent of the Taiwanese Congress).

whether this effect is more pronounced for firms potentially suffer from more agency problems, such as those with a large amount of insider pledges (the pledge value rule event) or with directors who pledge excessive shares for bank loans (the first reading and passage events). The chairperson of the board is one of the most important insiders and oversees the firm's daily operations. Thus, the board chairperson's share pledges may signal a more severe conflict of interests.⁴ Thus, we anticipate that firms with a chairperson who excessively pledges shares will experience more significantly positive returns than those without such a chairperson after the first reading and the passage events.

We also use the amount of the board of directors' shareholdings as a proxy for agency problems. When the board of directors' shareholdings are small, directors may not always act in the best interests of outside shareholders. In line with this argument, several studies find that small shareholdings by the board indicate an agency problem and thus result in low firm values (Jensen and Meckling, 1976; Leland and Pyle, 1977; Jensen, 1993). More important, if directors with small shareholdings pledge their shares for bank loans, the agency problem is likely to be even more severe. Thus, our second hypothesis predicts that the regulation changes better align owner–manager interests for firms with small directorship shareholdings, compared to those with large directorship shareholdings.

Finally, institutional investors are attentive to governance practices of listed firms (Ferreira and Matos, 2008). Particularly, prior research shows that foreign institutions are less interested in investing in firms with ownership structures conducive to governance problems (Leuz et al., 2008). Therefore, agency costs resulting from insider ownership can affect the shareholdings of institutional investors. Previous literature suggests that the listed firms' adoption of new legal standards plays an important role in institutional shareholdings (Florou and Pope, 2012). Thus, institutional investors are likely to change their shareholdings

⁴ In contrast to the role of a chairperson in many countries, in Taiwan, under the Company Act, a chairperson acts as the legal representative of a company. The chairperson is also the highest authority in a firm and is responsible for its overall operations.

significantly after the adoption of new regulations. Accordingly, we conjecture that before the passage of the 2011 Company Act amendment, institutional investors had little incentive to invest in pledged firms. However, once the act passed, institutional investors are more likely to increase their shareholdings in pledged firms, given the benefits the act provides these firms.

The legislative changes related to insider share pledging in Taiwan provide a good research opportunity to examine how investors evaluate the pledging behavior of insiders for two reasons. First, insider pledging and firm values may be jointly determined and reverse causality is likely. For example, a negative relation between insider pledging and firm value is possible because insiders reduce or cancel pledges in their bank loans when the share prices increase. However, our sample of three regulatory events are exogenous shocks to the pledging decisions of insiders, and endogeneity problems are less of a concern for such quasi-natural experiments. Second, to the best of our knowledge, Taiwan is one of the few countries that officially requires listed companies to disclose the information of pledged stocks at the insider level. Article 197-1 of the Company Act mandates listed companies report the amount of insiders' pledged shares on an open data website on a monthly basis.⁵ This requirement allows us to study the effects of insider pledging behavior on shareholder wealth. In addition, domestic mutual funds, dealers, and foreign investors are required to disclose their daily shareholdings.⁶ Accordingly, we can study their shareholding changes in response to regulation changes.

An argument can be made that the outcome of the passage event is expected given the announcement of the pledge value rule and the first reading events. However, some lawmakers opposed the amendment, arguing that a pledged share differs from a transfer of property rights to lending banks and thus voting rights should not be restricted unless the ownership changes

⁵ See Market Observation Post System: http://emops.twse.com.tw/emops_all.htm

⁶ On the Taiwan stock market, mutual funds are one of the important domestic institutional investors, and foreign investors play a substantial role because their holdings account for over 30% of the total market value of the listed companies.

hands. The potential opposition to the bill from some lawmakers can delay the process as political negotiations take place. According to the regulations, once the current meeting period of the Legislative Yuan ends, the entire legal process must be started all over again. Consequently, significant uncertainty exists about whether the new provisions of the act will eventually be implemented.

In addition, the influences of the 2007 pledge value rule and the 2011 voting rights restriction events on insider pledging are different. The pledge value rule constrains the banking industry's ability to make loans to insiders backed by their company's shareholdings, whereas the 2011 new rules do not, per se, prevent directors from pledging shares. Rather, the rules only limits pledged shares that exceed one-half of the shares held by a director on election.⁷ Thus, directors who pledge over 50% of their stocks lose some voting power in the general meetings. Hence, these regulations differ in the way they discourage insiders from over pledging stocks ex ante. Thus, the passage of the Company Act amendment is still likely to have a significant impact on stock returns because it contains substantial unexpected information.

Although prior studies provide evidence that investor protection regulations increase shareholder wealth, the consequences of the regulation changes in Taiwan are uncertain. Some research argues that the willingness of a firm to improve investor protection plays an important role in determining whether shareholders benefit from the regulations. For example, Berkman et al. (2010) find that state-owned enterprises, relative to private firms, are less likely to comply with regulations of investor protection. Hence, minority shareholders of state-owned enterprises benefit less from new regulations. Also, Cai and Walkling (2011) point out that that the provisions do not benefit the stockholders of the worst-governed firms because these firms may not comply with new rules. Accordingly, the effects of new laws on shareholder wealth

⁷ That is, in the case where a director pledges over one-half of shareholdings when elected, he or she will only retain voting rights up to one-half the shareholdings when elected, plus unpledged shares.

may depend on firms' compliance with the regulations. Because the literature provides mixed conclusions, this study examines the importance of the compliance issue.

This study contributes to the literature on regulation and its effects on firm value (Chow, 1983; Johnson et al., 2000a; Bushee and Leuz, 2005; Greenstone et al., 2006; Chhaochharia and Grinstein, 2007; Wintoki, 2007; Hochberg et al., 2009; Berkman et al., 2010; Iliev, 2010; Cai and Walkling, 2011; Larcker et al., 2011; Black et al., 2015). Our results show that firms with insiders who make share pledges for bank loans experience higher stock returns following the pledging-related regulatory events compared with firms without such insiders. The findings are consistent with the alignment hypothesis that regulations benefit firms that previously comply less with the provisions of the rules. Given that limiting pledge values or voting rights may impose costs on all firms and that these new rules do not necessarily lead to ideal economic outcomes, our methodology identifies the relative, rather than absolute, benefits of regulating insider pledging on firm value (Chhaochharia and Grinstein, 2007).⁸

This paper also relates to the literature on the effects of director behavior on firm value (Defond et al., 2005; Chhaochharia and Grinstein, 2007; Wintoki, 2007; Goldman et al., 2009). We find that firms with insiders pledging stocks benefit more from the new regulations, suggesting that investors reassess insiders' pledging behavior for bank loans following changes in regulations. In other words, investors may perceive insider stock pledging as detrimental to firm values, and thus the regulation changes result in a relative increase in shareholder wealth. This issue is important because the stock market reaction to regulation changes not only has policy implications for the regulators but also demonstrates the way investors assess insiders' share-pledging behavior.

⁸ Some studies find that regulations that do not improve firm value, possibly because the observed governance practices are the result of value maximization (e.g. Iliev, 2010; Larcker et al., 2011). For example, certain governance practices regulations mandate contracts that are not optimal between management and outside investors (e.g., limiting the number of blockholders and the level of CEO compensation), and compliance with some regulations can, in fact, inflict costs (e.g., the requirement of management report for small companies).

Finally, this study contributes to the literature on portfolio allocation preferences with regard to investor protection (La Porta et al., 2000; Aggarwal et al., 2005; Ferreira and Matos, 2008; Leuz et al., 2008; Aggarwal et al., 2011). We show that foreign investors and domestic institutional investors increase their shareholdings following the passage of the 2011 Company Act amendment in firms with directors who make share pledges. The findings provide evidence that governance-sensitive investors become more willing to hold stocks of previously less-compliant firms, given that the adoption of the new rules achieves better investor protection.

The remainder of this paper is organized as follows. Section 2 reviews related literature and develops the empirical hypotheses. Section 3 describes the research design, empirical model, and data. Section 4 reports the empirical results, and Section 5 concludes the paper.

2. Literature review and hypotheses development

2.1. Share pledging

In the absence of collateral, a bank's expected return decreases even at a higher loan rate due to asymmetric information (Leland and Pyle, 1977) because borrowers would take ex post high-risk projects (Stiglitz and Weiss, 1981). Thus, to avoid such adverse selection, lending banks prefer rationing credit to opaque borrowers rather than increasing the loan rate because they do not have enough information to ensure payback. Collateral resolves credit rationing and allows borrowers to secure a reduced loan rate (when loan size is held constant) or an increase in loan size (when loan rate is held constant). When banks do not trust borrowers, they can use the collateral to ease financial constraints (Boot et al., 1991; Inderst and Mueller, 2007).

When a bank requires a firm insider to pledge shares for personal loans, this activity signals that the bank believes the borrower has higher agency costs. Article 197–1 of the Company Act requires that listed companies fully disclose the amount of pledged shares of the

insiders, which mitigates information asymmetry for outside investors on insiders' personally pledged borrowings. Although this regulation improves the transparency of pledged borrowing, the risk of managerial rent extraction remains.

In Taiwan as well as in many other countries, loan contracts with pledged stocks include terms of a collateral maintenance ratio.⁹ If the borrower does not meet the requirement, the bank can terminate the loan contract and sell the pledged stocks as part of the recovery. Therefore, directors have incentives to engage in activities that focus on maintaining stock prices, but their actions may have little positive effect on the firm's business operation, especially when the stock price falls. Significant anecdotal evidence indicates a conflict of interest exists between insiders and outside shareholders.

For example, the chairpersons of Hung Fu Construction Company and Achem Technology Corporation pledged 99.5% and 89.1% of their shareholdings in June 1998 and August 2008, respectively. They were accused of illegally manipulating stock prices, and their companies eventually encountered financial problems. Furthermore, Achem conducted three stock repurchases in 2008, which accumulated 36.9 million shares that accounted for 591.5 million New Taiwan dollars (NTD; about 50% of the current assets). Thus, outside investors face higher risk when insiders pledge their shareholdings, because insiders can exhaust significant corporate resources to maintain stock prices rather than improve operational performance.

Prior research on the impact of share pledges on agency problems supports this argument. For example, Lee and Yeh (2004) examine the determinants of financial distress and find that insiders' share pledge ratio is an important indicator of weaker firm-level governance, which increases the probability of financial distress and the bankruptcy costs. Chen and Kao (2011)

⁹ For example, if a director borrows X million NTD with pledged stocks valued at NTD 2X million, then the collateral maintenance ratio is 200% ($2X/X \times 100\%$). If the maintenance ratio drops below 140% (i.e., the stock price falls 30%) for three successive trading days, then the bank will deliver a notice of margin call, and the director should post a margin to raise the maintenance ratio to 170%.

find that directors who have financing needs and hold high turnover stocks prefer to pledge their stocks at private banks for loans. Overall, the literature shows that shareholders bear higher risk when insiders pledge stocks for bank loans. Thus, the new regulations of 2007 and 2011, which limit the amount of shares insiders can pledge and the voting rights of pledged shares, respectively, attempt to align the interests of insiders and minority shareholders to benefit investors.¹⁰

2.2. Hypotheses Development

This study examines whether insider share pledging affects firm value and institutional investors' shareholding decisions. We address this issue by examining Taiwan's stock market reaction to the pledge value rule, the first reading, and the passage events. Several corporate scandals and the passage of the Sarbanes–Oxley Act of 2002 in the United States have drawn attention from governments around the world and encouraged them to improve corporate governance. A growing body of literature assesses the effects of regulations on firm-level governance attributes (Atanasov et al., 2010; Bruno and Claessens, 2010) and shareholder wealth (Greenstone et al., 2006; Chhaochharia and Grinstein, 2007; Berkman et al., 2010; Cai and Walkling, 2011, among others). Evidence suggests that rules that attempt to protect outside investors from expropriation by improving governance mechanisms affect firm value.

For example, Chhaochharia and Grinstein (2007) examine the effect of the 2002 U.S. new governance rules on firm value. During the announcement period of one year, portfolios of firms with insider trading, related-party transactions, and restated financial statements earned higher abnormal returns compared with portfolios of firms that were more compliant with the rules. Cai and Walkling (2011) investigate the announcement effect on shareholder wealth of

¹⁰ After the passage and implementation of the Company Act amendment at the end of 2011, the tendency of insider share pledging is significantly declined. The percentage of directors with excess pledged shares decreased from 6.59% in December 2011 to 4.18% in December 2014. The director pledge ratio also decreased, from 10.61% to 9.80% during the same period.

the 2007 Say-on-Pay bill, which gives shareholders the right to vote on executive compensation, and find that stocks of firms with positive abnormal CEO pay and low CEO pay-for-performance sensitivity reacted positively to the passage of the bill. Berkman et al. (2010) study three regulatory changes in the Chinese security market in 2000 and find firms with minority shareholders, who face greater risk of expropriation, benefit from new regulations, especially for private firms relative to state-owned enterprises. These findings are consistent with the notion that laws can help mitigate the expropriation of minority shareholders by insiders and thus lead to higher shareholder values.

Previous research suggests that insider share pledging is associated with higher agency costs and a higher possibility of corporate financial distress. Investors may require a higher rate of returns for holding stocks of the firms with such concerns, and, consequently, the price of these stocks declines. Based on the alignment hypothesis (Chhaochharia and Grinstein, 2007; Berkman et al., 2010; Cai and Walkling, 2011), we expect these firms to benefit more from regulatory changes that lower insiders' incentives to pledge shares. Accordingly, we expect that regulation changes are more effective for firms with insider share pledging and that these firms have higher stock returns than those without insider share pledging.¹¹ We therefore state our first hypothesis as follows.

H1: *Firms with insider share pledging for bank loans will experience higher stock returns compared with those without such insiders after the share pledging-related regulatory events.*

In addition, the amount of the board of directors' shareholdings is another measure for the agency problem. When the board of directors' shareholdings are small, directors may not always act in the best interests of outside shareholders. Given the low costs of expropriation,

¹¹ In Taiwan, firms are required to disclose publicly information about pledged shareholdings, and thus share pledging is relatively transparent. The eased expropriation from insiders may be accompanied by legal convergence (La Porta et al., 2000; Glaeser et al., 2001), and investors are unlikely to have doubts about whether the rule will be enforced effectively.

these directors are more likely to engage in rent-seeking activities and relationship-based transactions. In line with this argument, several studies find that small shareholdings by the board are indicative of agency problems and result in low firm value (Jensen and Meckling, 1976; Leland and Pyle, 1977; Jensen, 1993). More important, if directors with small shareholdings pledge their shares for bank loans, the agency problems are likely to be even more severe. Because the 2011 Company Act amendment focuses on regulating the voting rights of directors' pledged shares, our second hypothesis predicts that firms with small director shareholdings benefit more from the first reading and passage events of the Company Act amendment, compared to firms with large director shareholdings. Therefore, we state our second hypothesis as follows.

H2: *Firms with directors who have small shareholdings and who pledge their shares experience higher returns after the first reading and passage events, compared to those without such directors.*

If regulating insider share pledging affects firm value, how investors assess value and react to changes in regulation is of interest. On one hand, institutional investors are more attentive to corporate governance practices. For example, Ferreira and Matos (2008) find that institutional investors prefer to base their investment decisions on the equity value of corporate governance, whereas foreign investors prefer cross-listings in the United States and components of major indices, which are considered with better governance. Leuz et al. (2008) show that foreigners are less interested in investing in firms with ownership structures conducive to governance problems. On the other hand, both foreign and institutional investors are likely to pay close attention to profit information to determine their investment strategy. For example, previous studies show that foreign and institutional investors, relative to other investor types, are more professional in analyzing the value of firms and are more sophisticated in making profits due to their abundant financial capability and expertise, especially in emerging markets such as Taiwan (Chang et al., 2009; Chen et al., 2009).

Furthermore, the literature suggests that listed firms' adoption of new legal standards plays an important role in institutional shareholdings (Florou and Pope, 2012). In other words, institutional investors are likely to change their shareholdings significantly only after a firm complies with a new regulation. Thus, we hypothesize that institutional investors are aware of the positive effects, if any, of the passage of the 2011 amendment to the Company Act, and we expect a significant increase in their shareholdings in firms that comply less with the rules. Thus, we state our third hypothesis as follows.

H3: *Institutional investors increase their shareholdings in firms with directors who make share pledges for bank loans.*

3. Research design and data

3.1. Research design and models

When examining the link between management decisions and firm value, researchers often encounter problems of endogeneity because they can be jointly determined. We examine abnormal stock returns around the exogenous change of regulatory events to assess the effects of pledging-related regulations on investor evaluation.¹² We apply the classic difference-in-difference equation to estimate the portfolio time-series regression. This method reduces the potential shortcomings of clustering in the specification of cross-sectional regression analysis and avoids the endogeneity of firm value and pledging behavior. This method also avoids the problem that stems from the cross-sectional correlation among sampling stocks that share the same event window (Chhaochharia and Grinstein, 2007;

¹² To identify legislative event dates associated with the 2011 amendment of the Company Act, we search the UDN database (a major data vendor of news media in Taiwan) using the keyword "share pledging" during the period between the pledge value rule and the passage events. This period includes a related event, when the 2011 amendment was reported in the newspaper after the Economics Committee of the Legislative Yuan completed the examination of the proposal on June 8, 2011. We do not expect the market to react significantly to this event because the content of the amendment was the same as that of the first reading. Unreported results confirm this conjecture.

Berkman et al., 2010; Cai and Walkling, 2011).

We investigate whether the three sample events affect the value of firms with insider share pledging by using the Fama–French–Carhart four-factor model to examine the abnormal returns around the sample events:

$$R_{p,t} - R_{f,t} = \beta_0 + \beta_1(R_{m,t} - R_{f,t}) + \beta_2SMB_t + \beta_3HML_t + \beta_4UMD_t + \beta_5D_EVENT_t + \beta_6D_Pledge_t + \beta_7D_EVENT_t * D_Pledge_t + \varepsilon_t, \quad (1)$$

where $R_{p,t}$ denotes the equally weighted portfolio return at date t , $R_{f,t}$ is the risk-free rate, $R_{m,t}$ is the market return (proxied by the return of stock price index, excluding financial industry), SMB_t represents the differences in returns between portfolios of small and large firms, HML_t represents the differences in returns between portfolios of high and low book-to-market ratios, and UMD_t is the momentum factor. D_EVENT_t is an event dummy variable that equals 1 during the event window, and zero otherwise. D_Pledge_t is a dummy variable that equals 1 if the portfolio consists of pledging firm, and zero otherwise.

We estimate Equation (1) with an estimation period of 250 trading days before the event. The estimation period of the passage event overlaps with the first reading event period, so we exclude observations in the first reading event window $(-1, 1)$ from the passage event estimation period.¹³ The coefficient of D_EVENT_t represents daily abnormal returns that capture the average difference in returns before and after the event, and the coefficient of $D_Pledge_t * D_EVENT_t$ is our main interest because it captures the difference in after-minus-before daily abnormal returns between the pledging portfolio (treatment group) and the non-pledging portfolio (control group) in the spirit of the difference-in-difference method (Atanasov et al., 2010). Because the non-share pledging firms are, theoretically, not expected to be affected by the new pledging-related rules, the differences in market reactions between these two groups serves as a placebo test, similar to the analysis in Cohen and Wang

¹³ The results are consistent with or without this adjustment.

(2013).¹⁴

We examine changes in institutional investors' shareholdings around the passage event using the following regression:

$$\begin{aligned} Holdings_{i,v,t} = & \beta_0 + \beta_1 D_Pledge_{i,t} + \beta_2 post_t + \beta_3 D_Pledge_{i,t} * post_t + \beta_4 BM_{t-1} \\ & + \beta_5 \log(MarketCap)_{t-1} + \beta_6 Leverage_{t-1} + \beta_7 Div / Sales_{t-1} \varepsilon_t, \end{aligned} \quad (2)$$

where $Holdings_{i,v,t}$ denotes the v th institutions' shareholding ratio of i th firm at time t . $D_Pledge_{i,t}$ is dummy variable that equals 1 if relevant insiders in firm i have pledged shares, and zero otherwise; $post_{i,t}$ is a dummy variable that equals 1 after the event, and zero otherwise. The interaction term $D_Pledge_{i,t} * post_{i,t}$ measures the differences in shareholdings of the v th type of institution for the pledging firms D_Pledge relative to the non-pledging firms before and after the event. We test Equation (2) with two event windows, $(-5, -1)$ versus $(0, 4)$ and $(-10, -1)$ versus $(0, 9)$, to compare the difference in investors' shareholdings before and after the event.

3.2. Sample and data

Our sample firms are listed companies on the Taiwan Stock Exchange (TWSE), excluding foreign firms and financial companies. We require that the companies are listed on the TWSE for at least 250 days before the sample events. We collect the data of insiders' share pledges from two sources. The Company Act requires that listed companies disclose the creation or cancellation of pledges of stocks held by insiders on a monthly basis; therefore, we obtain firm-level insider pledge ratios in the month immediately prior to the event dates from the Taiwan Economic Journal (TEJ) database and then determine whether the firm is a pledging or

¹⁴ Cohen and Wang (2013) examine non-staggered-board firms as the placebo in their study regarding how staggered boards affect shareholder value using a natural experiment involving two Delaware court rulings in 2010.

a non-pledging firm.¹⁵

In addition, the law requires listed firms to disclose detailed information on ownership structure (including insider-level pledged shares) in annual financial reports, which enables us to collect insider-level share pledges at the end of the year prior to the event. Using this information, we identify whether a director or a chairperson made excessive pledges on his or her shareholdings. Data on stock prices, investor shareholdings, and other firm characteristics also come from the TEJ database.

Panel A of Table 1 presents sample details. As the sample size increases over the years, the number of pledging firms remains stable; however, the number of non-pledging firms increases from 56.82% to 62.91%. This result is possibly due to the announcement of the pledge value rule that signals public opinion is aimed at reducing the incentives of insider pledging. Panel B provides the descriptive statistics of institutional shareholdings and firm characteristics. Foreign investors exhibit similar mean shareholdings, but the shareholdings have higher variation compared with mutual funds. Dealers hold a smaller percentage of shares in listed companies because their trades emanate from their proprietary trading activity and their trade sizes are smaller than those of the other institutions (Barber et al., 2014). Panel C shows that foreign investors hold more shares of pledging firms than those of non-pledging firms. However, pledging firms exhibit larger size scaled by market capitalization and higher leverage compared to non-pledging firms. The differences in firm characteristics may partly explain the higher shareholdings of foreign investors in pledging firms.

[TABLE 1 ABOUT HERE]

4. Empirical results

¹⁵ TEJ is one of the most comprehensive financial data vendor for the Taiwanese financial markets and gathers information directly from the TWSE filings of public companies.

4.1. Insider stock pledging, firm valuation, and stock trading

Table 2 presents the cumulative abnormal returns (CARs) represented by the regression coefficients obtained from Equation (1) around the sample events for three different event windows. During the three events, the abnormal returns of pledging firms are greater than those of non-pledging firms in the majority of the tests. These results, therefore, support our first hypothesis that less compliant firms experience higher stock returns after the pledging-related regulatory events.

[TABLE 2 ABOUT HERE]

Table 3 presents the three-day CARs (-1, +1) based on the types of insider pledging. We again examine the differences in abnormal stock returns under the difference-in-difference framework in Equation (1). Panel A examines the effects of the pledge value rule event on firms with different amounts of pledge value, and Panels B and C examine the effects of the first reading and the passage events on firms with excessive pledges, respectively. To test the effect of the 2007 pledge value rule, we calculate the amount (in NTD) of director share pledges and examine the abnormal returns of firms with pledges values in the top tercile and on the top half. Panel A shows the results. Firms with larger amounts of share pledges experience relatively higher returns after the 2007 pledge value rule. This finding supports the argument that the pledge value rule of 2007 reduced the agency costs of firms with larger amounts of share pledges and thus these firms experience an increase in shareholder wealth.

[TABLE 3 ABOUT HERE]

Next, we examine whether firms with directors who commit excessive shares to pledging experience relatively higher returns after the first reading and the passage events. We

use director-level data to calculate pledged shares that exceed one-half of the shares held by each director on election and divide pledging firms into two groups based on whether at least one of the directors engages in excessive share pledging. Table 3, Panel B, shows that the differences in stock returns between firms with directors with excessive share pledging and those of non-pledging firms are significantly positive. Pledging firms without directors who commit excessive shares to pledging also experience higher returns compared to non-pledging firms, but the differences are not significant. Finally, we group pledging firms into two subsamples based on whether the chairperson of a firm pledges shares excessively. Panel C indicates that regardless of whether the chairperson engages in excessive share pledging the returns of pledging firms are higher than those of non-pledging firms.¹⁶

To test Hypothesis 2, we examine whether the amount of director shareholdings influences the effects of pledges. We divide the sample into two groups based on the median of director shareholdings and then test the differences in abnormal returns between pledging and non-pledging firms around the first reading and the passage events. Table 4 shows that when directors have small shareholdings pledging firms experience higher returns than non-pledging firms, confirming that agency problems are more severe for small director-shareholding firms. We do not find similar results for firms with large director shareholdings. These results support Hypothesis 2.

[TABLE 4 ABOUT HERE]

¹⁶ Ownership structure and tunneling are likely to affect the results. We investigate these issues using Equation (1) by testing firms with and without a pyramid structure and with high and low possibility of tunneling. Claessens et al. (2000) define pyramid structures as owning a majority of the stock of one corporation, which, in turn, holds a majority of the stock of another, a process that can be repeated a number of times. We collect ownership data from the TEJ database and determine whether a listed firm is controlled through the pyramid structures. Following Gao and Kling (2008), the tunneling index is defined as the difference between accounts payable and receivable, divided by total assets. We divide the sample into two groups based on the median of the tunneling index. Unreported results indicate limited evidence that ownership structure and tunneling play a role around the share pledging events. We thank an anonymous referee for pointing out this possibility.

Table 5 presents the estimation results for Hypothesis 3. The main variable of interest is the interaction term $D_Pledge*post$, which shows that the coefficient of the interaction term is significantly positive for the shareholding regressions of foreign investors and dealers. These findings indicate that institutional investors increase their holdings of pledging firms after the passage of the 2011 Company Act amendment, which supports our third hypothesis. The results suggest that, due to the reduction in agency problems after the passage of the new regulation restricting voting rights for excessively pledged shares, institutional investors increase their shareholdings in less compliant firms.

[TABLE 5 ABOUT HERE]

Overall, our findings show that investors perceive insider share pledging damages firm value because this behavior increases agency costs associated with holding stocks from these firms. Because Taiwan's new regulations reduces the incentives for insider share pledging, relative firm value and institutional shareholdings increase for firms with higher agency costs due to insider share pledges.

4.2. Robustness tests

4.2.1. Buy-and-hold abnormal returns

To test the robustness of our results, in the spirit of Chhaochharia and Grinstein (2007) we estimate buy-and-hold abnormal returns (BHARs) to reexamine our first hypothesis. Following Chan et al. (2015), who study the association between the share pledge ratios and abnormal returns of share repurchase announcements, we define BHARs as the difference in the compounded return during the event windows between pledging firms and matched non-pledging firms. For each pledging firm, we require that the matched non-pledging firm be

in the same industry, of the same size ranking (small, medium, and big), and of the same book-to-market ranking (low, medium, and high). We select the firm with the closest book-to-market ratio as the matched firm. Table 6 presents the results. Our previous results still hold: The compounded returns of pledging firms are all higher than those of non-pledging firms, and the BHARs are significant in six of nine tests.

[TABLE 6 ABOUT HERE]

4.2.2. Panel regression analysis of stock returns and pledging

We next conduct a panel regression analysis to examine the relation between stock returns and insider share pledging. We use the Fama–French–Carhart four-factor model to examine the three-day CARs around the three respective events for all sample firms and then run the following regression model:

$$CAR_{i,t} = \beta_0 + \beta_1 Pledging_{i,t} + \beta_2 \log MV_{i,t} + \beta_3 BM_{i,t} + \beta_4 FCF_{i,t} + \beta_5 LEV_{i,t} + \varepsilon_{i,t}, \quad (3)$$

where CAR is the three-day CARs and $Pledging$ is pledging-related variables. We consider both continuous (pledge ratio) and discrete variables (D_Pledge , a dummy that equals 1 if insiders pledge shares, and zero otherwise). Similar to Chan et al. (2015), we include in the regression models as control variables market caps ($\log MV$), book-to-market ratio (BM), free cash flows (FCF), and leverage ratio (LEV). t -values reported in all regressions are adjusted for heteroskedasticity and clustered at the industry level (Petersen, 2009). To control for the fix effects of each event, we include two event dummies (the first reading and the passage events and the pledge value rule event) in the regressions.

Table 7 presents the results. Insiders' pledge ratio is positively related to the CARs around the three sample events. The results are similar when we use a discrete share pledging variable. Thus, Hypothesis 1 is supported.

[TABLE 7 ABOUT HERE]

4.2.3 Firm valuation (Tobin's Q) before and after the implementations of new regulations

We also apply the methods in Atanasov et al. (2010) to conduct a valuation analysis for the implementation of new regulations using Tobin's Q. We measure Q as the market value of equity divided by book value of debt plus book value of equity for one and two years before and after the pledge value rule and the passage events, respectively. Q is then regressed on lagged control variables under the difference-in-difference framework. Table 8 shows that changes in firm values are similar to those using stock returns as the firm value proxy. The positive coefficients of $D_Pledge*post$ shows that the value of pledging firms, compared to non-pledging firms, increases significantly after the share pledging-related events.

[TABLE 8 ABOUT HERE]

5. Conclusions

Prior research shows that insider share pledging is associated with higher agency costs. However, evidence is limited regarding how investors respond to insiders' share-pledging behavior. Using a quasi-natural experiment in Taiwan, this study empirically shows that firms with insider share pledging experience greater stock returns after pledging-related regulatory changes that reduce the incentives for pledging shares. In addition, the difference in stock returns between firms with directors making pledged shares and those without such directors is more pronounced when the board has small shareholdings, suggesting that small director shareholdings along with pledged shares lead to a more severe agency problem. We also find that foreign and domestic institutional investors increase their shareholdings in firms with directors making share pledges after the passage of the 2011 Company Act amendment, consistent with the notion that institutional investors focus on the governance of listed firms.

Some prior studies find countervailing effects of regulations. They show that governance provisions do not improve firm value, possibly because the observed governance practices are the result of value maximization (e.g., Iliev, 2010; Larcker et al., 2011). Thus, the effect of enforcing investor-protection rules on shareholder wealth is likely to depend on the costs and benefits of new regulations. By contrast, when insiders reduce their share pledges to meet the requirement of Taiwan's new regulations, extra auditing or filing costs are less likely. Therefore, our evidence is consistent with the alignment hypothesis, which suggests that firms that are less compliant with the spirit of the new regulation benefit more from the legislation than firms that are more compliant.

Taiwan's stock traders consider the evident influence of the new regulations on less compliant firms and the resulting improvement in investor protection. Thus, we show that shareholder wealth increases when investor protection is improved by regulating the insider share pledges. Our results have important implications for how the legal environment can alleviate the agency problem and help improve firm valuations.

Appendix. Article 197-1 of the Company Act

Upon creation or cancellation of a pledge on the company's shares held by a shareholder, a notice of such action shall be given to the company, and the company shall, in turn and within 15 days after such pledge creation/ cancellation date, have the change of pledge over such shares reported to the competent authority and declared in a public notice; unless otherwise provided for in any rules or regulations separately prescribed by the authority in charge of securities affairs.

In case a director of a company whose shares are issued to the public that has created pledge on the company's shares for more than one half of the shares being held by him/her at the time he/she is elected, the portion of excessive voting power shall not be exercised, nor counted in the number of votes of shareholders present at the meeting.

References

- Aggarwal, R., Erel, I., Ferreira, M., Matos, P., 2011. Does governance travel around the world? Evidence from institutional investors. *Journal of Financial Economics* 100, 154-181.
- Aggarwal, R., Klapper, L., Wysocki, P.D., 2005. Portfolio preferences of foreign institutional investors. *Journal of Banking & Finance* 29, 2919-2946.
- Atanasov, V., Black, B., Ciccotello, C., Gyoshev, S., 2010. How does law affect finance? An examination of equity tunneling in Bulgaria. *Journal of Financial Economics* 96, 155-173.
- Barber, B.M., Lee, Y.-T., Liu, Y.-J., Odean, T., 2014. The cross-section of speculator skill: Evidence from day trading. *Journal of Financial Markets* 18, 1-24.
- Berger, A.N., Espinosa-Vega, M.A., Frame, W.S., Miller, N.H., 2011. Why do borrowers pledge collateral? New empirical evidence on the role of asymmetric information. *Journal of Financial Intermediation* 20, 55-70.
- Berger, A.N., Udell, G.F., 1990. Collateral, loan quality and bank risk. *Journal of Monetary Economics* 25, 21-42.
- Berkman, H., Cole, R.A., Fu, L.J., 2010. Political connections and minority-shareholder protection: Evidence from securities-market regulation in China. *Journal of Financial and Quantitative Analysis* 45, 1391-1417.
- Black, B.S., Kim, W., Jang, H., Park, K.-S., 2015. How corporate governance affect firm value? Evidence on a self-dealing channel from a natural experiment in Korea. *Journal of Banking & Finance* 51, 131-150.
- Boot, A.W.A., Thakor, A.V., Udell, G.F., 1991. Secured lending and default risk: Equilibrium analysis, policy implications and empirical results. *Economic Journal* 101, 458-472.
- Bruno, V., Claessens, S., 2010. Corporate governance and regulation: Can there be too much of a good thing? *Journal of Financial Intermediation* 19, 461-482.

- Bushee, B.J., Leuz, C., 2005. Economic consequences of SEC disclosure regulation: Evidence from the OTC bulletin board. *Journal of Accounting and Economics* 39, 233-264.
- Cai, J., Walkling, R.A., 2011. Shareholders' say on pay: Does it create value? *Journal of Financial and Quantitative Analysis* 46, 299-339.
- Chan, K., Chen, H.-K., Hu, S.-Y., Liu, Y.-J., 2015. Share pledges and margin call pressure. Working Paper. National Chengchi University.
- Chang, C.-C., Hsieh, P.-F., Lai, H.-N., 2009. Do informed option investors predict stock returns? Evidence from the Taiwan Stock Exchange. *Journal of Banking & Finance* 33, 757-764.
- Chen, A., Kao, L., 2011. Effect of collateral characteristics on bank performance: Evidence from collateralized stocks in Taiwan. *Journal of Banking & Finance* 35, 300-309.
- Chen, L.-W., Johnson, S.A., Lin, J.-C., Liu, Y.-J., 2009. Information, sophistication, and foreign versus domestic investors' performance. *Journal of Banking & Finance* 33, 1636-1651.
- Chhaochharia, V., Grinstein, Y., 2007. Corporate governance and firm value: The impact of the 2002 governance rules. *Journal of Finance* 62, 1789-1825.
- Chow, C.W., 1983. The impacts of accounting regulation on bondholder and shareholder wealth: The case of the Securities Acts. *Accounting Review* 58, 485-520.
- Claessens, S., Djankov, S., Lang, L.H.P., 2000. The separation of ownership and control in East Asian corporations. *Journal of Financial Economics* 58, 81-112.
- Coco, G., 2000. On the use of collateral. *Journal of Economic Surveys* 14, 191-214.
- Cohen, A., Wang, C.C.Y., 2013. How do staggered boards affect shareholder value? Evidence from a natural experiment. *Journal of Financial Economics* 110, 627-641.
- Defond, M.L., Hann, R.N., Hu, X., 2005. Does the market value financial expertise on audit committees of boards of directors? *Journal of Accounting Research* 43, 153-193.

- Ferreira, M.A., Matos, P., 2008. The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics* 88, 499-533.
- Florou, A., Pope, P.F., 2012. Mandatory IFRS adoption and institutional investment decisions. *Accounting Review* 87, 1993-2025.
- Gao, L., Kling, G., 2008. Corporate governance and tunneling: Empirical evidence from China. *Pacific-Basin Finance Journal* 16, 591-605.
- Glaeser, E., Johnson, S., Shleifer, A., 2001. Coase versus the coasians. *Quarterly Journal of Economics* 116, 853-899.
- Goldman, E., Rocholl, J., So, J., 2009. Do politically connected boards affect firm value? *Review of Financial Studies* 22, 2331-2360.
- Greenstone, M., Oyer, P., Vissing-Jorgensen, A., 2006. Mandated disclosure, stock returns, and the 1964 Securities Acts amendments. *Quarterly Journal of Economics* 121, 399-460.
- Hochberg, Y.V., Sapienza, P., Vissing-Jorgensen, A., 2009. A lobbying approach to evaluating the Sarbanes–Oxley Act of 2002. *Journal of Accounting Research* 47, 519-583.
- Iliev, P., 2010. The effect of SOX section 404: Costs, earnings quality, and stock prices. *Journal of Finance* 65, 1163-1196.
- Inderst, R., Mueller, H.M., 2007. A lender-based theory of collateral. *Journal of Financial Economics* 84, 826-859.
- Jensen, M.C., 1993. The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Finance* 48, 831-880.
- Jensen, M.C., Meckling, W.H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305-360.
- Johnson, M.F., Kasznik, R., Nelson, K.K., 2000. Shareholder wealth effects of the Private Securities Litigation Reform Act of 1995. *Review of Accounting Studies* 5, 217-233.

- Johnson, S., La Porta, R., Lopez-De-Silanes, F., Shleifer, A., 2000. Tunneling. *American Economic Review* 90, 22-27.
- La Porta, R., Lopez-De-Silanes, F., Shleifer, A., Vishny, R., 2000. Investor protection and corporate governance. *Journal of Financial Economics* 58, 3-27.
- La Porta, R., Lopez-De-Silanes, F., Shleifer, A., Vishny, R., 2002. Investor protection and corporate valuation. *Journal of Finance* 57, 1147-1170.
- Larcker, D.F., Ormazabal, G., Taylor, D.J., 2011. The market reaction to corporate governance regulation. *Journal of Financial Economics* 101, 431-448.
- Lee, T.-S., Yeh, Y.-H., 2004. Corporate governance and financial distress: Evidence from Taiwan. *Corporate Governance: An International Review* 12, 378-388.
- Leland, H.E., Pyle, D.H., 1977. Informational asymmetries, financial structure, and financial intermediation. *Journal of Finance* 32, 371-387.
- Leuz, C., Lins, K.V., Warnock, F.E., 2008. Do foreigners invest less in poorly governed firms? *Review of Financial Studies* 22, 3245-3285.
- Menkhoff, L., Neuberger, D., Suwanaporn, C., 2006. Collateral-based lending in emerging markets: Evidence from Thailand. *Journal of Banking & Finance* 30, 1-21.
- Petersen, M.A., 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22, 435-480.
- Stiglitz, J.E., Weiss, A., 1981. Credit rationing in markets with imperfect information. *American Economic Review* 71, 393-410.
- Stulz, R., 1988. Managerial control of voting rights: Financing policies and the market for corporate control. *Journal of Financial Economics* 20, 25-54.
- Wintoki, M.B., 2007. Corporate boards and regulation: The effect of the Sarbanes–Oxley Act and the exchange listing requirements on firm value. *Journal of Corporate Finance* 13, 229-250.

Table 1. Sample statistics

<i>Panel A. The sample</i>						
Events	Total	Pledging firms	Total pledging (%)	Pledge ratio of pledging firms (%)	Non-pledging firms	Total non-pledging (%)
Pledge value rule	704	304	43.18	24.42	400	56.82
First reading	760	284	37.37	26.82	476	62.63
Passage	771	286	37.09	25.34	485	62.91
<i>Panel B. Institutional shareholdings and firm characteristics</i>						
Variables	Mean	Median	Std dev	Min	Max	
Holdings_ForeignInvestor (%)	9.94	0.00	19.36	0.00	98.44	
Holdings_MutualFund (%)	10.04	4.99	13.09	0.00	72.68	
Holdings_Dealer (%)	0.13	0.00	0.36	0.00	4.52	
BM	0.73	0.65	0.46	0.07	8.33	
log(MarketCap)	15.81	15.67	1.39	11.12	21.33	
Leverage (%)	41.64	42.07	17.39	2.35	96.19	
Div/Sales (%)	5.68	2.99	16.96	0.00	387.98	
<i>Panel C. Difference in mean of institutional shareholdings and firm characteristics by pledging</i>						
Variables	Pledging firms	Non-pledging firms	Difference	<i>t</i> -statistics		
Holdings_ForeignInvestor (%)	11.235	9.281	1.954*	1.952		
Holdings_MutualFund (%)	0.130	0.128	0.002	0.077		
Holdings_Dealer (%)	0.873	1.113	-0.240	-1.199		
BM	0.772	0.710	0.062*	1.767		
log(MarketCap)	16.102	15.626	0.476***	4.514		
Leverage (%)	44.893	39.572	5.321***	4.034		
Div/Sales (%)	6.163	5.377	0.786	0.605		

Notes: This table presents the basic statistics of the sample and main variables used in this study. Panel A provides an overview of the sample, Panel B provides institutional and shareholder statistics, and Panel C gives the differences in the mean of institutional shareholdings and firm characteristics by pledging. Financial characteristics in Panels B and C are from year-end 2010 (the year prior to the passage event). Pledge ratio is the percentage of pledged shares over total shareholdings held by insiders. Insiders for the pledge value rule event (January 29, 2007) refer to directors and supervisors, whereas those for the first reading event (December, 30, 2010) and the passage event (October, 25, 2011) refer to directors. Institutional shareholding is the shares held by the institutional investors divided by total outstanding shares of a firm. Pledge ratios are from the month immediately prior to each event, and institutional shareholdings is the average shareholdings ratio on day t_0 of the passage event.

Table 2. Abnormal returns around sample events

	Top quintile of pledging firms (1)	Pledging firms (2)	Non-pledging firms (3)	Difference (1) – (3)	Difference (2) – (3)
<i>Panel A. Pledge value rule event</i>					
$t = 0$	- 0.15 (- 3.81) ^{***}	- 0.23 (- 6.81) ^{***}	- 0.36 (- 9.66) ^{***}	0.22 (5.62) ^{***}	0.14 (4.38) ^{***}
$t = (0, +1)$	0.06 (0.44)	- 0.04 (- 0.31)	- 0.20 (- 1.74) [*]	0.26 (6.73) ^{***}	0.16 (6.53) ^{***}
$t = (-1, +1)$	0.13 (1.19)	0.05 (0.43)	- 0.06 (- 0.49)	0.20 (3.28) ^{***}	0.11 (2.67) ^{***}
<i>Panel B. First reading event</i>					
$t = 0$	- 0.13 (- 8.30) ^{***}	- 0.13 (- 9.03) ^{***}	- 0.21 (- 14.49) ^{***}	0.08 (4.39) ^{***}	0.08 (5.18) ^{***}
$t = (0, +1)$	- 0.11 (- 3.64) ^{***}	- 0.12 (- 5.50) ^{***}	- 0.25 (- 7.05) ^{***}	0.14 (2.64) ^{***}	0.13 (3.06) ^{***}
$t = (-1, +1)$	- 0.07 (- 1.64)	- 0.08 (- 2.44) ^{**}	- 0.15 (- 1.69) [*]	0.08 (1.34)	0.07 (1.07)
<i>Panel C. Passage event</i>					
$t = 0$	0.05 (2.06) ^{**}	- 0.03 (- 1.25)	- 0.16 (- 8.24) ^{***}	0.21 (10.23) ^{***}	0.13 (7.44) ^{***}
$t = (0, +1)$	0.12 (2.28) ^{**}	0.04 (0.78)	- 0.08 (- 1.45)	0.21 (11.73) ^{***}	0.12 (7.30) ^{***}
$t = (-1, +1)$	0.09 (2.03) ^{**}	0.04 (1.10)	- 0.15 (- 2.29) ^{**}	0.24 (7.77) ^{***}	0.19 (3.51) ^{***}

Notes: This table presents the abnormal returns and difference in abnormal returns between pledging and non-pledging firms around the sample events. Cumulative abnormal returns are estimated from the coefficients of Equation (1). Pledge ratio is the percentage of pledged shares over total shareholdings held by insiders. Insiders for the pledge value rule event refer to directors and supervisors, whereas those for the first reading and the passage events refer to directors. t -values are in parentheses and standard errors for the ordinary least squares regressions are calculated based on heteroskedasticity-consistent covariance matrix. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 3. Three-day cumulative abnormal returns (CARs) around sample events based insider pledging type

<i>Panel A. Pledge value</i>					
Events	Top tercile of pledge value (1)	Top half of pledge value (2)	Non-pledging (3)	Difference (1) – (3)	Difference (2) – (3)
Pledge value rule	0.07 (0.66)	0.05 (0.43)	-0.06 (-0.49)	0.14 (2.17)***	0.11 (3.09)***
<i>Panel B. Excessive share pledging</i>					
Events	Pledging/ directors with excessive pledge (1)	Pledging/ directors w/o excessive pledge (2)	Non-pledging (3)	Difference (1) – (3)	Difference (2) – (3)
First reading	0.03 (0.35)	-0.13 (-1.64)	-0.14 (-1.65)*	0.17 (1.20)	0.02 (0.79)
Passage	0.25 (2.94)***	-0.08 (-1.40)	-0.15 (-2.30)**	0.40 (7.36)***	0.07 (1.16)
<i>Panel C. Chairperson with excessive share pledging</i>					
Events	Pledging/ chairpersons with excess pledge (1)	Pledging/ chairpersons w/o excess pledge (2)	Non-pledging (3)	Difference (1) – (3)	Difference (2) – (3)
First reading	0.10 (0.97)	-0.10 (-1.02)	-0.14 (-1.65)*	0.24 (1.34)	0.04 (0.86)
Passage	0.29 (2.39)**	-0.00 (-0.16)	-0.15 (-2.30)**	0.44 (4.57)***	0.14 (2.63)***

Notes: This table presents the three-day CARs and difference in CARs between pledging and non-pledging firms around the sample events. The CARs are estimated from the coefficients of Equation (1). Insiders for the pledge value rule event refer to directors and supervisors, whereas those for the first reading and the passage events refer to directors. Excessive pledge denotes pledged shares that exceed one-half of the shares held by a director on election. *t*-values are in parentheses and standard errors for the ordinary least squares regressions are calculated based on heteroskedasticity-consistent covariance matrix. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 4. Three-day cumulative abnormal returns (CARs) around the first reading and passage events based on the amount of director shareholdings

Events	Pledging (1)	Non-pledging (2)	Difference (1) – (3)
Small shareholdings of directors			
First reading	-0.04 (-0.70)	-0.20 (-1.66)*	0.16 (1.08)
Passage	-0.01 (-0.20)	-0.29 (-3.72)***	0.27 (10.78)***
Large shareholdings of directors			
First reading	-0.14 (-1.72)*	-0.10 (-1.42)	-0.03 (-0.41)
Passage	0.10 (1.03)	-0.03 (-0.54)	0.12 (0.99)

Notes: This table presents the three-day CARs and difference in CARs between pledging and non-pledging firms around the 2011 Company Act amendment events based on the amount of director shareholdings. CARs are estimated from the coefficients of Equation (1). Sample firms are divided into two groups based on the median of board shareholdings. *t*-values are in parentheses and standard errors for the ordinary least squares regressions are calculated based on heteroskedasticity-consistent covariance matrix. *** and * denote significance at the 0.01 and 0.10 levels, respectively.

Table 5. Institutional shareholdings around the passage event

Variables	Foreign Investor		Dealer		Mutual Fund	
	(-6, -1) vs. (0, 4)	(-10, -1) vs. (0, 9)	(-6, -1) vs. (0, 4)	(-10, -1) vs. (0, 9)	(-6, -1) vs. (0, 4)	(-10, -1) vs. (0, 9)
Constant	-85.43 (-8.74)***	-85.46 (-8.75)***	-0.74 (-6.92)***	-0.75 (-7.20)***	-4.23 (-7.79)***	-4.25 (-7.80)***
D_Pledge	0.04 (7.36)***	0.08 (8.87)***	0.00 (-0.22)	0.001 (0.39)	0.004 (0.38)	0.01 (0.74)
post	-1.08 (-1.42)	-1.09 (-1.44)	-0.02 (-0.77)	-0.03 (-0.89)	-0.41 (-4.09)***	-0.40 (-3.96)***
D_Pledge*post	0.04 (3.94)***	0.06 (3.22)***	0.01 (4.12)***	0.01 (4.76)***	0.01 (1.49)†	0.01 (1.32)
BM	0.59 (1.08)	0.58 (1.08)	-0.05 (-4.51)***	-0.05 (-4.67)***	-0.88 (-8.54)***	-0.88 (-8.45)***
log(MarketCap)	5.94 (9.82)***	5.95 (9.82)***	0.05 (8.29)***	0.05 (8.52)***	0.37 (11.15)***	0.37 (11.16)***
Leverage	0.03 (1.55)	0.03 (1.55)	0.001 (1.82)*	0.001 (1.84)*	0.005 (1.39)	0.005 (1.35)
Div/Sales	0.03 (0.57)	0.03 (0.57)	0.00 (0.41)	0.00 (0.42)	0.002 (0.74)	0.002 (0.74)
Adj R ²	0.39	0.39	0.06	0.06	0.08	0.08
N	7,170	14,340	7,170	14,340	7,170	14,340

Notes: This table presents shareholding regressions of foreign investors, dealers, and mutual funds on director pledging around the passage of the 2011 Company Act amendment. *t*-values are in parentheses and standard errors for the ordinary least squares regressions are calculated based on heteroskedasticity-consistent covariance matrix. ***, *, and † denote significance at the 0.01, 0.10, and 0.15 levels, respectively.

Table 6. Buy-and-hold abnormal returns (BHARs) around sample events

	Pledging (1)	Non-pledging (2)	BHARs (1) – (2)	<i>t</i> -Statistics
<i>Panel A. Pledge value rule event (pledging firms n = 213)</i>				
<i>t</i> = 0	–0.007	–0.011	0.003	1.645*
<i>t</i> = (0, +1)	–0.013	–0.018	0.004	1.978**
<i>t</i> = (–1, +1)	–0.014	–0.020	0.006	2.249**
<i>Panel B. First reading event (pledging firms n = 224)</i>				
<i>t</i> = 0	0.006	0.005	0.001	0.712
<i>t</i> = (0, +1)	0.016	0.009	0.006	2.291**
<i>t</i> = (–1, +1)	0.018	0.012	0.007	2.226**
<i>Panel C. Passage event (pledging firms n = 214)</i>				
<i>t</i> = 0	0.003	0.001	0.002	1.239
<i>t</i> = (0, +1)	0.008	0.005	0.003	1.259
<i>t</i> = (–1, +1)	0.031	0.025	0.006	1.981**

Notes: This table presents BHARs around the sample events. BHAR is the difference in the compounded return during the event windows between pledging firms and matched non-pledging firms. For each pledging firm, we require that the matched non-pledging firm be in the same industry, of the same size ranking (big, medium, and small) and of the same book-to-market ranking (low, medium, and high). We select the firm with the closest book-to-market ratio as the matched firm. ** and * denote significance at the 0.05, and 0.10 levels, respectively.

Table 7. Panel regression analysis of abnormal returns around sample events

Variables	(1)	(2)	(3)	(4)
Pledge ratio	0.003 (4.624) ***	0.003 (4.520) ***		
D_Pledge			0.102 (3.030) ***	0.097 (3.069) ***
logMV	0.030 (1.365)	0.031 (1.484)	0.026 (1.142)	0.027 (1.274)
BM	0.073 (1.335)	0.068 (1.159)	0.076 (1.390)	0.073 (1.228)
FCF	0.000 (0.120)	0.000 (0.076)	0.000 (0.211)	0.000 (0.165)
LEV	0.002 (1.072)	0.001 (1.036)	0.002 (1.198)	0.002 (1.180)
Constant	-0.691 (-2.735) **	-0.631 (-2.001) **	-0.642 (-2.468) **	-0.590 (-1.849) *
Adj. R^2	0.006	0.008	0.006	0.007
No. of obs	1,946	1,946	1,946	1,946
Event-fixed effects	No	Yes	No	Yes

Notes: This table presents the panel regression results with the three-day cumulative abnormal returns around the sample events as the dependent variable. D_Pledge is a dummy that equal 1 if insiders pledge shares, and zero otherwise. Pledge ratio the percentage of pledged shares over total shareholdings held by insiders. logMV is market caps, BM is the book-to-market ratio, FCF is free cash flows, and LEV is leverage ratio. t -values are in parentheses and adjusted for heteroskedasticity and clustering at the industry level (Petersen, 2009). To control for the fix effects of each event, we include two event dummies (the first reading and the passage, compared to the pledge value rule) in the regressions. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 8. Firm valuation (Tobin's Q) before and after the implementations of new regulations

Variables	Pledge value rule event		Passage event	
	1 year	2 years	1 year	2 years
Constant	1.51 (6.74) ^{***}	1.29 (7.76) ^{***}	1.52 (17.37) ^{***}	1.59 (12.35) ^{***}
post	-0.11 (-4.04) ^{***}	-0.22 (-2.42) ^{**}	-0.40 (-7.80) ^{***}	-0.36 (-4.29) ^{***}
D_Pledge	-0.21 (-3.90) ^{***}	-0.21 (-3.77) ^{***}	-0.05 (-1.72) [*]	-0.08 (-2.42) ^{**}
D_Pledge*post	0.07 (2.53) ^{**}	0.12 (2.18) ^{**}	0.07 (2.45) ^{**}	0.07 (2.57) ^{***}
ROA	0.04 (2.84) ^{***}	0.04 (3.96) ^{***}	0.03 (7.17) ^{***}	0.03 (5.21) ^{***}
LEV	-0.005 (-1.83) [*]	-0.002 (-1.17)	-0.004 (-2.95) ^{***}	-0.004 (-2.81) ^{***}
Adj. R^2	0.30	0.27	0.23	0.18
N	1,190	2,339	1,399	2,716

Notes: This table presents the valuation (Tobin's Q) regression for the implementations of new regulations (the pledge value rule and passage events). Q is measured as the market value of equity divided by book value of debt plus book value of equity for one and two years before and after the events. Return on assets (ROA) and leverage (LEV) are lagged control variables. t -values are in parentheses and standard errors for the ordinary least squares regressions are calculated based on heteroskedasticity-consistent covariance matrix. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.