Shareholder wealth consequence of insider pledging of company stock as collateral for personal loans*

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Abstract

We investigate the consequences of insiders pledging company stock as collateral for personal loans. We take advantage of pledging disclosure requirements in Taiwan and then exploit a major regulatory change pertaining to pledging to help us identify the causal effects of pledging on shareholder wealth. We find improvements in shareholder wealth when managers significantly reduce pledging. We focus on two channels through which pledging can reduce shareholder wealth. First, we show that margin calls triggered by price falls can exacerbate the crash risk of a company with pledged stock. Second, since managers can bear significant personal costs in meeting large margin calls, we hypothesize and find that pledging is followed by several changes in corporate policies that are consistent with greater risk aversion.

Keywords: Pledging; Managerial incentive; Downside risk; Risk-taking; Payout policy.

JEL classification: G31; G34; G35.

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1. **Introduction**

The modern corporation is characterized by significant equity ownership interests held by corporate insiders. While these ownership positions can create powerful incentives for managers to maximize shareholder wealth (Jensen and Meckling (1976), McConnel and Servaes (1990) Mehran (1995)), they also force corporate insiders to bear the costs of a risky, undiversified equity investment (Faccio, Marchica Mura (2011)). This can be mitigated when firms permit executives to pledge their personal stockholdings as collateral for a bank loan (henceforth pledging). Pledging permits insiders to maintain their voting power, while at the same time allowing them to either raise consumption or to better diversify a portion of their wealth that would otherwise be tied up in firm stock.

While pledging can have clear benefits for firm executives, in this study we investigate its impact on shareholder wealth. There are at least two channels through which pledging can damage shareholder wealth. First, once a personal loan is secured by company stock, a significant share price fall can trigger a margin call to the executive for more capital. Since an executive's pledging decision is generally driven by a lack of liquid assets, meeting a margin call is likely to be costly, especially when the price fall is triggered by a negative market-wide shock. In this case, the pledger or the bank will need to sell sufficient stock to meet the margin requirement. The result is the release into the secondary market of a large block of previously untraded shares, which further amplifies the price decline that initially triggered the margin call. By exacerbating price declines in this way, pledging creates an asymmetry in the return profile of a company's stock that results in increased crash risk for pledging firms. We refer this effect as the *Crash Risk Hypothesis.*

The second channel through which pledging can reduce outside shareholder wealth relates to executive incentive misalignment once the controlling shareholder or the CEO starts to pledge. The ability of the CEO or controller to sanction pledging can be thought of as a private benefit of control because it allows them to obtain personal benefits such as increased consumption and greater diversification without any loss of control rights. However, the value of this private benefit can only be fully preserved if subsequent margin calls do not occur. Thus once a firm's executives begin to pledge, stock price declines become more critical to them due to the risk of margin calls. The resulting incentives are similar to those discussed in John, Litov and Yeung (2008), and Andersen, Reeb and Mansi (2003). Controlling shareholders obtain private benefits by simply propagating the survival of their firm, resulting in a desire to reduce risk and avoid bankruptcy. In the case of pledging, severe price falls may result in insiders being forced to sell shares, which raises the probability of losing voting control altogether. This causes additional losses of private benefits, beyond those derived from the use of pledging proceeds. These effects should raise a CEO's risk-aversion which can distort investment decision making. Since such incentive problems are exacerbated under pledging, we expect the market to discount the value of firms where firm insiders pledge company stock. We call this effect the *Reduced Risk Tolerance Hypothesis.*

The shareholder wealth consequence of pledging is a topic of considerable economic importance. In the US, for example, Larcker and Tayan (2010) find that more than 20 percent of firms allow pledging by their managers and directors. Using a sample of 500 large U.S. firms, Anderson and Puelo (2015) confirm that 23 percent of firms had at least one executive pledging their shares between 2006 and 2011, most commonly being an influential director. The aforementioned risks of pledging have materialized in several instances. For example, in 2008

the CEO and co-founder of Chesapeake Energy was forced to sell $569 million worth of shares to cover a margin call, causing the stock price to drop by 40 percent within one week and precipitating a class action lawsuit by investors. Similar problems occurred at other listed firms such as Green Mountain Coffee Roasters and Carphone Warehouse in the UK.[1] These problems have also attracted the attention of institutional investors. A survey by Institutional Shareholder Services (ISS) finds that about half of the responding institutional investors view pledging as a problematic governance issue.[2] Yet, despite these anecdotes there is no systematic evidence on the aggregate impact of pledging on firm value. Larcker, McCall and Tayan (2013) point out that a lack of credible evidence on the causal impact of pledging on minority shareholders precludes the formulation of an effective policy response. The primary reason for this lack of evidence has been the difficulty in obtaining accurate pledging data, as disclosure regimes around the world have only recently begun to require firms to disclose pledging activity.[3]

To provide empirical evidence on the consequence of insider share pledging, we utilize a rich and novel database of share pledging activity in Taiwanese publicly listed firms over the 2003 to 2013 period. Pledging disclosures are compulsory for all listed firms in Taiwan. Once a corporate insider pledges his/her stock as collateral for a personal loan, Taiwanese regulations require that the company promptly disclose all the details of pledge to the market, allowing us to identify the precise date of every pledge during our sample period. The data shows that pledging by Taiwanese executives is pervasive. Approximately half of the sample firms' insiders

[1] In the UK, the founder of Green Mountain Coffee Roasters was forced to sell shares with a worth of $123 million to cover the margin call; the failure to disclose pledging has caused David Ross, the 87th richest person in Britain and co-founder of Carphone Warehouse to resign. In Singapore, the pledging by the CEO of Sino-Environment Technology Group led to a 70 percent fall in the company's stock over two months. In Australia, the pledging by its directors has caused the ABC Learning Centres, the largest childcare service provider in the World, to fall into receivership.

[2] http://www.towerswatson.com/en/Insights/Newsletters/Global/executive-pay-matters/2013/Will-Prohibiting-Executive-Stock-Pledging-Benefit-Shareholders-Sensible-Pledging-Policies

[3] For example, the Financial Services Authority (FSA) in the UK and the Securities and Exchange Commission (SEC) in the US only made disclosure on pledging mandatory in 2009 and 2006 respectively.

undertake a pledge at some point during the sample period, providing us with a rich empirical setting to evaluate the impacts of pledging on firms that permit it versus those that don't. Of the pledging shareholders, an average of 21 percent of their stock is pledged to secure personal loans. This amounts to about 6 percent of the entire market capitalization of Taiwanese firms with pledging activity being held as collateral for personal loans to corporate insiders.

We begin our empirical analysis by studying share price reactions to pledging announcements. Using pledge disclosures as event dates, we find that shareholders react significantly negatively to announcements that a manager, board member, or an outside block holder of the firm increases their pledging level. Such negative reactions are stronger when the pledging increase is by an executive who has a large influence on firm policies (-0.4 percent 3-day CAR), and when the size of the pledge is large (-0.5 percent). Our analysis also considers the possibility of a reverse causality explanation for this result – that price declines drive the pledging of more shares as a means of meeting marginal call requirements. To address this question, we analyze a subsample of first-time pledging announcements, since factors relating to existing pledging agreements should not play a role for these events. We find that announcement returns are also significantly negative for this subsample of firms.

We next examine whether these negative short term wealth consequences are reflected in longer term systematic differences in firm value between pledging and non-pledging firms. In a simple OLS regression, we find that in the cross-section, firms with insider pledging exhibit significantly lower Tobin's Qs. Using a firm fixed-effects model, we show that the introduction of pledging is also associated with lower firm value. These results however are subject to endogeneity concerns. For example, better performing firms may be implementing unobservable

improvements in their governance over time, which leads to both better performance and restrictions on executive pledging.

Thus, to properly identify the effects of pledging on firm value, we utilize an exogenous regulatory change to pledging introduced in Taiwan in 2011. The regulatory change removed voting rights from the portion of an insider's pledged shareholdings that exceeds 50 percent of their total beneficial shareholdings. We show that this change caused a substantial fall in extent of pledging in Taiwan. This regulatory announcement also caused an average positive short term share price reaction, especially for firms with pledging insiders. We exploit this exogenously induced drop in pledging to conduct a difference-in-difference analysis on the valuation effects of this regulatory change on pledging versus non-pledging firms. Our results show that relative to comparable firms without pledging, firms with pledging experience a significantly larger rise in Tobin's Q following the regulatory change. These results indicate a negative causal impact of pledging on firm value.

Having established the negative valuation effects of pledging, we next investigate the potential sources of this expected valuation decline. To test the *Crash Risk Hypothesis*, we utilize the 2008 Global Financial Crisis (GFC) as an experimental setting that propagates an exogenous negative price shock, across both pledging and non-pledging firms in the market. In the first three months of the GFC, the Taiwanese stock market experienced a 40 percent decline in value. We use this shock to determine whether firms with pledgers (treatment group) suffer larger price declines compared to the control firm sample. Our results show that indeed pledging firms suffered greater price declines relative to non-pledging firms during the crisis period. Most importantly, these price declines were proportional to the total percentage of the firm's market capitalization that was pledged. In addition we find that insider shareholdings decline

significantly during the crisis period for pledging firms, consistent with forced share sales to meet margin calls.

The *Reduced Risk Tolerance Hypothesis* predicts firm value declines with the introduction of pledging because firms make more conservative investment decisions, passing up profitable, but high risk projects in order to protect the benefits obtained through pledging and to preserve their private benefits of control. To test this conjecture, we examine the effects of pledging on three proxies for corporate risk taking: capital expenditures (CAPEX), research and development expenses (R&D), and idiosyncratic risk. Our results show that pledging is associated with a drop in all three measures of risk taking.

It is important to note there also some other (less plausible) circumstances where pledging can in fact increase risk taking. First, pledging can provide implicit downside protection when price declines become so severe that the value of margin loan begins to exceed value of the share collateral, in which case default by the pledger creates implicit downside protection.[4] However, since margin loans in Taiwan are limited to a maximum of 65 percent of the collateral value (Chen and Kao, 2011) and are marked-to-market daily, then a 35 percent one-day price fall is required to create this perverse incentive. Second, insiders can use pledging proceeds to diversify their personal investment portfolios and limit the idiosyncratic risk exposure to their firm. This will encourage greater risk taking only when the firm's stock price is well above the margin threshold. At this point, the risk that the pledger will need to liquidate personal assets to cover a margin call is substantially reduced. In light of these arguments, our empirical results can be interpreted as the net outcome of these effects and the risk reduction hypothesis outlined earlier. Our findings suggest that risk reduction dominates, that is, pledging insiders attempt to

[4] At first glance, pledging may seem similar to an insider taking out a put option on their stock position. It is important to note however, that there are significant differences in the incentives that arise from both types of contracts. Combining a put with stock creates a synthetic call option which in fact increases managerial risk taking.

avoid privately costly margin calls which could threaten their control benefits, leading them to pursue more conservative corporate policies.

Beyond the two channels of wealth destruction we examine, pledging can also be detrimental to minority shareholders because it can, under certain conditions, create greater incentives for a firm's controlling shareholder to extract private benefits of control. In particular, once the controller pledges, they temporarily forfeit their cash flow rights on the pledged stock, (as their dividend receipts are offset by the interest liabilities on the margin loan). However, the voting rights associated with the shares are retained. In circumstances where the firm's stock price has risen well above the margin call price and the controller's private benefits are no longer at risk, diversion of the firm's resources becomes more attractive due to the wedge between the controller's cash flow and control rights. Such diversion however, will be subject to a lower bound of the margin call price, as the controller has incentives to maintain the value of the firm above this level. Nevertheless, this effect can also explain the negative valuation consequences of pledging that we document above.

Our paper makes several contributions to the literature. First, we are the first to provide casual evidence on the negative impact that pledging has on outside shareholder wealth. Concurrent studies on pledging (Andersen and Puleo, (2015), Chan, Chen, Hu and Liu (2015)) document some possible channels through which pledging can destroy shareholder wealth, but do not explore the aggregate impact of pledging, which is likely to be an outcome of numerous forces beyond the channels they document. In particular, Chan, Chen, Hu and Liu (2015) examine the impact of pledging on stock repurchase decisions of Taiwanese firms. They find that firms with significant pledging engage in value reducing stock repurchases following price falls to protect insiders from margin calls. These results suggest one additional channel through which

pledging can reduce firm value, albeit under very specific circumstances. Echoing our *Crash Risk hypothesis*, Anderson and Puleo (2015) find that pledging leads to greater tail risk which drives up measures of firm risk. In addition to these channels of value destruction, we show that sub-optimal corporate decision making can also result from the incentives created by pledging. This result builds on John, Litov and Yeung (2008) who show that when the scope to extract private benefits is large due to poor investor protection, insiders avoid taking excessive risk taking which subsequently impairs a firm's growth. Our results suggest that pledging can also be viewed as a corporate governance deficiency that, using the same logic, can lead to excessive risk avoidance and thus constrain a firm's growth.

Second, our findings also contribute to the very limited literature on how the private transactions of insiders affect the nature of their incentive contracts, managerial decisions and thus, firm outcomes. Existing studies in this area have focused exclusively on insider hedging transactions. Such transactions are another means through which managers can effectively diversify their firm-specific wealth exposures. For instance, Bettis, Bizjak and Lemon (2001) analyze the use of derivatives (zero-cost collars) and swaps by corporate executives to hedge their equity positions and thereby sever the pay-performance link implicit in their compensation contracts. Jagolinzer, Matsunaga and Yeung (2007) also examine a similar set of insider hedging transactions, and show that price declines tend to follow hedging transactions, implying that managers time their hedging transaction to lock in gains.

Our analysis differs from the above studies because the distortions in incentives created by pledging are fundamentally different from those created by hedging transactions. Unlike hedging transactions, pledging does not limit the upside or downside risk exposure of insiders stockholdings. On the contrary, pledging actually increases the downside risk of the firm. Thus,

while hedging can reduce a managers pay-performance sensitivity, pledging creates an asymmetric pay-performance sensitively profile, whereby managerial disutility from a price decline outweighs the benefits from increasing firm value.

Finally, our findings relating to the crash risk hypothesis also contribute to our understanding of firm-specific determinants of crash risk. Kelly and Jiang (2015) show that since investors are tail-risk averse, the equity risk premium rises when market tail risk increases. Our findings show that these aggregate investor attitudes to tail risk appear to be borne out at the firm level. In particular, we show that pledging increases crash risk which in turn increases a firm's expected returns. Our findings in this regard also echo the faulty contract design hypothesis outlined in Hillion and Vermaelen (2004), who show that certain features of a firm's convertible securities can create "death spirals" in their prices, similar to pledging and thus ultimately reduce firm value when issued.

The rest of the paper is structures as follows. Section 2 describes the data and outlines the sample selection procedures. Section 3 presents our baseline results on the effect of pledging on firm value. Section 4 presents the results from our quasi-natural experiment that attempts to identify the causal impact of pledging on firm value. Section 5 presents evidence on the channels through which pledging destroys value and finally Section 6 concludes.

2. Data & Sample

We obtain data on the total shares owned and the percentage pledged by managers, directors and blockholders from the Taiwan Economic Journal (TEJ) database from 2003 to 2013. Firms in Taiwan are required to disclose such information on a monthly basis. We also obtain firm-level financial data (e.g., total assets, sales) and stock price information from TEJ and Datastream

respectively. After excluding financial and utility firms and over-the-counter firms, our sample contains 8,003 firm-year observations from 840 listed firms.

Because some of our hypotheses are concerned with managerial decision making (e.g., risk-taking), our first step is to identify the central decision maker in each firm. While, in many developed economies, this is the senior managers or executives of the firm, in Taiwan like many other developing economies, the ultimate authority rests with the controlling shareholder (see LaPorta, Lopez and Shleifer (1999)).

To identify whether there is a controlling shareholder in the firm we must first take account of the fact that many listed firms in Taiwan are family firms. Therefore, reported ownership at the individual shareholder level can under-estimate the real ownership of the controlling shareholder as some of these individuals belong to the same family. To classify individuals into groups, we take the following three steps. First, we assume that board members who share the same surname belong to the same family. In this case we aggregate the ownership and take the total value as the real ownership of this family. Second, the TEJ data also enables us to infer whether a board member is a representative of another institution. Therefore, we also classify individuals who have different surnames but represent the same institution into one group. Lastly, we merge our sample to the data from Masulis, Pham, and Zein (2011) which contain manually collected information on shareholder affiliations among Taiwanese firms. If some shareholders are shown to belong to the same group in their data, we also classify these shareholders into the same group in our sample.

Following the above three-step procedure, we subsequently label the group (or the single shareholder) with the highest ownership in the firm as the controlling shareholder if his/her ownership exceeds 5%, and also exceeds the ownership of the second largest shareholder in the

firm by more than 50%. After implementing this two-step procedure, we find that about 76% firm-year observations in our sample have a controlling shareholder. This proportion is comparable to other studies such as Yeh (2005), Yeh, Lee, and Woidtke (2001), and Claessens, Djankov, Fan, and Lang (2000).

Table 1 reports basic descriptive statistics of our sample. In Panel A we summarize shares owned and pledged for the whole sample, as well as for sub-sample of firms that have a controlling shareholder (hereafter termed Controlled Firms) and for those that do not have a controlling shareholder (hereafter termed Widely Held Firms). Overall, pledging (by any manager, board member, controlling shareholder, or blockholder) occurs in 51% of all firm-year observations, and is slightly more common in Widely Held Firms (56.52%) than in Controlled Firm (48.83%). Given the possibility that the effects of pledging depend on whether the pledger has a strong influence on the firm, we also look at the proportion of firms in which the decision makers also pledges their stock. We define decision makers as the controlling shareholders for Controlled Firms and as the senior managers for Widely Held Firms. According to Panel A, about 31% (54%) of Controlled Firms (Widely Held Firms) have a pledging decision maker. The fact that a pledging decision maker is more common in Widely Held Firms is likely due to the nature of our classification. While there can only be one decision maker in Controlled Firms, there can be many decision makers in Widely Held Firms.

In addition, the impact of pledging can depend on its magnitude. Therefore, we also summarize the proportion of firms that have at least one individual who pledges over 50% of his/her shares. On average about 38% of all firm-year observations have at least one large pledger. To consider the magnitude of pledging at the firm level, we also examine the proportion of firms where the total number of shares pledged by the managers, directors, and blockholders

exceed 5% of the total shares outstanding at the firm. The results suggest that such substantial pledging exists in 20% of our sample firms. Furthermore, in the last four rows of Panel A, we examine the magnitude of pledging by reporting the number of shares pledged at the individual level as a proportion of the number of shares owned by the pledger, and the total number of shares pledged at the firm level as a proportion of the total shares outstanding at the firm. Even though the previous results indicate that pledging is less prevalent in Controlled Firms, the results here suggest that its magnitude is much higher.

Panel B reports summary statistics for our sample firm characteristics. The table also reports the results from basic univariate comparisons between firms with and without pledging. All financial variables are winsorized at the 1% and 99% level. The results in Panel B suggest that pledging firms tend to be larger (as reflected in total assets and market capitalization) and older. Since more established firms tend to have more stable valuations, these stocks should represent safer collateral for banks making personal loans. Consequently shareholders in larger, more established firms will find it easier to pledge [and personally less risky in terms of losing private benefits of control]. In addition, pledging firms tend to have larger boards. This difference is unsurprising, given that the probability of having any pledging naturally increases with the number of board members. Lastly, consistent with our expectation, pledging firms have lower operating profitability, measured by ROA, and lower firm valuation, measured by Tobin's Q.

3. Empirical Results

3.1 Announcement Returns to Pledging.

To examine whether pledging impacts firm value, we conduct a series of empirical tests. We first consider the average shareholder reaction to announcements of pledging. Firms in Taiwan are

required to make announcements to the market within a few days after their managers, board members, and blockholders pledge shares as collaterals or change the number of shares pledged. This unique disclosure requirement enables us to conduct an event study to examine how firm share prices respond to these announcements.

As these announcements disclose the pledger's identity and the number of shares being pledged, we also investigate whether the shareholder reaction to the news depends on certain pledging characteristics such as the influence the pledger has in the firm and the size of the pledge. Under the *Crash Risk Hypothesis*, the magnitude of the potential shareholder wealth destruction effect should rise with the size of the pledge. Similarly, the *Reduced Risk Tolerance Hypothesis* implies that wealth losses to outside shareholders will be greater if the pledger plays an important role in the firm's decision-making process.

The results are reported in Table 2. We calculate CARs using the Fama-French Three-Factor Model with an estimation window of [-210, -11] and an event window of [-1, 1]. In Panel A, we partition these announcements based on whether they refer to an increase or a decrease in pledging. To ensure our results are robust to the calculation of CARs, we also report the results where we calculate CARs based on the Market Adjusted Model over the same event window. Among the pledging announcements, we exclude observations where we cannot obtain sufficient stock price data to compute CARs. To reduce the extent to which the pledging is "unsurprising" to shareholders, we only keep an announcement if it is not preceded or followed by another pledging announcement in the same firm within 30 calendar days. This restriction reduces our sample by approximately 50%. Our final sample includes 1,816 pledging increase announcements and 1,752 pledging decrease announcements.

Overall, the results in Panel A clearly show that announcements of an increase in pledging trigger a significantly negative share price reaction. On average such an announcement reduces the share price by 0.4%. Both the mean and the median value appear statistically significant. On the other hand, the shareholder reactions to announcements of decreased pledging are mixed and generally insignificant. One possible explanation for this asymmetric effect is that once an individual has already pledged his/her shares, a subsequent decrease in pledging is more or less expected. If this is the case, then the degree of surprise in a decrease in pledging announcement is reduced.

Having shown that shareholders in general view pledging increases as value-reducing, we next explore whether the wealth impact of pledging announcements depends on certain characteristics of the pledging announcement and the pledger. Because of the differences in ownership structure between Controlled and Widely Held Firms, the impact of pledging may also differ, and thus we examine CARs for these two firm types separately.

Panel B reports the mean values of CARs obtained from various sub-samples. Because the results in Panel A suggest that announcements of a decline in pledging do not carry as much new information, in this panel we only focus on increases in pledging announcements. Within each sample, we first split the announcements based on whether the pledger is a major decision maker in the firm. Consistent with the *Reduced Risk Tolerance Hypothesis*, the CARs are significantly negative for pledging announcements by decision makers. For pledging announcements by non-decision-makers, the CARs are still negative, but are generally insignificant and are of smaller magnitude.

We also expect the shareholder reaction to be affected by the size of the pledge. To measure size we employ two measures. The first is the number of shares being pledged scaled by

the total number of shares the pledger owns; while the second one is the number of shares being pledged scaled by the total number of shares outstanding at the firm. Once we split the announcements into large (i.e., above median) and small (i.e., below median) pledges, the results indicate that announcements of a large pledge always trigger a significantly negative reaction, while small pledge announcements trigger only an insignificant negative reaction. This result supports the *Crash Risk Hypothesis*.

Lastly, we partition the announcements based on whether the pledger has already pledged stocks prior to the announced pledging. As mentioned previously, pledging can occur in response to a margin call where the pledger has to pledge additional shares to meet the margin call. For these pledging announcements, it is unclear whether the negative reaction is really driven by pledging per se. To deal with this concern, we examine first-time announcements which should not be driven by margin calls. According to the results, the CARs of these announcements are also significantly negative, particularly for Controlled Firms and in cases where a decision maker in the firm is the first time pledger.

3.2 Tobin's Q analysis.

Our second line of investigation examines the impact of pledging on firm value in the long term. For this purpose, we regress Tobin's Q, a commonly used measure for firm value, on a measure of insider pledging, along with control variables. We employ two measures for pledging. The first measure is an indicator variable that equals one if pledging is present in the firm, and zero otherwise. The second measure is a continuous variable which scales the number of shares pledged by the total number of shares outstanding in the firm. Because our financial variables are on an annual basis, we collapse our monthly pledging and holding data to the firm-year level. In doing so, for each firm-year we take the average value of the twelve firm-month observations.

For the whole ("All Firms") sample, we measure pledging at the aggregate level. That is, the indicator variable equals one as long as any manager, board member or blockholder in the firm pledges; while the numerator of the continuous variable equals the total number of shares pledged by all managers, board members and blockholders. Meanwhile, to allow for the possibility that pledging is only value-reducing when it is being done by a major decision maker in the firm, we measure pledging separately for decision makers and non-decision-makers in both the Controlled and Widely Held sub-samples.

Table 3 reports the results. In Panel A, we estimate panel regressions with industry-fixed effects and year-fixed effects to control for time varying heteroscedasticity. Industry is defined based on the 2-digit SIC codes. We control for the ownership by the decision maker in the firm, firm size (measured by the log transformation of total assets), sales growth, cash holding, leverage, CAPEX, 36-month stock return volatility, firm age, board size, the fraction of independent directors (referred to as "supervisors" in Taiwan), and the amount of analysts coverage for the firm. . For Widely Held Firms, we also control for the total ownership by blockholders. Robust standard errors are clustered at firm level.

Overall, results in Panel A suggest that pledging appears to have a significantly negative impact on Tobin's Q. This negative relation confirms our hypothesis that pledging reduces firm value. Further, in Columns 3-6 we find that this negative relation only exists when pledging is carried out by decision makers in the firm. This result is consistent with the hypothesis that pledging is problematic because it increases incentive misalignment between shareholders and firm decision makers.

The results in Panel A only address unobservable factors at the industry level. To further minimize the impact of firm-level unobservable factors on our results, in Panel B of Table 3 we

estimate the same regressions with firm-fixed effects and year-fixed effects. These results are even stronger than those in Panel A, suggesting that by eliminating the unobservable firm-level differences, the negative impact of pledging on firm value becomes more severe.

4. Quasi-Natural Experiment

4.1 Background.

The results presented so far do not prove a causal relation between pledging and firm value. It is possible that the results can be explained by a reverse causality argument: firms with characteristics associated with low valuation may somehow facilitate or motivate more pledging by their board members and shareholders. To make stronger inferences on the causal relationship between pledging and firm value, in this section we conduct a quasi-natural experiment made possible by an amendment to the Taiwan Corporations Law that was implemented in 2011.

In 2011, the Taiwanese legislature initiated a discussion on whether a restriction should be in place for certain types of pledging. Specifically, it was proposed that if the number of shares pledged by a manager or director exceeds 50% of the number of shares he/she was holding upon election, then the shares exceeding 50% would no longer carry voting rights.

In Taiwan, for a proposal to become law, it must be discussed and passed three times by the legislature. According to local media coverage, prior to the first discussion of this proposal, the public was in general expecting it to be rejected.[5] Nevertheless, on the 8th of June 2011, the proposal received its first passage. The proposal then received a majority vote on the second discussion. On 25 October 2011, the date of the final discussion, it was announced that the proposal was passed for the third time, indicating that it would unequivocally become an official amendment.

[5] Anni Lin & Yi Yang, "Board member power to shrink for excessive pledging" *Economic Daily*, June 09 2011. http://www.jihyoung.com/news/100/06/1000609-2

4.2 Shareholder Reaction to Legislative Change.

To determine the extent to which this legislative change influences the market, we investigate the shareholder reactions to the two key event dates discussed above. The first passage surprised the market, while the final passage provided certainty that the proposal would be implemented. Thus, it is possible for both events to be priced by the market. Since the proposal aims to reduce pledging, a significant increase in shareholder wealth upon these two announcements would indicate that pledging is viewed as value-reducing. Also, because these two announcements are fairly exogenous, they help to address the concern that the previously observed negative relation between pledging and firm value is driven by the reverse causality or some other endogenous cause.

Treating 08 June 2011("Event 1") and 25 October 2011 ("Event 2") as the two event dates, we calculate the CARs for all listed firms in Taiwan over the event window [-1, 1] using the Fama-French 3-factor model with an estimation window of [-210, -11]. We then test whether the shareholder reaction on these two dates is significantly different from zero. The results are in Table 4. We report the CARs for the two events separately, as well as taking the sum of the two CARs for each firm. Once again we split the sample into Controlled Firms and Widely Held Firms.

As Table 4 shows, for both Controlled and Widely Held Firms, there is a significantly positive shareholder reaction upon the first passage of the proposal. The mean value of CARs for Event 1 is 1.2% for Controlled Firms and 0.9% for Widely Held Firms, suggesting that the market in general views the proposal as value-enhancing. On the other hand, the shareholder reaction on Event 2 is mostly insignificantly different from zero. Since the proposal already received two majority votes, the insignificance is likely due to the fact that the final passage is

not a surprise to the market. Lastly, once we calculate the sum of the two CARs for each firm, our results remain positive and significant at the 1% level.

The above results are based on samples that include both firms with and without insider pledging. If shareholders view pledging as problematic, then an amendment that reduces pledging should be good news for all firms. Even for firms without pledging, such an amendment reduces the likelihood that these firms will have insider pledging in the future. Nevertheless, the magnitude of the shareholder wealth increase should be greater in firms where substantial pledging already exists. Because the amendment only affects large pledging, it should have a stronger impact on firms where an insider is pledging over 50% of his/her shares. Further, because the amendment only places restrictions on voting rights, it should largely impact insider pledgers who highly value their votes. Therefore we expect the shareholder reaction to be the largest when there is a controlling shareholder in the firm, and the controlling shareholder is pledging over 50% of his/her shares.

To examine this prediction, within the subsample of Controlled Firms, we define treatment firms as those in which the proportion of shares pledged by the controlling shareholder exceeds 50% at the end of May 2011. Firms where no managers, board members or large shareholders are pledging at the end of May 2011 are potential control firms. We select control firms from this subsample based on a propensity score matching (PSM) procedure, where matching takes place based on firm size (measured by total assets), age, sales growth, cash holding, CAPEX, stock return volatility in the past 36 months, board size, and board independence. After obtaining the propensity scores, we match each of the treatment firms to all control firms that (1) are in the same industry and (2) have propensity scores that differ from the treatment firm's propensity score by no more than 20%.

We repeat the above process to identify treatment and control firms for the Widely Held Firms sample. However, since the decision maker (i.e., managers) in these firms is likely to view voting as unimportant, it is unclear whether the new law can lead to a significant reduction in pledging in these firms.[6] According to the results in Table 4, both treatment and control firms tend to experience significant positive shareholder reactions following Event 1 and for the combined CARs of Events 1 and 2. Also, consistent with our conjecture, the results suggest that stock market price reactions tend to be larger for treatment relative to control firms.

To further examine whether the difference in shareholder reactions in treatment versus control firms is statistically and economically significant, we subsequently regress the CAR of each firm on an indicator variable indicating whether the firm is a treatment or a control firm. All the regressions include industry indicator variables and the standard errors are clustered at industry level.

The results are reported in Table 5. Consistent with the findings in Table 4 that the Event 2 announcement does not surprise the market, the *Treat* indicator variable is insignificant in Column 2. In contrast, it is significant at the 10% level in Event 1 (Column 1) and at the 5% level in the combined CARs (Column 3) for the Controlled Firms, suggesting that within the Controlled Firm subsample, firms where the controlling shareholder has substantial pledging before the announcements experience significantly larger CARs than firms that have no pledging at all. On the other hand, for Widely Held Firms, the indicator variable *Treat* is insignificant for the two individual announcements and significant only at the 10% level in the combined CARs. As explained previously, this weak result is expected since losing some voting rights is not a serious concern for managers in these firms. Consequently this new statute is unlikely to bring about an equally substantial reduction in pledging at these firms.

[6] In Section 4.3, we examine and find that the actual reduction in pledging is much smaller in Widely Held Firms.

Overall, the results presented in Table 4 and 5 suggest that shareholders generally view pledging as value-reducing.

4.3 Difference-in-Difference Analysis.

Our next investigation utilizes this quasi-natural experiment in a difference-in-difference (DiD) framework. Specifically, rather than looking at shareholder reactions in an event study, we examine how much firm value changes for pledging firms from before until after the new statute and compare this valuation change to the change experienced by firms where this new statute has no real impact (i.e., the non-pledging firms).

4.3.1 Changes in pledging before and after the shock

Before employing a DiD approach, one critical feature of the experiment that must be validated is that the variable of interest (i.e., pledging) should undergo a substantial change following the exogenous shock to the treatment firms, while it exhibits no measurable change for the benchmark firms. Therefore, to verify whether our treatment firms experience a significant drop in pledging, in Table 6 we summarize how pledging changes within the 12 months from the end of October 2011, the last month before the new law becomes official, to the end of September 2012.

According to Table 6, we do not find a dramatic reduction in pledging when our focus is any insider with any pledging. However, as we gradually narrow down our focus to firms that have an insider with a large pledge (defined as 30% or 50%), the magnitude of the reduction becomes greater, especially for firms where the controlling shareholder is pledging over 50%. This drop suggests that it is specifically large controlling shareholders that value their voting rights and thus, choose to reduce their pledging to prevent a loss of voting control. In contrast, among Widely Held Firms, the proportion of firms where at least one manager pledges over 50%

of his/her shares drops by only 9% (from 32.35% to 29.41%), suggesting once again that managers in Widely Held Firms do not value voting rights very highly.

The focus of the above analysis may still be too broad in the sense that among all firms where controlling shareholders pledges over 50% of their shares, their need to reduce pledging will differ based on how tenuous their control rights are. For firms where a large gap exists between the ownership levels of the largest and second largest shareholders, it is likely that the pressure to reducing pledging is weaker for the largest shareholder.

To allow for this possibility, we subsequently test whether the largest shareholder in a firm has stronger incentives to reduce pledging based on (i) his/her ownership level, (ii) his/her pledging level, and (iii) the second largest shareholder's ownership level. For this analysis, we first calculate the controlling shareholder's voting power if his/her pledging is not reduced (i.e. their voting rights after the legislative change, assuming no change to pledging). If the second largest shareholder's ownership exceeds 50% of this "pseudo ownership", then we designate this largest shareholder a "threatened" decision maker. Among controlled firms with a threatened decision maker (as of October 2011), the decision maker is pledging more than 50% of their shares in 32.02% of these firms. After implementation of the new law, this proportion falls by 43.2% to 18.19% within 12 months.

The last three rows of Table 6 focus on the amount of shares being pledged before and after the shock. To do this, we define *Votes at Risk* as the number of shares pledged over 50% by each pledger. These are the votes that will be lost if the pledger does not reduce pledging. We find that Votes at Risk, as a proportion of the total number of shares outstanding in the firm, exhibit a modest decline when we focus on all large pledgers. However, once we focus on threatened decision makers, the decline in pledging is much more dramatic, from 2.7% to 1.8%

for Controlled Firms. Overall, the results in Table 6 show that the new law leads to a substantial reduction in pledging by decision makers for whom the loss of voting rights is likely to be important.

4.3.2 Difference-in-Difference evidence

Having shown that the pledging level of firms with substantial insider pledging changes dramatically following the exogenous legislative shock, we next examine whether the value of these firms improves significantly, relative to comparable firms that are not impacted by the shock. We first include all treated firms as long as their decision makers are pledging over 50% of their shares prior to the new law. The benchmark firms are selected using the same propensity score matching model as before. Because the change in the law is officially implemented at the end of 2011, we treat 2009 and 2010 as the pre-shock year and 2011 and 2012 as the post-shock year. The dependent variable in our regressions is once again Tobin's Q. We regress this variable on an indicator variable *Treat* which equals one for treatment firms and zero for benchmark firms, an indicator variable *Post* that equals one for the treatment years 2011 and 2012 and zero for 2009 and 2010, and an interaction of these two variables (the difference-in-difference variable).

Table 7 reports the results. We include the same set of control variables as in Table 3 as well as industry indicators. According to Columns (1) and (3), the treatment firms in the Controlled Firm sample experience a significant improvement in firm value, while the treatment firms in Widely Held Firm subsample experience no significant improvements. This is consistent with the evidence in Table 6, which suggests that controlling shareholders in general reduce their pledging after the shock, while managers in Widely Held Firms do not exhibit such a reduction. Also, consistent with the findings in Table 6 that the threatened firms tend to exhibit a larger

decline in pledging, the coefficient of the interaction term in Column (2) is significantly positive and is much higher than that in Column (1).

The above results indicate that firms in which the pledging level has substantially declined after the new law experience a significantly larger improvement in firm value compared to similar firms with no pledging. An alternative interpretation of the results is that the value improvement is driven not by a reduction in pledging, but by a reduction in the ownership of controlling shareholders who do not decrease their pledging to below 50%. This interpretation is unlikely for a number of reasons. First, even if these controlling shareholders fail to reduce pledging to below 50%, they still maintain their full cash flow rights and only lose a proportion of voting rights. Second, even the loss of voting rights should not matter so long as the controlling shareholders maintain their dominant positions in the firm. In our Controlled Firms sample, there are only 6 (out of 32) treated firms in which the controlling shareholder loses the dominant position in the post-shock year. In untabulated results, we find that we obtain similar results if we exclude these firms from our sample. The above evidence strongly supports the conclusion that pledging reduces firm value, rather than the argument that changes in pledging are merely correlated with changes in firm valuation because of an unspecified endogenous relationship.

5. Sources of Value Reduction

5.1 Crash Risk Hypothesis

Having identified a causal relation between pledging and firm value, we next identify the specific channels through which pledging can be detrimental to firm value. As discussed previously, the first channel of value destruction is that pledging, especially when substantial, can increase the downside risk of a firm's stock. Following a non-trivial stock price decline,

pledging executives may need to pledge/sell additional shares to meet their margin calls. These margin call requirements can be difficult to meet, because the decision to pledge in the first place is likely driven by an executive's limited level of liquid assets. Upon default of the margin loan, a forced sale of these shares by the lender suddenly brings a large block of shares onto the secondary market, thereby driving the stock price down further. Since these pledged shares are usually not actively traded prior to this event, the negative price impact they trigger is likely to be largely permanent.

The above negative price impact is not the end of story. Since the significant stock price decline can hardly be reversed in the short term, existing shareholders can suffer a severe loss even if they have not pledged any stock. In light of this threat, they have incentives to sell their shares upon observing a non-trivial drop in share price, which adds further downward pressure on the stock price, increasing downside risk of the stock. This argument is similar in the logic of the *faulty contract design hypothesis* of Hillion and Vermaelen (2004), where the authors find empirical evidence supporting this hypothesis from an empirical analysis of floating-priced convertible security issuances.

In this sub-section we first test whether, following a non-trivial stock price decline, large pledgers are more likely to reduce their shareholdings. Such a decline in shareholdings can be either a result of the pledgers selling shares to meet their margin calls, or a result of forced sales when they fail to meet the margin calls. The endogenous nature of the relationship between stock prices, pledging and shareholding levels makes testing the crash risk hypothesis challenging. Ideally, an experimental setting that overcomes these concerns should be characterized by a price decline is that is exogenous to pledging.

To deal with this concern, we utilize the Global Financial Crisis (GFC) as an exogenous shock to stock prices in general. The GFC was triggered by events totally independent of pledging. In Taiwan, the GFC hit the stock market mainly during mid to late 2008. To maintain the exogenous nature of the crisis, we focus on the initial three months from June 2008 to August 2008. Specifically, for each manager, board member, and blockholder who holds shares at the end of May 2008, we calculate the proportion of their shares that are pledged and use this proportion as our key independent variable. In addition, we construct an indicator variable that equals one if the proportion of shares pledged by an individual exceeds a certain threshold. Among all pledgers in our sample, the thresholds for the median, the top tercile, the top quartile, and the top decile are 45%, 75%, 85%, and 99%, respectively. In untabulated results, we find that the top tercile value (75%) produces the most significant results. Therefore, we report the results using this threshold.

The results are shown in Panel A of Table 8. In this analysis, we do not split the sample based on whether the firm has a controlling shareholder because the two major types of firms should not differ in terms of the threat of margin calls and forced shares sales. Our dependent variable is the percentage change of shareholdings for each individual from the end of May 2008 to the end of August 2008. In Columns 1 and 2, we estimate OLS regressions with industry indicator variables and control for certain firm-level characteristics. The coefficients of the key explanatory variables associated with pledging are significantly negative, indicating that level of shareholdings of each insider during the GFC decreases with the magnitude of their pledging.

The firm-level control variables in Columns 1 and 2 are based on data at the end of 2007. To allow for the possibility that some firm characteristics have changed dramatically during the GFC and these changes might also lead to changes in shareholdings, in Columns 3 and 4 we

replace the firm-level control variables with their percentage changes from 2007 to 2008. The results in Columns 3 and 4 remain significant. Lastly, in Columns 5 and 6 we drop all the control variables and include firm indicators in place of industry indicators. By only examining the within-firm variation, we minimize the impact of unobservable firm level factors. Our results in these two columns remain significant. Overall the evidence in Panel A suggests that insider shareholding declines can be attributed to their pledging.

Subsequently, we examine whether pledging puts further downward pressure on stock prices during the GFC. To do this, we measure stock returns during the GFC using Fama-French 3-factor adjusted returns from the beginning of June 2008 to the end of August 2008 and use this variable as the dependent variable. Our first two measures of pledging are the total number of shares pledged by the largest pledger or the top three large pledgers in the firm divided by the firm's total shares outstanding. As shown in Columns 1 and 2 of Panel B, the coefficients of these two variables are negative and significant, suggesting that the presence of large pledgers can significantly damage a firm's stock performance during this financial crisis.

In addition, the impact of pledging can also be affected by the ownership of the pledger. Even if a pledger is forced to sell shares, the effect on the stock price might not be significant if the pledger only holds a small proportion of shares. Thus, in Columns 3-5, we construct indicator variables that equal one if the firm has at least one individual who pledgers more than 75% of his/her shareholdings and whose ownership exceeds 3%, 5%, and 10%, respectively. The coefficients of these variables are negative and significant at the 5% level. Overall, the results in this sub-section are consistent with the argument that large pledging significantly increases the downside risk for the firm's stock due to the threat of margin calls and forced sales of stocks upon defaults.

5.2 Reduce risk tolerance hypothesis

Our second hypothesis predicts that firms tend to make more conservative investment decisions once its controlling shareholder or CEO begins pledging company stock. A board's decision to allow insiders to pledge their shares can be understood as a private benefit of control, since it is a decision, at the discretion of insiders, which allows them to enjoy personal benefits such as increased diversification and/or consumption. To maintain this private benefit, insiders must ensure that the stock price remains higher than the margin price. Should margin calls be made on the loan due to stock prices falls, insiders must give up cash and/or private benefits derived therefrom. In the extreme, stock price falls may lead insiders to forfeit their shares to the bank, to cover their loss positions which can lead to a total loss of control rights.

The underlying logic in the above hypothesis is that the fear of losing control benefits can result in greater risk-aversion by the company's decision makers. This incentive is consistent with the model in Burkart, Radicevic, Yu (2015). In their model, private benefits are forgone if the firm passes into a default state. Thus, insiders will want to minimize the possibility that such default states occur, even when higher risk taking is optimal from a shareholder value point of view. A similar argument is also advanced in Andersen, Reeb and Mansi (2003) relating to family firms and the agency costs of debt. If the family can derive private benefits from their controlling ownership stake (e.g. enhanced family reputation and the ability to pass on the firm to a family heir), then they will be more likely to value the firm's survival over shareholder wealth maximization. Andersen, Reeb and Mansi (2003) show that this incentive effect more closely aligns the interests of the family with the firm's bondholders, which results in a lower cost of debt.

Further, several studies have examined the consequences of CEO inside debt holdings (Cassell, Huang, Sanchez and Stuart 2012; Phan 2014; Wang, Xie and Xin 2013; Wei and

Yermack 2011). Because inside debt holdings (e.g., pension benefits and deferred compensation) represent *future* payments to the executives, these studies are relevant to our analysis in the sense that it is the severe loss in the bad state that is driving this increased ex-ante risk-aversion. These studies universally document a negative relation between inside debt holdings and corporate risk taking. In this section, we examine whether this argument also holds in the context of executive pledging.

Table 9 reports the results. We first follow Bargeron, Lehn and Zutter (2010) and Coles, Daniel and Naveen (2006) and use CAPEX and R&D (both scaled by total assets) in the next year to measure a firm's risk-taking propensity. As a third risk measure, we also compute each firm's idiosyncratic risk. To do so, we first estimate the Fama-French 3-factor model using daily stock returns over the 12 months following the end of the current year.[7] Thereafter, we take the idiosyncratic risk as the volatility of the residuals from this model. Our hypothesis predicts a negative relation between pledging and these three variables.

In Table 9, all regressions include firm-fixed effects and year-fixed effects. For ease of interpretation, all dependent variables are multiplied by 100. Overall, the results show that Controlled Firms experience a significant reduction in CAPEX, R&D, and idiosyncratic volatility as the magnitude of pledging by their controlling shareholders increases. For Widely Held Firms, there is also suggestive evidence that these firms experience a significant reduction in CAPEX when the managers in these firms pledge a large amount of their stock.

6. Conclusion

Many firms around the world permit their insiders to pledge their personal company stock as collateral for bank loans. While allowing pledging alleviates insiders' potential liquidity

[7] We use the trading volume information downloaded from Datastream to exclude non-trading days from the calculation.

concerns, this practice can also have potentially adverse consequences for shareholder wealth. We show that initial pledging announcements trigger a significantly negative average market reaction. Firms in which insiders are pledging also tend to have lower valuation as measured by Tobin's Q. Our analysis using a quasi-natural experiment suggests that a reduction in pledging leads to an increase in firm value.

We next explore the potential sources of this observed value reduction surrounding pledging. We find that firms in which large insider pledging activity occurs suffered greater stock price declines during the 2008 Global Financial Crisis. This is consistent with the hypothesis that pledging increases the down-side risk associated with the firm's stock. In addition, consistent with the hypothesis that pledging increases manager risk aversion, we find that firms in which managers pledge their shares undertake less risky but potentially profitable investment projects, reflected in a lower CAPEX and R&D expenditures. Although widely discussed, to our knowledge there is no empirical evidence on whether firms should allow insiders to pledge their stockholdings in the firm. Our findings suggest that insider pledging is detrimental to firm value and should therefore be banned or at least seriously restricted.

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Table 1: Summary Statistics

This table reports basic summary statistics. Panel A summarizes stock ownership and pledging information for all firms, as well as for the sub-samples with a controlling shareholder (Controlled Firms) and without a controlling shareholder (Widely Held Firms). *Decision Maker* refers to the controlling shareholder in Controlled Firms and managers in Widely Held Firms. Panel B provides descriptive statistics for firm level variables. *Board Ownership* refers to the total ownership by all managers and board members. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

Panel A - Ownership & Pledging

	All Firms	Controlled Firms	Widely Held Firms
Total firm-year observations	8,003	6,131	1,872
Proportion with pledging	50.63%	48.83%	56.52%
Proportion with pledging by Decision Maker		31.47%	53.69%
Proportion with a larger pledger (>50%)	37.72%	35.83%	43.91%
Proportion with a large pledging Decision Maker (>50%)		18.15%	40.75%
Proportion with more than 5% total shares pledged	19.81%	20.98%	15.97%
Shares pledged / Shares owned (Full Sample)	7.62%	7.71%	7.34%
Shares pledged / Shares owned (Pledging Sample)	15.05%	15.78%	12.99%
Shares pledged / Total shares outstanding (Full Sample)	3.15%	3.30%	2.67%
Shares pledged / Total shares outstanding (Pledging Sample)	6.22%	6.75%	4.72%

Panel B - Firm Level Characteristics

	Mean	Median	SE	25%	75%	Firm Pledge Yes	Firm Pledge No	Diff in Mean	Diff in Median
Assets	291.345	56.042	1465.118	26.936	128.64	346.708	243.595	103.113***	35.414***
Market Cap	216.89	44.547	903.246	19.339	111.25	302.723	138.839	163.884***	21.933***
Sales Growth	0.046	0.044	0.304	-0.092	0.182	0.037	0.054	-0.017**	-0.016
Leverage	0.182	0.158	0.162	0.034	0.287	0.208	0.159	0.049***	0.076***
Age	10.265	10	6.377	5	15	12.232	8.57	3.661***	4.000***
Cash	0.097	0.058	0.109	0.024	0.129	0.077	0.114	-0.037***	-0.028***
CAPEX	0.03	0.012	0.051	0.003	0.034	0.031	0.03	0.001	0.003***
R&D	0.019	0.008	0.029	0	0.024	0.015	0.022	-0.008***	-0.005***
Idiosyncratic Volatility	0.399	0.378	0.081	0.364	0.415	0.397	0.401	-0.004**	0
ROA	0.076	0.061	0.064	0.03	0.106	0.069	0.083	-0.015***	-0.011***
Q	1.313	1.118	0.666	0.895	1.49	1.234	1.383	-0.150***	-0.089***
Board Size	17.436	15	8.439	12	20	18.6	16.451	2.149***	2.000***
Board Independence	0.274	0.25	0.121	0.182	0.357	0.249	0.295	-0.046***	-0.049***
Board Ownership	0.353	0.314	0.199	0.204	0.464	0.321	0.381	-0.060***	-0.059***

Table 2: Shareholder reaction to pledging announcements

This table reports Cumulative Abnormal Returns upon announcements of changes in pledging. CARs are measured using the Fama-French 3-factor model with an estimation window of [-210,-11] and an event window of [-1,1]. Panel A examines announcements of both increases and decreases of pledging, while providing t-tests, signed-rank tests, and plain sign tests on whether the reaction is significantly different from zero. Panel B includes only announcements of increases in pledging, and partitions the sample based on various characteristics. Reported in Panel B include the number of announcements in the sample (*N*), the percentage of the announcements with negative CARs (*% Negative*), and the mean value of the CARs (*Mean*). Controlled Firms (Widely Held Firms) refer to firms that have (do not have) a controlling shareholder. *Decision Maker* refers to the controlling shareholder in Controlled Firms and managers in Widely Held Firms. *First-Time Pledging* refers to when the shareholder has no existing pledging prior to the announced pledging. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

Panel A: Nature of Announcements

		N	% Negative	Mean	t-Statistics	Median	Signed-Rank Z-Score	Sign Test P-Value
FF 3-factor [-1,1]	Pledging Up	1816	55.3	-0.331%	-3.678	-0.362%	-4.757	0
	Pledging Down	1752	53.9	0.105%	1.055	-0.167%	-1.084	0.01
Market Adjusted [-1,1]	Pledging Up	1816	56.3	-0.465%	-4.218	-0.552%	-5.391	0
	Pledging Down	1752	52.6	0.095%	0.888	-0.211%	-1.075	0.033

Panel B: Characteristics of Pledging Increase Announcements

	Controlled Firms			Widely Held Firms		
	N	% Negative	Mean	N	% Negative	Mean
Decision Maker Pledging	598	55.5	-0.425%**	525	56.4	-0.301%**
Non-Decision-Maker Pledging	609	53.9	-0.291%	84	51.2	-0.143%
Large Pledging (Pledged/Holding > Median)	604	56.1	-0.568%**	304	56.9	-0.453%
Small Pledging (Pledged/Holding ≤ Median)	603	53.2	-0.146%	305	54.5	-0.106%
Large Pledging (Pledged/Total Outstanding > Median)	604	55.5	-0.515%**	304	57.6	-0.435%*
Small Pledging (Pledged/Total Outstanding ≤ Median)	603	53.8	-0.199%	305	53.8	-0.124%
First-Time Pledging	327	52.3	-0.223%**	170	52.5	-0.406%
Non-First-Time Pledging	880	55.6	-0.407%***	439	56.9	-0.230%***
Decision Maker & Large (Pledged/Holding > Median)	436	58.3	-0.784%***	287	58.2	-0.553%*
Decision Maker & Large (Pledged/Total Outstanding > Median)	442	57.5	-0.702%***	294	58.5	-0.465%*
Decision Maker & First-Time	113	50.4	-0.334%**	147	51.0	-0.442%***

Table 3: Effects of pledging on firm value

This table reports results of OLS regressions where the dependent variable is the natural log of Tobin's Q. Regressions in Panel A include industry-fixed effects and year-fixed effects while regressions in Panel B include firm-fixed effects and year-fixed effects. Industry is defined based on the 2-digit SIC codes. *Controlled Firms (Widely Held Firms)* refer to firms that have (do not have) a controlling shareholder. *Decision Maker* refers to the controlling shareholder in Controlled Firms and managers in Widely Held Firms. For All Firms, the indicator variable *Any Pledging [1,0]* equals one as long as any manager, board member, or large shareholder has pledged, while the continuous variable *Any Pledging [%]* refers to all shares pledged by managers, board members, and blockholders divided by total shares outstanding in the firm. *Decision Maker Pledging [%]* refers to all shares pledged by the decision maker divided by the total shares outstanding in the firm. Beneath each coefficient is the associated p-value. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

Panel A: Industry FE & Year FE						
	All Firms		Controlled Firms		Widely Held Firms	
	(1)	(2)	(3)	(4)	(5)	(6)
Any Pledging [1,0]	-0.032					
	(0.308)					
Any Pledging [%]		-0.375*				
		(0.098)				
Decision Maker Pledging [1,0]			-0.074**		-0.086	
			(0.033)		(0.138)	
Non-Decision Maker Pledging [1,0]			0.009		0.109*	
			(0.797)		(0.094)	
Decision Maker Pledging [%]				-0.615**		-1.129**
				(0.020)		(0.046)
Non-Decision Maker Pledging [%]				0.258		0.733
				(0.717)		(0.624)
Decision Maker Ownership	0.282**	0.326***	0.251*	0.292*	0.377	0.404
	(0.018)	(0.007)	(0.091)	(0.055)	(0.180)	(0.153)
Blockholder Ownership					-0.082	-0.062
					(0.378)	(0.505)
Ln(Total Assets)	-0.126***	-0.135***	-0.143***	-0.147***	-0.073**	-0.084***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)	(0.004)
Sales Growth	0.178***	0.178***	0.170***	0.169***	0.202***	0.202***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash/Assets	0.953***	0.953***	0.994***	1.004***	0.836**	0.832**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.033)	(0.033)
Leverage	-0.425***	-0.432***	-0.381***	-0.400***	-0.529**	-0.532**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.015)	(0.017)
CAPEX/Assets	0.308	0.259	0.367	0.398	0.111	-0.030
	(0.287)	(0.374)	(0.261)	(0.233)	(0.810)	(0.948)
36-Month Volatility	0.394***	0.393***	0.371***	0.370***	0.418**	0.399**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.018)	(0.025)
Ln(Firm Age)	-0.142***	-0.153***	-0.127***	-0.130***	-0.204***	-0.208***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.002)
Ln(Board Size)	0.002	-0.007	-0.045	-0.050	0.169	0.156
	(0.973)	(0.911)	(0.446)	(0.397)	(0.181)	(0.224)
Board Independence	0.343**	0.366**	0.425**	0.443***	0.209	0.255
	(0.033)	(0.022)	(0.014)	(0.010)	(0.430)	(0.306)
Ln(Analyst Coverage)	0.368***	0.374***	0.394***	0.398***	0.266***	0.274***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,147	7,147	5,395	5,395	1,752	1,752
Adjusted R-squared	0.400	0.404	0.416	0.419	0.414	0.415

Panel B: Firm FE & Year FE						
	All Firms		Controlled Firms		Widely Held Firms	
	(1)	(2)	(3)	(4)	(5)	(6)
Any Pledging [1,0]	-0.125***					
	(0.000)					
Any Pledging [%]		-1.171**				
		(0.038)				
Decision Maker Pledging [1,0]			-0.122*		-0.134**	
			(0.055)		(0.014)	
Non-Decision Maker Pledging [1,0]			-0.025		0.004	
			(0.602)		(0.947)	
Decision Maker Pledging [%]				-1.663**		-1.509**
				(0.042)		(0.010)
Non-Decision Maker Pledging [%]				-0.122		1.223
				(0.861)		(0.101)
Decision Maker Ownership	0.476***	0.513***	0.390**	0.464***	0.555***	0.695***
	(0.000)	(0.000)	(0.025)	(0.005)	(0.006)	(0.000)
Blockholder Ownership					0.066	0.070
					(0.294)	(0.308)
Ln(Total Assets)	-0.166***	-0.169***	-0.226***	-0.213***	-0.058	-0.109
	(0.001)	(0.000)	(0.001)	(0.000)	(0.562)	(0.271)
Sales Growth	0.134***	0.134***	0.147***	0.146***	0.130***	0.133***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.005)	(0.007)
Cash/Assets	0.521***	0.520***	0.530**	0.524**	0.479	0.508
	(0.005)	(0.006)	(0.014)	(0.015)	(0.240)	(0.222)
Leverage	-0.531***	-0.496***	-0.516***	-0.506***	-0.339	-0.241
	(0.000)	(0.000)	(0.003)	(0.004)	(0.135)	(0.294)
CAPEX/Assets	0.825***	0.761***	0.378	0.291	1.450***	1.417***
	(0.000)	(0.001)	(0.103)	(0.255)	(0.002)	(0.003)
36-Month Volatility	0.681***	0.662***	0.719***	0.720***	0.730***	0.736***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Board Size)	-0.013	-0.017	-0.016	-0.025	0.148	0.183
	(0.806)	(0.762)	(0.795)	(0.705)	(0.267)	(0.169)
Board Independence	0.340**	0.344**	0.327*	0.336*	0.548*	0.649**
	(0.020)	(0.018)	(0.061)	(0.053)	(0.059)	(0.027)
Ln(Analyst Coverage)	0.205***	0.199***	0.230***	0.224***	0.160***	0.150***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,147	7,147	5,395	5,395	1,752	1,752
Adjusted R-squared	0.627	0.627	0.642	0.644	0.704	0.708

Table 4: Shareholder reaction to the law amendment - univariate analysis

This table reports the market reaction to the passage of the law amendment. CARs are measured using the Fama-French 3-factor model with an estimation window of [-210,-11] and an event window of [-1,1]. *Event 1* refers to the passage of the proposal during the initial discussion on June 08 2011; while *Event 2* refers to the passage of the proposal during the final discussion on October 25 2011. *Sum of CARs* is the sample where the two CARs for each firm are summed up. In each sample, *Treatment* refers to firms where the *Decision Maker* already pledges over 50% of his/her shares. *Control* refers to firms identified using a Propensity Score Matching method and has no pledging at all. Controlled Firms (Widely Held Firms) refer to firms that have (do not have) a controlling shareholder. *Decision Maker* refers to the controlling shareholder in Controlled Firms and managers in Widely Held Firms. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

				Mean			Median		
		N	% Positive	All	Treatment	Control	All	Treatment	Control
Event 1	Controller Firms	536	57.3	1.182***	1.128**	1.009**	0.492***	0.310***	0.476***
	Non-Controller Firms	204	59.8	0.901***	1.120***	0.608*	0.598***	0.701***	0.471***
Event 2	Controller Firms	541	59.9	0.599***	0.661**	0.528	0.288	0.866	0.245
	Non-Controller Firms	205	59.2	0.270	0.360	0.057	0.339	0.339	0.138
Sum of CARs	Controller Firms	541	65.5	1.770***	2.446***	1.611***	1.600***	2.086***	1.417***
	Non-Controller Firms	205	60.4	1.179***	1.544***	0.772	0.815***	0.871***	0.492***

Table 5: Shareholder reaction to the law amendment - multivariate analysis

This table reports results of the regressions where the dependent variable is the CAR for each firm is measured using the Fama-French 3-factor model with an estimation window of [-210,-11] and an event window of [-1,1]. Event 1 refers to the passage of the proposal during the initial discussion on June 08 2011; while Event 2 refers to the passage of the proposal during the final discussion on October 25 2011. Pooled is the sample where the two CARs for each firm are summed up. In all regressions, *Treat* equals one for firms where the Decision Maker already pledges over 50% of his/her shares, and zero for control firms identified using a Propensity Score Matching method and have no pledging at all. Controlled Firms (Widely Held Firms) refer to firms that have (do not have) a controlling shareholder. Decision Maker refers to the controlling shareholder in Controlled Firms and managers in Widely Held Firms. Industry is defined based on the 2-digit SIC codes. Beneath each coefficient is the associated p-value. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

	Controlled Firms			Widely Held Firms		
	Event 1	Event 2	Pooled	Event 1	Event 2	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Treat	0.870*	0.703	2.069**	1.230	0.584	1.261*
	(0.053)	(0.111)	(0.023)	(0.239)	(0.186)	(0.074)
Ln(Total Assets)	-0.225	-0.037	0.430	1.444*	-0.495	0.407
	(0.694)	(0.916)	(0.399)	(0.067)	(0.261)	(0.533)
Sales Growth	-1.122	-1.406*	-2.404*	5.062**	4.351***	9.139***
	(0.492)	(0.078)	(0.076)	(0.015)	(0.000)	(0.002)
Cash/Assets	-2.549*	-9.598***	-13.821***	4.554**	-0.382	3.247
	(0.093)	(0.000)	(0.000)	(0.012)	(0.794)	(0.168)
Leverage	0.355	0.851	-6.292	-22.984*	-3.713	-22.115*
	(0.891)	(0.356)	(0.452)	(0.087)	(0.355)	(0.092)
CAPEX/Assets	3.306	8.654***	18.454**	-16.046***	-3.312	-13.130***
	(0.130)	(0.007)	(0.017)	(0.000)	(0.203)	(0.001)
36-Month Volatility	-4.559	-2.444*	-8.833**	-5.792	-7.889**	-12.080**
	(0.144)	(0.067)	(0.023)	(0.465)	(0.023)	(0.023)
Ln(Firm Age)	0.339	1.208	0.734**	-1.375	0.314	-0.672
	(0.517)	(0.117)	(0.023)	(0.139)	(0.245)	(0.287)
Q	-0.686	1.325***	0.239	-2.031***	0.195	-1.560***
	(0.462)	(0.008)	(0.838)	(0.000)	(0.648)	(0.002)
Ln(Board Size)	-0.271	-1.208	-0.893	1.576	0.850	2.523
	(0.823)	(0.137)	(0.119)	(0.482)	(0.599)	(0.367)
Board Independence	2.068	-0.047	5.102**	-2.721	-1.717**	-5.113*
	(0.192)	(0.976)	(0.018)	(0.227)	(0.034)	(0.069)
Ln(Analysts Coverage)	0.067	0.421	-0.262	-2.206*	0.375	-1.298
	(0.895)	(0.210)	(0.326)	(0.096)	(0.198)	(0.120)
Blockholder Ownership				-0.304	1.491	0.813
				(0.744)	(0.280)	(0.636)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	134	136	147	88	83	94
Adjusted R-squared	0.050	0.104	0.109	0.338	0.014	0.246

Table 6: Changes in pledging before and after the law amendment

This table shows the changes in pledging around the passage of the law amendment. Pre-event pledging summary is based on the pledging data in October 2011; while post-event pledging summary is based on the pledging data in September 2012. The first five rows are at firm level, while the last three rows are at individual level. Votes at Risk is the total number of shares pledged over 50% by the pledger. *Controlled Firms (Widely Held Firms)* refer to firms that have (do not have) a controlling shareholder. *Decision Maker* refers to the controlling shareholder in *Controlled Firms* and managers in *Widely Held Firms. Threatened* refers to when, assuming the largest shareholder does not reduce pledging and hence loses all the votes exceeding 50%, the second largest shareholder's ownership exceeds 50% of the largest shareholder's remaining ownership.

	Controller Firms		Non-Controller Firms	
Pre: Oct 2011. *Post*: Sep 2012	Pre	Post	Pre	Post
Proportion of firms with pledging	38.55%	40.89%	51.81%	50.98%
Proportion of firms with 30% pledging	33.53%	30.43%	49.40%	45.88%
Proportion of firms with 50% pledging	28.51%	23.06%	43.37%	32.94%
Proportion of firms with 50% pledging by Decision Maker	26.10%	20.35%	43.37%	32.94%
Proportion of firms with a *Threatened* Decision Maker that is pledging over 50%	32.02%	18.19%	22.31%	17.53%
Votes at Risk / Shares Outstanding (All Pledgers with 50% Pledging)	1.84%	1.50%	1.51%	1.21%
Votes at Risk / Shares Outstanding (Decision Makers with 50% Pledging)	2.41%	1.85%	1.44%	1.22%
Votes at Risk / Shares Outstanding (*Threatened* Decision Makers with 50% Pledging)	2.73%	1.80%	1.66%	1.27%

Table 7: Diff-in-Diff analysis on firm value

This table reports results of Difference-in-Difference tests. For all columns, the dependent variable is Tobin's Q. The sample includes observations in 2011 and 2012. Controlled Firms (Widely Held Firms) refer to firms that have (do not have) a controlling shareholder. *Decision Maker* refers to the controlling shareholder in Controlled Firms and managers in Widely Held Firms. Treat equals one for firms where the Decision Maker already pledges over 50% of his/her shares, and zero for control firms identified using the Propensity Score Matching method and have no pledging at all. Post equals one for observations in 2012 and zero for observations in 2011. Columns 1 and 3 are based on all treatment and comparable firms, while Columns 2 and 4 are based on *Threatened* treatment firms and their corresponding comparable firms only. *Threatened* refers to when, assuming the largest shareholder does not reduce pledging and hence loses all the votes exceeding 50%, the second largest shareholder's ownership exceeds 50% of the largest shareholder's remaining ownership. Industry is defined based on the 2-digit SIC codes. Beneath each coefficient is the associated p-value. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

	Controlled Firms		Widely Held Firms	
	Full	Threatened	Full	Threatened
	(1)	(2)	(3)	(4)
Treat	-0.188*	-0.079	0.272	0.536
	(0.076)	(0.624)	(0.143)	(0.464)
Post	-0.362***	-0.436***	-0.365***	-0.160*
	(0.000)	(0.000)	(0.005)	(0.086)
Treat*Post	0.155**	0.239**	-0.065	-0.249
	(0.029)	(0.011)	(0.598)	(0.445)
Decision Maker Ownership	0.475**	0.967***	0.877	1.850***
	(0.013)	(0.006)	(0.292)	(0.000)
Ln(Total Assets)	-0.092*	-0.094*	0.060	0.070
	(0.061)	(0.078)	(0.449)	(0.812)
Sales Growth	0.405**	0.568***	0.006	-0.078
	(0.029)	(0.007)	(0.971)	(0.229)
Cash/Assets	0.578	1.918***	0.914	0.148
	(0.381)	(0.000)	(0.181)	(0.902)
Leverage	-0.332	-0.367	-0.908	-0.859
	(0.351)	(0.423)	(0.200)	(0.464)
CAPEX/Assets	-0.426	2.045**	0.563	-0.269
	(0.420)	(0.042)	(0.479)	(0.901)
60-Month Volatility	0.802*	0.787**	1.752**	1.971
	(0.072)	(0.034)	(0.041)	(0.173)
Ln(Firm Age)	-0.339**	-0.126	-0.368	-0.738
	(0.018)	(0.104)	(0.135)	(0.414)
Ln(Board Size)	-0.238	-0.064	-0.029	-0.316
	(0.137)	(0.583)	(0.846)	(0.682)
Board Independence	-0.639	0.013	0.559	-0.244
	(0.142)	(0.970)	(0.463)	(0.910)
Ln(Analyst Coverage)	0.204**	0.219***	0.248***	0.134
	(0.049)	(0.004)	(0.003)	(0.451)
Blockholder Ownership			-0.199	-0.835
			(0.274)	(0.399)
Industry FE	Yes	Yes	Yes	Yes
Observations	220	166	134	50
Adjusted R-squared	0.397	0.455	0.462	0.493

Table 8: Shareholding and stock prices during the GFC

This table reports analyses of the impact of pledging on firms' performance during the Global Financial Crisis. In Panel A, the dependent variable for all columns is the percentage change in ownership from June 2008 to August 2008 for each manager, board member, and blockholder. The independent variable *Pledging>75%* equals one if the individual pledges more than 75% of his/her shares at the end of May 2008; and zero otherwise. In Panel B, the dependent variable for all columns is the stock return from June 2008 to August 2008. In Columns 1 (2), *Pledging/Total Shares* refers to the number of shares pledged by the largest pledger (the top three largest pledgers) as a fraction of the total number of shares outstanding for the firm. In Columns 3 to 5, the key explanatory variables are indicator variables that equal to one if the firm has at least one individual who has pledged more than 75% of his/her shares and whose ownership exceeds 3%, 5%, and 10% respectively. All explanatory variables related to pledging are based on data at the end of May 2008; all financial explanatory variables are based on data at the end of December 2007. Beneath each coefficient is the associated p-value. Industry is defined based on the 2-digit SIC codes. Standard errors are clustered at firm level in Panel A and at industry level in Panel B. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

Panel A: Changes in Holding						
	(1)	(2)	(3)	(4)	(5)	(6)
Pledging>75% [0,1]	-0.238**		-0.548***		-0.304***	
	(0.015)		(0.000)		(0.000)	
Pledging/Holding		-0.386***		-0.692***		-1.354**
		(0.001)		(0.000)		(0.026)
Ln(Market Cap)	0.613	0.615	2.428	2.481		
	(0.195)	(0.195)	(0.304)	(0.294)		
Sales Growth	1.060	1.057	-0.002**	-0.002**		
	(0.257)	(0.259)	(0.026)	(0.025)		
Cash/Assets	-5.155	-5.157	0.002	0.003		
	(0.305)	(0.305)	(0.962)	(0.943)		
Leverage	-2.378	-2.370	-0.000	-0.000		
	(0.256)	(0.257)	(0.215)	(0.207)		
CAPEX	-1.879	-1.842	-0.000**	-0.000**		
	(0.414)	(0.422)	(0.045)	(0.032)		
36-Month Volatility	2.155	2.159				
	(0.145)	(0.145)				
Ln(Firm Age)	-1.848	-1.842				
	(0.183)	(0.183)				
Ln(Board Size)	-0.474	-0.477	-0.326	-0.253		
	(0.592)	(0.590)	(0.851)	(0.884)		
Board Independence	-2.327	-2.333	-0.869	-0.865		
	(0.400)	(0.399)	(0.182)	(0.182)		
Ln(Analyst Coverage)	-0.313	-0.315	-0.635*	-0.635*		
	(0.325)	(0.323)	(0.088)	(0.087)		
Industry Indicators	Yes	Yes	Yes	Yes	No	No
Firm Indicators	No	No	No	No	Yes	Yes
Observations	9,645	9,645	5,056	5,056	10,611	10,611
Adjusted R-squared	0.000	0.001	0.002	0.002	0.003	0.003

Panel B: Changes in Stock Return					
	(1)	(2)	(3)	(4)	(5)
Pledging/Total Shares (Largest Pledger)	-0.310**				
	(0.031)				
Pledging/Total Shares (Top Three Pledgers)		-0.222*			
		(0.076)			
Pledging>75% & Holding>3% [1,0]			-0.040**		
			(0.045)		
Pledging>75% & Holding>5% [1,0]				-0.052**	
				(0.036)	
Pledging>75% & Holding>10% [1,0]					-0.061**
					(0.042)
Ln(Assets)	-0.021**	-0.020**	-0.022***	-0.022***	-0.022***
	(0.010)	(0.015)	(0.008)	(0.009)	(0.007)
Sales Growth	0.016	0.007	0.018	0.017	0.018
	(0.371)	(0.707)	(0.341)	(0.347)	(0.341)
Cash/Assets	-0.039	-0.060	-0.041	-0.041	-0.038
	(0.541)	(0.363)	(0.516)	(0.520)	(0.552)
Leverage	-0.113**	-0.123**	-0.114**	-0.114**	-0.113**
	(0.033)	(0.022)	(0.031)	(0.030)	(0.032)
CAPEX	0.042	0.037	0.056	0.049	0.050
	(0.760)	(0.791)	(0.686)	(0.719)	(0.715)
36-Month Volatility	-0.079	-0.076	-0.079	-0.076	-0.077
	(0.160)	(0.187)	(0.166)	(0.180)	(0.175)
Ln(Firm Age)	0.016	0.015	0.018	0.017	0.016
	(0.316)	(0.379)	(0.263)	(0.289)	(0.322)
Ln(Board Size)	0.006	0.003	0.009	0.008	0.008
	(0.795)	(0.882)	(0.688)	(0.716)	(0.710)
Board Independence	-0.060	-0.056	-0.049	-0.049	-0.055
	(0.385)	(0.415)	(0.491)	(0.493)	(0.432)
Ln(Analyst Coverage)	0.030***	0.030***	0.030***	0.030***	0.031***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Board Ownership	0.112**	0.113**	0.090*	0.091*	0.096**
	(0.020)	(0.022)	(0.057)	(0.054)	(0.039)
Industry Indicators	Yes	Yes	Yes	Yes	Yes
Observations	632	623	632	632	632
Adjusted R-squared	0.094	0.088	0.093	0.095	0.094

Table 9: Effects of pledging on risk-taking

This table shows the analyses of the relation between pledging by the decision maker and the level of risk-taking by the firm. *CAPEX* and *R&D* are both lagged and scaled by total assets. *Idiosyncratic Risk* is the sum of the squared residuals from a Fama-French 3-factor model using daily stock returns over the 12 months following the end of the current year. All dependent variables are multiplied by 100. *Controlled Firms (Widely Held Firms)* refer to firms that have (do not have) a controlling shareholder. *Decision Maker* refers to the controlling shareholder in Controlled Firms and managers in Widely Held Firms. *Decision Maker Pledging [%]* refers to all shares pledged by the decision maker divided by the total shares outstanding in the firm. Beneath each coefficient is the associated p-value. Standard errors are clustered at firm level. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

	Controlled Firms			Widely Held Firms		
	CAPEX	R&D	Idiosyncratic Risk	CAPEX	R&D	Idiosyncratic Risk
	(1)	(2)	(3)	(4)	(5)	(6)
Decision Maker Pledging [%]	-0.094**	-0.011**	-0.023*	-0.078*	-0.005	-0.020
	(0.012)	(0.043)	(0.054)	(0.060)	(0.605)	(0.390)
Decision Maker Ownership	1.544	0.016	4.823*	5.615	1.547	-2.409
	(0.499)	(0.963)	(0.077)	(0.277)	(0.144)	(0.387)
Blockholder Ownership				1.404	0.012	-0.164
				(0.287)	(0.923)	(0.700)
Ln(Market Cap)	0.434**	-0.224***	0.332*	1.300***	-0.260	0.965
	(0.036)	(0.001)	(0.058)	(0.006)	(0.112)	(0.204)
Sales Growth	0.201	-0.022	0.192	0.419	0.002	0.025
	(0.109)	(0.490)	(0.112)	(0.180)	(0.973)	(0.916)
Cash/Assets	-2.781***	-0.676	-2.903	-5.908*	-1.195	-3.665
	(0.008)	(0.280)	(0.232)	(0.057)	(0.218)	(0.335)
Leverage	0.365	-0.414	-0.863	1.446	-0.768	0.898
	(0.726)	(0.250)	(0.541)	(0.462)	(0.227)	(0.407)
Ln(Board Size)	-0.272	0.216	-0.230	-1.703	0.436	-0.892
	(0.572)	(0.236)	(0.381)	(0.121)	(0.162)	(0.169)
Board Independence	-0.606	-0.299	-0.640	-4.472	0.486	1.180
	(0.568)	(0.401)	(0.604)	(0.140)	(0.567)	(0.795)
Ln(Analyst Coverage)	0.141	0.006	-0.197	0.317	0.023	-1.090
	(0.385)	(0.905)	(0.241)	(0.389)	(0.830)	(0.184)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,517	5,516	4,997	1,777	1,777	1,572
Adjusted R-squared	0.477	0.920	0.604	0.461	0.893	0.665