

# The Inside Job: Share Pledges by Insiders and Earnings Management

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## Abstract

The study creates the first comprehensive database of share pledges by insiders in the U.S. to reveal the prevalence of this practice and its role in encouraging earnings management. I find that, during the fiscal years 2006 to 2014, insiders at one of every three S&P 1500 firms pledged their ownership in the firm as collateral to obtain loans at least once. I exploit a 2012 market-wide advisory against share pledges by Institutional Shareholder Services, the largest proxy advisory firm, as a quasi-natural experiment. A difference-in-differences estimation reveals that, after the shock, insiders curtailed share pledge activity by approximately 40% and firms with share pledges reduced earnings manipulation by an average 15% of their reported profits. The results suggest that share pledges distort the incentives of insiders and motivate them to inflate earnings.

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# 1 Introduction

*“To the extent that shares beneficially owned by named executive officers, directors and director nominees are used as collateral, these shares may be subject to material risk or contingencies that do not apply to other shares beneficially owned by these persons. These circumstances have the potential to influence management’s performance and decisions.”*

Securities and Exchange Commission (2006)

On January 27, 2006, Securities and Exchange Commission (SEC) published a document acknowledging that the share pledges of the CEO of WorldCom may have led to the demise of the company and solicited public feedback on regulating share pledges by insiders.<sup>1</sup> The report stated that share pledges may influence the incentives of insiders and, in turn, their ability to make optimal decisions. After discussing the feedback internally, on August 29, 2006, SEC enforced disclosure rules for share pledges by insiders at the publicly-listed entities.

The accounting scandal at WorldCom was not the only such incident in the U.S. where share pledges by insiders may have played an important role (Jennings, 2003). About a year prior to the news of accounting misrepresentations at WorldCom, financial irregularities at Enron had become public. Similar to insiders at WorldCom, insiders at Enron also had pledged their ownership in the firm to obtain loans. In fact, share pledges by insiders have been associated with corporate misconduct across the world. WorldCom in the U.S., Satyam in India, and Steinhoff in South Africa were the largest accounting scandals in their respective countries and each of these was perpetrated by insiders who had pledged their shares to obtain loans. In spite of an abundance of anecdotal evidence linking share pledges with income-increasing earnings management, I am unaware of studies that establish a causal relationship in the U.S. context.

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<sup>1</sup>A share pledge is a bilateral loan contract where the borrower obtains a loan from the lender by offering her shares as the collateral. For example, proxy statements of Tesla, Inc. for the fiscal year 2018 reported that the CEO, Elon Musk, has pledged 13.7 mn shares of the firm to secure personal loans worth a few billion U.S. dollars.

The purpose of my study is to explore the practice of pledging of shares by insiders and understand whether share pledges compromise their decision-making abilities and motivate them to manage earnings. Insiders use their discretion over accounting of accruals to arrive at the earnings that are reported by the firm. Share pledges alter the incentives of insiders by creating a divergence between their cashflow and control rights (Martin and Partnoy, 2005). If insiders choose to act on these distorted incentives, then the results should be visible in the accounting of discretionary accruals. Therefore, I focus on the discretionary component of accruals to pinpoint the association between share pledges of insiders and manipulation of earnings.

Conceptually, share pledges by insiders may influence earnings management in opposite ways. Insiders effectively monetize their equity without losing either their voting rights or private benefits when they pledge their ownership in the firm. Therefore, share pledges may serve as an instrument for insiders to diversify their personal wealth away from the firm. This diversification of wealth can attenuate their incentives to account for the income-increasing accruals.

On the other hand, share pledges may also incentivize insiders to inflate the reported profits. Share pledges protect the personal wealth of insiders from declines in the firm's share price while allowing them to retain their profits from the appreciation. This downside protection may motivate insiders to engage in earnings manipulation and other similar activities that may generate private benefits at a cost to the firm. In addition, share pledges expose these insiders to the risk of margin calls.<sup>2</sup> These margin calls burden insiders with financial obligations during adverse circumstances. Moreover, margin calls faced by the insiders are public information and therefore harm their reputation and threaten their control rights. Therefore, these insiders may use their authority to report higher profits, which, in turn, would increase the share price and prevent margin calls.

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<sup>2</sup>The stock of pledged shares comprises the collateral for the margin loan availed by the borrower. Refer to Section 2 for the details.

I create two novel datasets to analyze the relationship between share pledges by insiders and earnings management. First, the information on share pledges of insiders is hand-collected by carefully reading the proxy statements of S&P 1500 firms from the fiscal year 2006 to 2014. Second, I reorganize the MSCI GMI Ratings database (previously GMI Ratings database) to obtain information on the individual insiders and blockholders. This database provides unique information on the directors; for example, whether she is the founder of the firm or if she has been involved in incidents of problematic behavior (financial irregularities, bankruptcies, regulatory infringements, etc.). Subsequently, I merge the share pledge information of insiders with their information in ISS (formerly RiskMetrics), Execucomp, and MSCI GMI Ratings by carefully hand-matching over 400,000 names of insiders. The precise identification of insiders across these databases enables me to implement insider fixed effects while analyzing their share pledge activity.

The exhaustive data collection exercise allows me to establish several important facts about insider pledging in the U.S. First, I show that the practice of pledging shares is prevalent: during the fiscal years 2006 to 2014, insiders at about a third of S&P 1500 firms pledged their shares at least once to obtain loans.<sup>3</sup> The share pledge activity of insiders is spread across firms of different size and industry. Second, share pledges are not persistent and are created and terminated repeatedly by insiders. In the subset of firms where insiders pledged their shares at least once, these shares were pledged about half the time. Third, I do not find strong differences in financial characteristics of the firms with share pledges and those without. Fourth and last, the insiders who are most likely to pledge shares wield significant influence over the firm. These insiders possess the ability to affect corporate policies for their personal benefit. The founders, who play a large role in determining the firm's strategies, are approximately five times more likely to pledge their shares after accounting for their individual fixed effects and other characteristics. In addition, the insiders, who are also the

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<sup>3</sup>The proportion of the U.S. firms with share pledges would be substantially higher if we could account for the share pledges by blockholders, which are not subject to the disclosure requirements.

large shareholders of the firm, are much more likely to pledge their shares. The average ownership of insiders with pledged shares is approximately six times when compared to the insiders without such pledges (3.50% against 0.61% of the total equity of the firm). This evidence suggests that the desire of insiders to diversify their personal wealth is an important determinant of their decision to pledge shares. In general, this diversification of wealth does not accompany a loss of authority or voting rights and hence may lead to undesirable behavior by insiders.

Thereafter, I exploit a shock to the practice of pledging shares by insiders as a quasi-natural experiment to examine the causal relationship between these share pledges and the inflation of reported profits. Institutional Shareholder Services (ISS), the largest proxy advisory firm, has a strong influence on voting by shareholders. For instance, [Malenko and Shen \(2016\)](#) shows that negative shareholder recommendations of ISS reduce the support for the say-on-pay proposals by 25 percentage points. In 2012, ISS denounced the practice of pledging of shares by insiders and issued an advisory to oppose it ([Institutional Shareholder Services, 2012](#)). ISS alleged that insiders use share pledges to ensure that they get rewarded irrespective of their performance and that corporate boards are abdicating their responsibilities by allowing this practice. As a result, the practice of pledging of ownership by insiders began to attract significant attention in the media. The enhanced public and institutional scrutiny of the practice made these pledges more costly to firms. In addition, the sharp focus on insiders with share pledges had the ability to discipline them against engaging in income-increasing earnings management.

The shock had strong repercussions on the pledging behavior of insiders and inflation of reported profits at firms. Firms discouraged their insiders from pledging their shares. The fraction of insiders who pledged shares declined by approximately 40% during the fiscal years 2011 and 2014. In addition, firms clamped down on earnings manipulation if their insiders still pledged their shares. As a result, the accounting for discretionary accruals was lower by 0.82% of firm's assets if insiders pledged their shares after the shock. This represents a large

reduction in abnormal profits, amounting to \$80 mn or approximately 15% of total profits of these firms. These results are robust to the use of firm fixed effects and hence cannot be explained by the entrenched issues of internal governance that are difficult to quantify. Subsequent tests suggest that if insiders pledged their shares after the shock, the accounting of total accruals declined by 0.85% of firm's assets. The decline in the abnormal accounting of total accruals is similar to the decline in its discretionary component, which shows that the results are not an artifact of the methodology of accrual estimation.

Furthermore, I find that institutional ownership and strong corporate governance practices play an important role in intermediating the relationship between share pledges and earnings management. The founder-controlled firms remained unresponsive to the shock and did not register a decline in accounting for accruals. Moreover, the decrease in earnings manipulation was specific to the firms where blockholders held higher than the median level of ownership, firms had higher analyst coverage, and the industry was highly competitive. These results suggest that the shock to share pledges was effective only in well-governed firms and firms with high ownership by blockholders.

My article contributes to the emerging literature on share pledges by demonstrating their role in encouraging earnings management. To my knowledge, this is the first paper that establishes the relationship between share pledges by insiders and inflation of reported earnings in the U.S. In related work, I find that firms in India avoid reporting small losses (by converting them to small profits) when their insiders pledge shares (Singh, 2018). Another similar study, Chan, Chen, Hu, and Liu (2018) analyzes share pledges in Taiwan and provides evidence to suggest that share pledges create moral hazard for insiders. This study indicates that insiders in Taiwan launch share repurchases to support firm's share price and avoid margin calls. Dou, Masulis, and Zein (2017) uses data from Taiwan and claims that share pledges motivate insiders to avoid risk, which results in a decline in the risk-taking ability of the firm. In contrast, Anderson and Puleo (2015) randomly selects 500 of S&P 1500 firms and suggests that share pledges lead to an increase in idiosyncratic volatility of the stock

and hence increase firm-specific risks.

Another contribution of my paper is to show that it is the well-governed firms and not the poorly governed firms that respond to criticism and strengthen their internal governance practices. Although the poorly governed firms stand to benefit more from an improvement in their governance structures, they are less inclined to make the required efforts. It appears that self-governance fails in firms where it is needed the most. These findings further support the “quiet life” hypothesis, which suggests that firms in less competitive industries are not proactive and prone to suboptimal decision-making (Giroud and Mueller, 2010). In agreement with Carleton, Nelson, and Weisbach (1998), my tests suggest that a significant ownership by blockholders acts as a credible threat against bad behavior by insiders. Leuz and Wysocki (2008) states that higher coverage by analysts leads to a better availability of information and improves the governance practices at the firm. While Irani and Oesch (2016) uses a quasi-natural experiment to establish that analyst coverage leads to earnings management through accrual manipulation. My analysis extends these findings by demonstrating a lack of improvement in earnings quality at firms that were ranked in the lowest quartile of analyst following.

The remainder of the article proceeds as follows. Section 2 describes the mechanics of share pledges in detail. It also uses a simple numerical example to illustrate how share pledges protect the wealth of insiders during the periods of share price decline. Section 3 describes the data collection exercise and the methodology for estimating accruals. Section 4 presents important facts about the prevalence of share pledges by insiders and analyzes the characteristics that are associated with this practice. Section 5 uses the ISS shock to explore the role of share pledges in encouraging income-increasing earnings management. Section 6 concludes the study.

## 2 Background on Share Pledges

### 2.1 Example of a typical share pledge

A share pledge is a bilateral loan contract where the borrower obtains a loan from the lender by offering her shares as the collateral. My study is restricted to the subset of share pledges where insiders collateralize their equity in the firm. The pledge of shares by Elon Musk, the CEO of Tesla, in favor of Morgan Stanley, serves as a relevant example.<sup>4</sup> Insiders like Elon Musk are privy to valuable information and have the authority to make important decisions at their firms. As a result, a shift in their incentives has the ability to impact the firm's performance and affect the rest of the stakeholders.

The standard share pledge contract mandates the insider to provide for a stipulated value of the collateral of pledged shares. The required collateral is specified in terms of a multiple of the outstanding loan amount, called the asset cover ratio. An asset cover ratio of 1.5 times implies that insider shall maintain the value of collateral at 1.5 times the value of loan outstanding. The lender holds the entire stock of pledged shares in a margin account. In case the share price of the firm appreciates, the surplus collateral is released from the margin account and is delivered to the insider. However, when the share price declines, the insider has to either provide for additional collateral of shares or repay a part of the loan. If the insider fails to do so, then the lender sells a portion of the collateral to recover her dues.<sup>5</sup> Therefore, in order to avoid these margin calls, the insider has to offer additional resources when her wealth is already declining. This may motivate her to take actions that can support the share price of the firm temporarily but may prove to be costly later.

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<sup>4</sup>The name of the lender is sourced from the prospectus for the public offering of shares of common stock of Tesla in March 2017 and is available on the SEC website.

<sup>5</sup>A simple derivation shows that a \$1 decline in the value of collateral forces the lender to sell  $\$1/(\text{asset cover} - 1)$  worth of collateral to re-balance the pledge. This implies that, in this example, the lender would sell \$2 worth of collateral for each \$1 decline in the value of collateral.



## 2.2 Share pledges and the mechanism of downside protection

*“pledging of shares may be utilized as part of hedging or monetization strategies that would potentially immunize an executive against economic exposure to the company’s stock, even while maintaining voting rights.”*

Institutional Shareholder Services (2012)

Insiders can use share pledges to protect their wealth when the share price of the firm declines. This downside protection comes at the expense of a decrease in their ownership in the firm. On the other hand, share pledges do not curtail the appreciation of their wealth when the share price of firm increases. Therefore, insiders can use share pledges to undo the high-powered incentives of their compensation contracts and ensure their wealth against poor performance by the firm. The following example illustrates the impact of share pledges on the personal wealth of insiders.

Let us assume that, on day 0, an insider pledges \$200 of her shares in the firm to obtain a loan of \$100 at an asset cover of 2 times. The insider is obliged to maintain the collateral of pledged shares at 2 times the value of outstanding loan amount throughout the tenure of the loan. The excess collateral provides the lender sufficient cover to sell the collateral and recover her dues without incurring losses. Now, let us extend the illustration to assume that the price of the share declines by 20% on day 1, which reduces the value of collateral to \$160. At the end of day 1, there is a shortfall of \$40 in the value of the collateral. But, the insider does not provide for this shortfall either willfully or due to the lack of resources. As a result, the lender is forced to liquidate some of the collateral to recover her dues and maintain the required asset cover. In order to maintain the asset cover of 2 times, the lender would sell \$1 of collateral for each \$1 decline in the value of collateral. By the end of Day 1, the lender liquidates pledged shares worth \$40, thereby lowering the value of collateral from \$160 to \$120. The lender uses the proceeds from sale to write-off the outstanding loan. As a result, the outstanding loan amount declines from \$100 to \$60 and the asset cover of 2 times

is maintained. It is important to note that if the insider did not pledge her shares she would own \$160 of shares in the firm at the end of day 1. Now, what would happen if share price declines further by  $x\%$  on day 2? The insider would lose  $\$1.2x$  of her personal wealth ( $\$1.2x = \$120 * x\%$ ). Had she not pledged her shares, she would have lost  $\$1.6x$  ( $\$1.6x = \$160 * x\%$ ).

Let us assume that share price continues to decline by 20% on each of the following three days - day 2, day 3 and day 4. The insider does not provide for the shortfall in collateral and hence the lender sells the requisite amount of collateral to maintain the asset cover. At the end of day 4, the lender would be left with a collateral of \$25.92 securing an outstanding loan amount of \$12.96. The wealth of the insider would be \$112.96 comprising \$100 of proceeds from the loan and \$12.96 of equity in the collateral held by the lender. If the insider had not pledged her shares on day 0, she would be poorer on day 4. Her wealth would only be \$81.92 after 4 consecutive days of 20% decline in share price ( $\$81.92 = \$200 * 80\% * 80\% * 80\% * 80\%$ ). In fact, the pledging of shares ensures that the insider would retain \$100 of loan proceeds even if the share price declined to \$0. Figure 1 shows that share pledges not only make the personal wealth of insiders less sensitive to a decline in firm's share price but also ensure that they retain the loan proceeds at the minimum.

It is interesting to note that share pledges are not a zero-sum game between the insider and the lender. The lender remains protected by the excess collateral. She manages to recover her dues by periodically liquidating the required amount of collateral and does not incur losses. The losses are distributed amongst the investors who buy shares from the lender. In other words, these investors provide for the downside protection availed by the insider. In this example, the lender would lose only when the share price drops by more than 50% in an instant. In this improbable scenario, the value of the collateral would fall below the outstanding loan amount instantaneously and hence the lender would fail to recover her dues even after selling the entire collateral. To hedge against such unlikely scenarios, the lenders charge a premium in interest rates while lending against share pledges.

Now, let us consider that the share price increased on the four days after shares were pledged. The insider would have received the collateral that was in excess of the stipulated amount and hence retained the entire upside in the value of shares that she pledged. In a nutshell, share pledges allow insiders to retain the benefits from the appreciation in the share price of the firm. At the same time, if the share price of the firm declines then these pledges lower the rate at which the insider loses her wealth and ensure that her wealth exceeds the proceeds from the loan.

The insiders have the option to sell an equivalent amount of their shares instead of pledging them to generate the funds. However, a sale of shares would forfeit their control rights associated with these shares. Moreover, a large sale of shares reflects poorly on insiders and invites criticism. In comparison, the pledge of shares provides insiders with the money while allowing them to retain the control rights. As a result, share pledges create a divide between the control and cashflow rights of insiders.

The misalignment between control and cashflow rights may create moral hazards for the insiders who pledge their shares (Bebchuk, Kraakman, and Triantis, 2000). The lowering of the skin in the game creates incentives for these insiders to benefit at the expense of the firm (Shleifer and Vishny, 1997). Duchin, Goldberg, and Sosyura (2017) shows that insiders respond to their incentives even if this may reduce firm value. While Almeida and Wolfenzon (2006) emphasizes that founders self-select firm's policies and hence founder-controlled firms may behave differently when compared to the rest of the firms. Along the same lines, my study proposes that share pledges would create incentives for the insiders to manage earnings even if this does not benefit the firm. Moreover, this manipulation of earnings may vary across firms with distinct categories of entrenched insiders.

## 3 Data and Variable Construction

### 3.1 Data sources and sample selection

On August 29, 2006, SEC forced publicly listed firms to disclose the number of shares pledged by their insiders (directors and named executive officers) in their annual proxy statements. The disclosure of pledged insider shares is required typically as a footnote to the table of beneficial ownership. However, it is common for firms to provide the details of pledging activity of their insiders while discussing other developments in the main body of the proxy statement. Therefore, in order to ensure the completeness of information, I carefully perused through the proxy statements of each S&P 1500 firm from the fiscal year 2006 to 2014. This detailed data collection exercise was undertaken with the objective of creating a high-quality dataset that could provide robust evidence to pinpoint the role of share pledges in influencing the incentives of insiders.

I source the information on directors from ISS Directors database (previously RiskMetrics) and MSCI GMI Ratings; while the information on named executives is obtained from Execucomp. MSCI GMI Ratings provides information about the directors that is not available in the other databases that are used frequently in corporate governance studies. I find the information on whether the directors are the founders of the firm or if they have been classified as problem directors (personally involved in corporate scandals, regulatory infringements, bankruptcies, etc.) particularly useful. However, this database does not have a unique identifier for the directors. Therefore, I merged the information about individual insiders across ISS, Execucomp and MSCI GMI Ratings by matching them by their names. Over 400,000 names across these databases were matched manually and the superfluous observations were discarded. The painstaking task of manually matching the names of insiders ensured the accuracy of the merged dataset and made it possible to implement fixed effects for the individual insiders.

The information on analyst coverage was retrieved from the annual data files at I/B/E/S. The accounting data and earnings per share of firms are extracted from Compustat and the stock prices from CRSP. ISS and Execucomp follow different conventions to record the fiscal year. The fiscal year is matched across these databases by using the dates of proxy filing and board meeting. The dataset follows the convention of Execucomp to determine fiscal years for firms. In addition, I use the data from [Coles, Daniel, and Naveen \(2014\)](#) to verify the fiscal years across ISS and Execucomp databases, for the years that are common across both the studies. SEC Analytics database is used to match the ticker and CUSIP with the CIK of firms. Firms corresponding to financial institutions (SIC between 6000 and 7000) and regulated industries (SIC between 4900 and 5000) have been excluded from the dataset. The final dataset includes 97,349 insider-year observations from the fiscal year 2006 to 2014.

The count of firms is significantly lower in the fiscal year 2006 when compared to the subsequent years. The disclosure of share pledges became effective for listed firms with their fiscal years ending on December 15, 2006, or later. The fiscal year 2006 ended prior to December 15, 2006, for a significant proportion of S&P 1500 firms. Since these firms were not required to disclose the share pledges by insiders for the year 2006, they have been excluded from the dataset for the fiscal year 2006.

## **3.2 Estimation of accruals**

I primarily use discretionary accruals to measure income-increasing earnings management. Discretionary accruals are estimated using the cross-sectional version of the Modified Jones Model ([Jones, 1991](#)). In addition to discretionary accruals, total accruals are used to provide supporting evidence. The balance sheet method is used to estimate the total accruals for the firms, which are then divided into discretionary and non-discretionary components. The process of estimation of Total Accruals and Discretionary Accruals is follows.

Total accruals are calculated as the difference between reported earnings and cashflow

from operations, scaled by lagged value of total assets.

$$TA_{i,t} = \frac{PAT_{i,t} - CFO_{i,t}}{A_{i,t-1}} \quad (1)$$

where  $TA_{i,t}$  represents total accruals,  $PAT_{i,t}$  is the reported profit and  $CFO_{i,t}$  is the cash flow from operations of the firm  $i$  in year  $t$ .

The following equation is used for each industry-year cohort to estimate the parameters  $\alpha_1$ ,  $\alpha_2$  and  $\alpha_3$  and denote the estimates by  $\alpha_{1est}$ ,  $\alpha_{2est}$  and  $\alpha_{3est}$ , respectively.

$$TA_{i,t} = \alpha_1 \left( \frac{1}{A_{i,t-1}} \right) + \alpha_2 \left( \frac{\Delta REV_{i,t}}{A_{i,t-1}} \right) + \alpha_3 \left( \frac{PPE_{i,t}}{A_{i,t-1}} \right) + \epsilon_t \quad (2)$$

where for the firm  $i$ ,  $\Delta REV_{i,t}$  is change in revenues in year  $t$  over year  $t - 1$  and  $PPE_{i,t}$  is gross value of property plant and equipment at the end of year  $t$ .  $\alpha_1$ ,  $\alpha_2$  and  $\alpha_3$  are industry-year specific parameters.

A part of firm's total accruals is considered normal in the course of business and varies with the business cycle and firm's performance. The parameters estimated in equation (2) are used to isolate this non-discretionary component from total accruals.

$$NDA_{i,t} = \alpha_{1est} \left( \frac{1}{A_{i,t-1}} \right) + \alpha_{2est} \left( \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} \right) + \alpha_{3est} \left( \frac{PPE_{i,t}}{A_{i,t-1}} \right) \quad (3)$$

where  $\Delta REC_{i,t}$  is change in receivables in year  $t$  over year  $t - 1$  of the firm  $i$ .

The adjustment for receivables in equation (3) is an improvement over the original Jones model. It accounts for the managerial discretion in using receivables to influence the reported revenues. Finally, discretionary accruals,  $DA_{i,t}$ , are calculated by subtracting non-discretionary accruals from total accruals of the firm.

$$DA_{i,t} = TA_{i,t} - NDA_{i,t} \quad (4)$$

## 4 Stylized Facts About Insider Pledging in the U.S.

Share pledges are bilateral loan contracts between the insider and the lender and hence this information is private in nature. Regulatory authorities avoid forcing firms to disclose this information if they are not convinced of the detrimental impact of share pledges on firm's performance. However, the lack of disclosures creates a hurdle in analyzing the consequences of share pledges and providing the required evidence. I undertake an extensive data collection exercise across multiple sources in an effort to resolve this puzzle.

### 4.1 Fact 1: Pledging of shares has been prevalent amongst insiders

Table 1 illustrates the trend of share pledge activity at the level of firms. Approximately, a third of the firms in the dataset witnessed their insiders pledge shares at least once between the fiscal years 2006 and 2014. Share pledges were common for insiders across the firms of different sizes and diverse industries. A survey by ISS in May 2012 revealed that insiders at 17% of Russel 3000 firms had pledged their shares ([Institutional Shareholder Services, 2012](#)). My dataset finds that insiders at 17.9% of S&P 1500 firms had pledged their shares at the end of the fiscal year 2011, the period corresponding to the ISS survey. This indicates that the practice of pledging shares is equally prevalent across insiders of both large and small firms. The persistent effects of the ISS shock are evident after the fiscal year 2012. The proportion of firms where insiders had pledged their shares declined from 17.9% in the fiscal year 2011 to 12.3% in the fiscal year 2014. The qualitative information from proxy filings reveals that, after the fiscal year 2012, firms increasingly adopted anti-pledging policies to restrain insiders from pledging their shares.

The average firm in the dataset has 8 directors, 5 named executives and 1 executive director each year. Table 2 provides an overview of the practice of pledging of shares at

the level of insiders. As expected, the share pledge activity of insiders declined considerably after the fiscal year 2011. Compared to 2.5% of executives in the fiscal year 2011, only 1.3% of executives pledged shares in the fiscal year 2014. Similarly, the proportion of directors who pledged their shares declined from 2.3% in the fiscal year 2011 to 1.4% in the fiscal year 2014.

Although the instances of pledging of shares declined for both the executives and directors after the fiscal year 2011, the intensity of pledging did not decrease. I define encumbrance as the measure of the intensity of pledging by insiders. Encumbrance represents the fraction of ownership that has been pledged by the insider (shares pledged / shares owned). The intensity of pledging by insiders in the U.S. is marginally higher than their counterparts in India (Singh, 2017). The average encumbrance in the U.S. was 33% for the executives and 38.4% for the directors who had pledged their shares. The 90th percentile values were 76.1% and 90.5% for the executives and directors, respectively. Insiders with such high levels of encumbrance had monetized most of their cashflow rights over the firm. For example, consider that the lender stipulates a collateral cover of 1.5 times of the loan value while lending against a pledge of shares. The insider would obtain a loan worth 50% of her ownership in the firm by offering 75% of her ownership as collateral. In other words, at an encumbrance of 75%, the insider would have effectively diversified half of the monetary value of her ownership in the firm.

## **4.2 Fact 2: Pledging of shares by insiders is not persistent**

I analyze the subset of firms where insiders pledged shares at least once. The average firm, where shares were pledged at least once, was present in 8 of the 9 years of study. Insiders at this firm pledged shares during 4 of the 8 years on the average and 3 years at the median. The frequent creation and termination of share pledges provide the variation that is required to analyze the shifts in the incentives of insiders.



### **4.3 Fact 3: Firms with share pledges and those without share similar characteristics**

I do not find major differences between the firms where shares were pledged by insiders and those where shares were not pledged. The first two columns of Table 3 show that both groups of firms operate at similar levels of profitability, capital expenditure and Tobins Q. In addition, the insiders who had a problematic history or did not regularly attend the board meetings are almost equally likely to be present across both the groups. However, the insiders own a larger stake in the firms where share have been pledged. Also, these firms are about 60% more likely to be controlled by their founders when compared to the other group of firms. The third column is a subset of the second column and documents the characteristics for the firms where shares have been pledged by their founders. These firms have fewer directors with problematic history on their board. Founders own an average 10% of ownership in their firms and hence, not surprisingly, the insider ownership is an average 14% in firms where the founders pledged their shares. Overall, the firms do not differ substantially on observable characteristics depending on whether the founders or the other insiders pledged their shares.

### **4.4 Fact 4: Influential insiders are more likely to pledge shares**

The univariate sorts according to the characteristics of the insiders suggest that their designation and ownership levels are important determinants of their share pledge activity. The founders and CEOs are more likely to pledge their shares when compared to the rest of the insiders. The founders comprise only 1.56% of the insider pool but account for 12.66% of the share pledges by insiders. This implies that, without controlling for other factors, the founders are about seven times as likely as the average insider to pledge their shares. In addition, the insiders with a large shareholding in the firm appear more likely to pledge their shares. The average shareholding of insiders who pledged their shares in the firm is 3.5%

against 0.61% for those who did not pledge their shares.

I use the framework of regressions to further explore the factors that influence the practice of pledging of shares by insiders. These regressions divide insiders into separate sub-segments and compare the results. At first, the insiders are divided into the categories of executives and directors. Then, executives are classified as either the CEOs or the rest of the executives. Similarly, directors are separated into the outside and the inside directors. The inside directors are further identified as either the founder directors or the rest of the inside directors. Firm fixed effects and industry-year fixed effects account for the unobservable characteristics specific to the firms and their respective industries. In addition, the regressions implement insider fixed effects to account for the unobservable attributes of the insiders.

Specification 1 of Table 4 verifies that executives and directors display similar likelihood of pledging their shares. Specification 2 shows that CEOs and inside directors have a much higher propensity to pledge shares than the rest of the insiders. Specification 4 suggests that the high propensity of CEOs to pledge their shares is on account of their equity and option ownership in the firm and not their designation. On the other hand, founders are highly likely to pledge their shares irrespective of their ownership of equity and options. Specification 6 adds variables to control for the corporate governance standards and financial performance of firms and implements the industry-year fixed effects. The results suggest that the likelihood of founders pledging their shares is higher by 7%, or by about 5 times when compared to the likelihood of the rest of the insiders. In addition, the financial characteristics of firms have a marginal association with the likelihood of pledging of shares by the insiders. A 1 standard deviation increase in size, financial leverage and Tobins Q of the firm is associated with an increase in the probability of pledging in the range of 0.20% to 0.50% only. The use of firm fixed effects and insider fixed effects in specifications 7 and 8 yield similar results.

Interestingly, when compared to the increase in ownership of equity, the increase in ownership of options has a larger effect on pledging of shares across executives. On the other

hand, ownership of options does not seem to influence the pledging of shares by the directors. This suggests that the executives, more than the directors, pledge their shares to undo the high powered incentives that are embedded in their compensation structure. This evidence supports the claim of ISS that insiders pledge their shares to insure their compensation against poor performance of the firm and further adds that the executives are more likely to do so.

In a nutshell, the insiders with share pledges are more likely to be the founders, large shareholders and entrenched directors with longer tenures. These insiders have the ability to mold the decision-making at firms. Hence, if share pledges affect the incentives of the insiders, then it is likely that these pledges would also affect corporate policies.

## **5 Insider Pledging and Earnings Management: Evidence from a Quasi-natural Experiment**

The year 2012 had a longstanding impact on the practice of pledging of shares by insiders. ISS is the largest proxy advisory firm in the world with a presence in 115 countries and over 1,600 institutional clients. Not surprisingly, ISS has a strong influence on voting by institutional shareholders. In 2012, ISS declared that insiders were avoiding the restrictions on hedging their ownership by pledging their shares and issued an advisory to against it. This increased the risk of institutional investors bringing in proposals to oppose the practice at their investee firms. Moreover, the criticism by ISS was followed by similar communications from other institutional advisory firms and increased awareness about this practice. This shock was expected to increase the costs of pledging for insiders and discourage them from pledging their shares. Further, it was anticipated that the heightened scrutiny of the insiders, who still managed to pledge shares, would forbid them to inflate earnings.

It is important to note that the advisory against pledging by insiders was not prompted

by a suspicion of earnings management at these firms but by the desire of ISS to bring consistency to its advisories. ISS had been writing against the hedging of ownership by insiders for the past few years and held an advisory against it. In the 2012 communication, ISS announced a change in their internal policy and acknowledged that pledging of shares by insiders is a substitute to their hedging strategies that lock-in their gains associated with the share price of the firm. The decision to treat pledging by insiders at par with their hedging strategies led to the issuance of advisory.

The incidences of pledging by insiders of S&P 1500 firms declined substantially after the shock. Proxy statements reveal that approximately 1.6% of insiders used to pledge their ownership in the firm before the shock. This proportion declined to about 1.0% by the end of the fiscal year 2014, representing a fall of about 40%. However, the founders remained unaffected by this shock. Firms made exceptions to their policies for their founders and allowed them to pledged shares. Figure 2 illustrates the longstanding effect of the shock on the practice of pledging of shares for both categories of insiders. The proportion of founders, who pledged their shares, did not decline after the shock. Prior to the shock, approximately 12% of founders used to pledge their shares. Three years later, the proportion of founders with share pledges was unchanged at 12%. On the other hand, this proportion approximately halved within the subsequent three years for the rest of the insiders. Approximately 1.5% of the non-founder insiders pledged their shares before the shock. However, three years after the shock, only 0.8% of these insiders had pledged their shares.

Subsequently, I verify the effectiveness of the shock by analyzing the insider level data in a regression framework. The precise identification of individual insiders allows the study to incorporate insider fixed effects. As a result, the regressions account for the persistent characteristics of insiders while analyzing their pledging behavior. Approximately 12% of the individuals in the dataset serve as insiders at multiple firms in the dataset. For example, an individual may be the founder of a firm and an outside director at another. Insiders may also transition to a different role within the firm. For instance, a CEO may join the

board of directors and become an inside director at the firm. I utilize these variations while incorporating insider fixed effects in specifications 3, 6 and 9 in Table 5. Specifications 2, 5 and 8 use firm fixed effects to account for the enduring aspects of firms, for example, the entrenched corporate governance issues. The estimation using logit models yields similar results and is excluded to avoid repetition.

The regressions in Table 5 quantify the changes in pledging behavior for the founders and the rest of the insiders. The dependent variable indicates whether the insider pledged her shares or not. The coefficients on the variable “Post ISS Shock” quantify the changes in pledging activity after the shock. Specifications 1 to 3 analyze the pledging behavior of the founders while specifications 4 to 6 study the rest of the insiders. The results confirm that there was no decline in the pledging activity of the founders even after accounting for the fixed effects specific to the firms or these individuals. On the other hand, there was a large decrease in pledging of shares by the rest of the insiders. Specification 6 suggests that, after controlling for the unchanging attributes of these insiders, the instances of pledging declined by approximately 24% after the shock. In order to further explore the divergence in pledging behavior, the regression uses specifications 7 to 9 to observe the pledging behavior of the non-founder insiders in the founder-controlled firms. Interestingly, the results show that although the founders at these firms continued pledging their shares, the pledging activity of the rest of the insiders declined by 60% after accounting for their individual fixed effects. It appears that founder-controlled firms follow separate standards of governance for their founders and the rest of the insiders.

After establishing the relevance of the shock, I use it to evaluate the impact of share pledges on earnings management. The regressions in Table 6 use the abnormal increases in discretionary accruals to quantify earnings management. The findings of this test constitute the main results of this study. Specification 4 uses industry fixed effects along with year fixed effects and is the most important specification. Specification 5 replaces industry fixed effects with firm fixed effects as a robustness measure.

The results of the regressions provide strong evidence to suggest that pledging of shares by insiders leads to earnings management. The coefficient on “Non-founder Pledged Shares \* Post ISS Shock” shows that, after the shock, firms accounted for less discretionary accruals if their non-founder insiders pledged shares. Specification 4 measures a decline in reported profits amounting to 0.82% of firm’s assets or 15% of the total profits of the firm. On the other hand, the coefficient on “Founder Pledged Shares \* Post ISS Shock” suggests that, after the shock, firms did not change their accounting for discretionary accruals if their founders pledged shares. As a result, when founders are pooled with the other insiders, the regression does not find statistically significant results for the average insider. Specification 5 uses the harsh constraint of firm fixed effects in the regressions on discretionary accruals and finds consistent results. The use of firm fixed effects suggests that, after the shock, the accounting for discretionary accruals reduced by 0.72% of firm’s assets if their non-founder insiders pledged shares. As anticipated, there was no change in discretionary accruals if shares were pledged by the founders.

Further, the small and statistically insignificant coefficients on “Post ISS Shock” provide the evidence to suggest that the shock did not lead to a widespread reduction in earnings management across the entire set of S&P 1500 firms. Similarly, the coefficients on “Firm with Founder \* Post ISS Shock” and “Firm with Problem Director \* Post ISS Shock” show that the decline in inflation of profits was not specific to the subset of firms with founders or directors with a problematic history. These variables are not presented in the tables to avoid a long list of control variables and maintain the clarity of presentation. The results of earnings management are specific to pledging of shares by insiders after the shock, in particular, the insiders who are not the founders. As a robustness test, the regressions are implemented using 3 digit SIC rather than 2 digit SIC to identify applications and obtain similar results. Further, the tests are repeated using the original Jones Model, which does not account for the changes in non-cash revenues, and obtain similar results. In additional tests, regressions cluster standard errors at the level of industry instead of the industry-year

and find that results retain statistical significance.

In addition to the discretionary accruals, finance and accounting literature relies on total accruals to quantify earnings management. Total accruals measure the excess of reported profits over cashflow from operations and comprise both discretionary and non-discretionary accruals. Table 7 uses total accruals rather than discretionary accruals as the dependent variable. The results extend the evidence obtained by the use of discretionary accruals. The coefficients on “Non-founder Pledged Shares \* Post ISS Shock” in Table 7 and Table 6 are almost equal in magnitude. This confirms that the decline in accounting for abnormal discretionary accruals is not an outcome of their estimation methodology.

To recapitulate, the shock to share pledges reveals that share pledges encourage insiders to inflate profits. The discretion of insiders is to be blamed for the entire inflation in reported profits at these firms. However, founders hold a disproportionate influence over the corporate boards and remained unaffected by the shock. As a result, there was no improvement in the quality of earnings at the founder-controlled firms.

## 5.1 Evidence of the underlying channel

The inability of the ISS shock to affect the founders raises an important question: Was the shock to share pledges more effective at the well-governed firms? It may appear that poorly governed firms would benefit more by improving their governance standards and hence would be more receptive to the shock. However, these firms may be poorly governed because they are not open to implementing strict internal governance policies. As a result, these firms may not be as proactive as their well-governed counterparts in exploiting the shock to restrain manipulation of earnings by their insiders. On the other hand, the well-governed firms may be more receptive to accepting criticism and implementing corrective measures. To find an answer, I evaluate the strength of the main results across the cross-section of firms.

The first test analyzes the role of blockholder ownership in influencing firm’s respon-

siveness to the shock. Blockholders are defined as the entities who own 5% or more of the common stock of the firm. (Holderness, 2009) estimates that blockholders are present in 96% of the publicly listed in the U.S., and own an average 39% of the common stock in these firms. The information on blockholders in the MSCI GMI Ratings dataset conforms with these findings. Blockholders were the primary clients of ISS and were likely to pressurize their investee firms to restrict the pledging activities of their insiders.

The analysis divides firms into two categories depending on whether the blockholder ownership in the firm was above or below the median value. The results of the analysis are presented in Table 8. The first three specifications analyze firms with high ownership of blockholders while the following specifications study the rest of the firms. The evidence from these regressions suggests that the main results of the table were specific to firms with high ownership of blockholders. The coefficients on “Non-founder Pledged Shares \* Post ISS Shock” are economically large and statistically significant for firms with high ownership by blockholders. Specification 3 controls for the industry fixed effects and year fixed effects and finds that the abnormal increase in reported profits declined by 1.48% of firm’s assets after the shock. In contrast, these coefficients are close to zero and statistically insignificant for firms with low ownership by blockholders.

The survey in Leuz and Wysocki (2008) explains the role of analyst coverage in disseminating information about the firm and improving its standards of corporate governance. Along the same lines, I explore whether analyst coverage plays a role in disciplining insiders and mitigating earnings manipulation. The tests calculate analyst coverage as the total number of unique analysts issuing earnings forecasts for the firm, which is available in I/B/E/S dataset. Firms are divided into the categories of low and high analyst following. The firms in the lowest quartile of analyst following comprise the category of firms with low analyst following. The rest of the firms constitute the category of high analyst following. The first three specifications of Table 9 include firms with high analyst following and the rest study firms with low analyst following. Specifications 3 and 6 use industry and year fixed effects.



The results show that the shock was effective only in firms with better analyst coverage. Specification 3 shows that inflation of earnings that was associated with share pledges declined by 0.92% of firm's assets after the shock. On the contrary, the corresponding effect in specification 6 was small and statistically insignificant.

Finally, I examine whether firms in intensely competitive industries were more open to control the abnormal increase in earnings associated with share pledges by their insiders. [Giroud and Mueller \(2010\)](#) among others proposes that insiders at the firms in less competitive industries prefer a quiet life and hence these firms are inefficient and poorly governed. I follow their paper to divide firms into the categories of high and low industry competitiveness. Market share is calculated for each firm within its industry, where industries are identified using their 4 digit SIC. Herfindahl-Hirschman index (HHI) is used as the measure of competition in the industry and is calculated as the summation of squared market shares of firms in the industry. Then, firms are divided into the two sections of highly competitive industries and less competitive industries depending on whether the HHI for their industry is lower or higher than the median value. The first three specifications in [Table 10](#) correspond to the industries with high competition and the rest to industries with low competition. The regressions specify that firms in highly competitive industries utilized the shock to discipline their insiders, who had pledged shares, against escalating profits. Specification 3 shows that the inflation in discretionary accruals that was associated with share pledges of the insiders decreased by 0.86% of firm's assets after the shock. On the other hand, there was no evidence of a corresponding effect for the firms in industries with less competitive intensity.

Overall, the results of the cross-sectional analysis provide credible evidence to suggest that market feedback improves governance in firms that are already well-governed. These firms create mechanisms to discipline insiders and thus effectively control their bad behavior. In contrast, poorly governed firms ignore the feedback provided by the market participants. These firms prefer to maintain the status quo rather than implement policies that limit the private benefits of their insiders.

## 6 Conclusion

This study makes an attempt to understand the role of incentives in shaping our financial markets. Poorly designed incentive structures encourage insiders to make decisions that benefit themselves but are costly to the firm. I use the share pledge activity of insiders as an instrument to explore the role of incentives in influencing firm performance. Pledging of shares alters their payoff function but, in general, does not affect their voting rights. Moreover, even after pledging shares, insiders retain their ability to influence corporate policy. It is not difficult to see that pledging of shares by insiders can create serious lapses in corporate governance. The study utilizes ISS advisory against share pledges as a quasi-natural experiment to examine changes in the behavior of firms and their insiders. The self-serving behavior of insiders is quantified by estimating the abnormal increase in accounting for accruals at their discretion. Unlike the relatively indirect channels, the discretion of insiders in the accounting of accruals is a straightforward mechanism to identify a shift in their incentives.

The results of my study support the assertion of SEC that pledging of shares distorts the incentives of insiders and affects their performance and decision-making abilities. The tests provide credible evidence to suggest that share pledges motivate insiders to inflate earnings. After pledging their ownership in the firm, insiders use their discretion to inflate earnings by 0.82% of assets. This is a large abnormal increase in earnings, amounting to approximately \$80 mn or 15% of the total earnings of the firm. In addition, the cross-sectional analysis of results draws attention to the limitations of self-governance in financial markets. After the shock, the abnormal inflation in earnings disappeared at well-governed firms and firms with high institutional ownership. There was no improvement in the quality of accounting at firms that were poorly governed, founder controlled or had low institutional ownership; although, these firms stood to benefit the most from an improvement in internal governance.

The paper highlights the role of share pledges in incentivizing insiders, thereby opening interesting avenues for future research. Incentives determine the behavior of rational agents. Therefore, it is plausible that share pledges would affect the performance of insiders through multiple channels, be it risk-taking, lack of effort and monitoring, or stealing from the firm. Even though important, these topics have not been explored to their full potential. Furthermore, insiders are mandated to report margin calls on their share pledges to the SEC in Form-4 filings. The pattern of margin calls or the lack thereof may present an interesting backdrop to analyze the mechanism of share pledges in detail.

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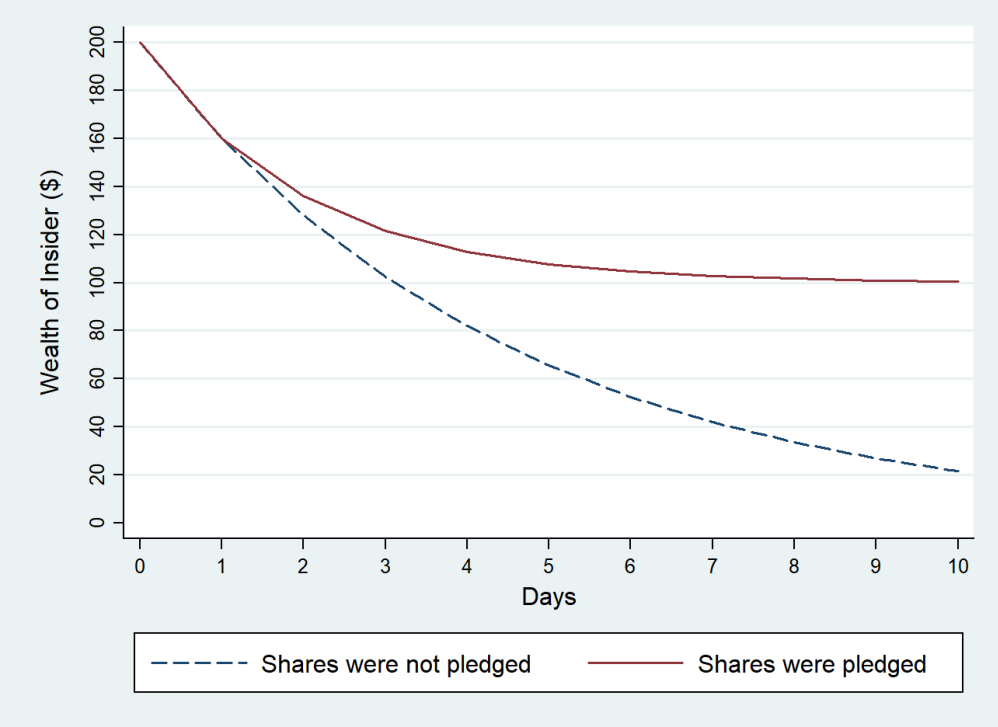
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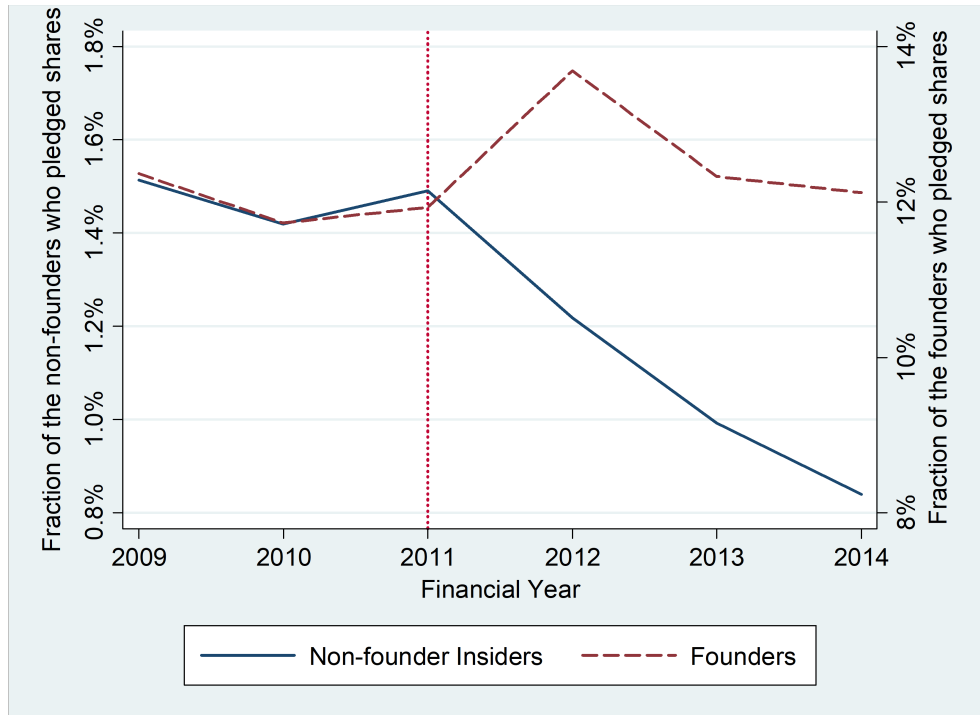
**Figure 1: Share pledges for personal loans protect the wealth of insiders when firm's share price declines**

The figure illustrates the mechanism behind the downside protection provided by share pledges. Share pledges protect the value of borrower's equity in the firm and ensure that it remains above the proceeds from the loan. In addition, share pledges lower the rate at which controlling shareholder loses her wealth when the share price of the firm declines. The illustration assumes that, on day 0, the controlling shareholder obtains a loan of \$100 by offering \$200 of her shares as collateral. The lender stipulates that the value of collateral should be 2 times the value of outstanding loan throughout the tenure of the loan. The share price of the firm declines by 20% on each of the next 10 days and the insider does not provide for the shortfall in collateral. Therefore, the lender sells a portion of pledged shares on each of these 10 days to maintain the required amount of collateral. The solid line shows the wealth of the insider who pledged her shares on day 0 while the dashed line depicts her wealth had she not pledged shares. The lender manages to recover her dues by selling shares from the collateral and does not bear any losses.



**Figure 2: Relevance of the ISS shock to pledging of shares by insiders**

The figure illustrates the effect of ISS shock on pledging behavior of insiders at S&P 1500 firms. The insiders are separated into founders of firms and the rest. The vertical line marks the time of shock. The graph denotes the fraction of insiders at S&P 1500 firms that pledged their shares in the respective years.



**Table 1: Overview of the practice of pledging of shares by insiders**

The following table shows the changes in prevalence of pledging of shares among the insiders of S&P 1500 firms from the fiscal year 2006 to 2014. The last column represents the fraction of S&P 1500 firms where insiders pledged their shares that year. The count of firms appears significantly lower in the fiscal year 2006 when compared to the subsequent years. The disclosure of share pledges became effective for listed firms with their fiscal years ending on December 15, 2006, or later. The fiscal year 2006 ended prior to December 15, 2006, for a significant proportion of S&P 1500 firms. Since these firms were not required to disclose the share pledges by insiders for the fiscal year 2006, they have been excluded from the dataset for that year.

<b>Fiscal Year</b>	<b>Count of Firms</b>	<b>Firms with share pledges</b>	
		<i>Count of Firms</i>	<i>Proportion (%)</i>
2006	666	104	15.6
2007	987	170	17.2
2008	995	196	19.7
2009	1014	191	18.8
2010	1023	180	17.6
2011	1036	185	17.9
2012	1049	174	16.6
2013	1081	153	14.2
2014	1090	134	12.3
<b>Cumulative</b>	<b>1108</b>	<b>357</b>	<b>32.22</b>



**Table 2: Prevalence of pledging of shares by insiders**

The table illustrates the trend of pledging shares by the insiders of S&P 1500 firms during the fiscal years 2006 to 2014. Panel A presents the details for the executives and Panel B for the directors. The last four columns show the extent of pledging of shares by the insiders who pledged their shares.

**Panel A: Prevalence of pledging of shares by the executives**

Fiscal Year	Fraction of All Executives (%)	Shares Pledged / Shares Owned (%)			
		<i>Mean</i>	<i>Median</i>	<i>75th %ile</i>	<i>90th %ile</i>
2006	2.8	29.3	19.7	40.8	85.7
2007	2.8	29.6	24.5	42.3	68.2
2008	2.5	34.8	28.1	46.3	86.0
2009	2.6	34.7	29.8	51.4	75.5
2010	2.3	35.3	28.8	50.3	88.1
2011	2.5	30.9	22.8	48.0	68.4
2012	2.2	35.1	25.4	52.2	77.8
2013	2.0	29.4	22.0	44.2	64.9
2014	1.3	37.0	28.7	56.3	78.6
<b>Cumulative</b>	<b>2.3</b>	<b>33.0</b>	<b>25.2</b>	<b>47.6</b>	<b>76.1</b>

**Panel B: Prevalence of pledging of shares by the directors**

Fiscal Year	Fraction of All Directors (%)	Shares Pledged / Shares Owned (%)			
		<i>Mean</i>	<i>Median</i>	<i>75th %ile</i>	<i>90th %ile</i>
2006	1.6	39.9	28.0	72.1	99.7
2007	2.3	37.2	27.9	58.5	92.3
2008	2.4	41.4	34.2	64.6	98.6
2009	2.3	37.8	30.0	57.6	89.4
2010	2.0	37.7	29.8	58.2	94.0
2011	2.1	37.1	26.6	61.1	86.3
2012	1.9	39.1	30.4	63.3	91.1
2013	1.5	35.2	26.0	54.9	80.2
2014	1.4	40.0	35.4	62.3	86.1
<b>Cumulative</b>	<b>2.0</b>	<b>38.4</b>	<b>30.1</b>	<b>60.0</b>	<b>90.0</b>

**Table 3: Descriptive statistics of firms with pledged shares and without**

The table illustrates the descriptive statistics of the firms with pledged shares and those without pledged shares. The data period corresponds to the fiscal years 2006 till 2014. The last column presents the statistics for the subset of firms where shares were pledged by their founders. The first and second rows mention the mean and the median values, respectively, for each variable.

	<b>Firms without Share Pledges</b>	<b>Firms with Share Pledges</b>	<b>Firms with Share Pledges by Founders</b>
	<i>Mean (Median)</i>	<i>Mean (Median)</i>	<i>Mean (Median)</i>
Assets (\$ bn)	8.50 (1.79)	9.27 (3.06)	9.18 (3.78)
Equity (Equity to Assets)	0.80 (0.82)	0.71 (0.73)	0.72 (0.73)
Tangibility (Net PPE / Assets)	0.23 (0.17)	0.27 (0.19)	0.22 (0.11)
Profitability (EBITDA / Assets)	0.15 (0.14)	0.15 (0.14)	0.12 (0.11)
Market to Book Value of Assets	1.66 (1.34)	1.55 (1.31)	1.33 1.14
Capital Investment (Capital Expenditure / Net PPE <sub>t-1</sub> )	0.27 (0.22)	0.25 (0.20)	0.25 (0.19)
Whether firm pays dividend	0.56 (1)	0.59 (1)	0.54 (1)
Whether Net Debt was issued during the previous year	0.34 (0)	0.42 (0)	0.38 (0)
Whether one or more directors have problematic history	0.19 (0)	0.23 (0)	0.12 (0)
Whether one or more directors failed minimum attendance requirement	0.05 (0)	0.05 (0)	0.04 (0)
Size of the board of directors	8.40 (8)	8.90 (9)	8.79 (9)
Proportion of outside directors on the board	0.75 (0.78)	0.70 (0.71)	0.66 (0.67)
Whether one or more founders are present on the board	0.13 (0)	0.21 (0)	1.00 (1)
Total shareholding of the insiders (Fraction of total common stock of the firm)	0.07 (0.03)	0.11 (0.05)	0.14 (0.09)

**Table 4: Variables that influence pledging of shares by insiders**

The following table illustrates the importance of various characteristics of the firm and insiders in motivating insiders to pledge their shares. The dependent variable indicates whether the insider has pledged her shares. The coefficients of the explanatory variables represent the probability of pledging of shares by the insiders that is associated with the variable and are expressed in percentages. Ownership of equity and options is normalized with the total equity of the firm. Specification 7 employs firm fixed effects to account for the persistent unobserved characteristics of firms along with year fixed effects. Specification 8 uses insider fixed effects to absorb the unobserved traits of the individual insiders along with year fixed effects. t-statistics are provided in the parenthesis. The statistical significance at the 1, 5, and 10 percent levels are represented by \*\*\*, \*\* and \*, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Executive	1.70*** (17.55)							
Director	1.44*** (21.54)							
CEO		1.79*** (4.71)	1.70*** (4.59)	-1.03*** (-2.65)	-0.48 (-1.24)	-0.42 (-1.04)	-0.30 (-0.75)	0.69* (1.66)
Executive other than CEO		-0.04 (-0.10)	-0.07 (-0.17)	-1.08*** (-2.88)	-0.57 (-1.56)	0.06 (0.17)	0.16 (0.44)	1.16*** (2.59)
Outside Director		-0.32 (-0.79)	-0.35 (-0.89)	-1.20*** (-3.21)	-1.72*** (-4.45)	-1.45*** (-3.58)	-1.26*** (-3.28)	-0.69 (-1.59)
Inside Director		2.66*** (8.16)						
Inside Director other than Founder			1.97*** (6.14)	0.39 (1.29)	-0.59* (-1.89)	-0.43 (-1.33)	-0.32 (-1.05)	-0.38 (-0.98)
Founder Director			9.91*** (9.84)	10.00*** (6.66)	6.99*** (3.34)	7.59*** (3.59)	7.00*** (3.43)	6.87** (1.99)
Ownership of Equity by Executive				0.64*** (6.66)	0.59*** (6.07)	0.51*** (5.06)	0.55*** (5.74)	0.95*** (5.08)
Ownership of Options by Executive				0.97*** (2.90)	1.08*** (3.21)	1.43*** (3.76)	1.14*** (3.11)	-0.62 (-1.11)
Ownership of Equity by Founder				-0.35*** (-3.13)	-0.37*** (-3.29)	-0.31*** (-2.85)	-0.30*** (-2.86)	-0.05 (-0.19)
Ownership of Options by Founder				-0.53 (-0.37)	-0.35 (-0.24)	0.32 (0.22)	0.05 (0.04)	-2.28 (-1.19)
Ownership of Equity by Director other than Founder				0.48*** (6.78)	0.43*** (6.13)	0.49*** (6.77)	0.50*** (7.35)	0.17* (1.66)
Ownership of Options by Director other than Founder				0.40 (0.90)	0.06 (0.13)	0.26 (0.57)	0.25 (0.56)	-0.62 (-1.09)
Tenure of Founder Director					0.14** (2.03)	0.11 (1.64)	0.13* (1.91)	-0.24* (-1.67)
Tenure of Director other than Founder					0.13*** (10.79)	0.13*** (10.97)	0.13*** (11.59)	0.07*** (3.19)
Director with problematic history						-0.75*** (-3.40)	-0.70*** (-3.30)	-0.27 (-0.65)
Member of a board committee						0.40*** (3.22)	0.25** (2.08)	0.15 (1.38)
Size of the Board of Directors						0.13*** (2.72)	-0.04 (-1.20)	0.02 (0.49)
Fraction of Outside Directors on the Board						-1.00** (-2.26)	0.86** (2.34)	-0.34 (-0.85)
log of Assets						0.20*** (3.78)	0.46*** (3.06)	0.09 (1.22)
Leverage (Debt / Assets)						2.63*** (6.29)	0.73 (1.16)	0.92* (1.88)
Profitability (EBITDA / Assets)						1.31 (1.39)	1.24 (1.23)	2.13** (2.00)
Standard Deviation of Profitability						0.01 (0.12)	-0.15 (-1.58)	-0.01 (-0.18)
Market To Book Value of Assets						0.11* (1.65)	-0.02 (-0.27)	0.03 (0.37)
Capital Investment (Capital Expenditure / Net PPE <sub>t-1</sub> )						0.08 (0.22)	-0.29 (-0.99)	-0.51 (-1.62)
Firm pays dividend						0.20 (1.57)	0.30* (1.80)	-0.05 (-0.32)
Constant		1.07*** (2.63)	1.10*** (2.78)	1.90*** (5.16)	1.40*** (3.83)	-2.22*** (-3.51)	-3.64*** (-2.97)	-0.80 (-1.06)
<i>Fixed Effects Cluster</i>	None	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Firm, Year	Insider, Year
<i>N</i>	97,349	97,323	97,323	91,994	91,953	85,498	85,498	85,498
<i>Adjusted R<sup>2</sup></i>	0.020	0.021	0.027	0.045	0.049	0.053	0.125	0.499

**Table 5: Relevance of the ISS shock to share pledge activity of insiders**

The following table illustrates the effects of ISS shock on pledging behavior of the founders and non-founder insiders after controlling for the relevant variables and fixed effects. The regression uses data at the level of individual insiders. Specifications 1 to 3 analyze the change in pledging behavior of all founders while specifications 4 to 6 include all non-founder insiders. Specifications 7 to 9 assess change in pledging behavior of all non-founder insiders in the firms with founders. The dependent variable denotes whether the insider has pledged shares or not. The coefficients of explanatory variables signify the probability of pledging of shares associated with the respective variable and are expressed in percentages. The coefficients on the variable “Post ISS Shock” represent the change in pledging of shares by the respective category of insiders after the shock. Ownership of equity and options is normalized with the total equity of the firm. Specifications 2, 5 and 8 utilize firm fixed effects, while specifications 3, 6 and 9 employ insider fixed effects. Control variables of ownership comprise Ownership of equity by executive, Ownership of equity by director, Ownership of options by executive, and Ownership of options by director. Firm financials include log of Assets, Leverage (Debt / Assets), Profitability (EBITDA / Assets), Standard Deviation of Profitability, Market To Book Value of Assets, Capital Investments (Capital Expenditure / Net PPE<sub>t-1</sub>), Issuance of net debt, Issuance of net equity and whether firm pays dividend on common stock. Governance Indicators include Tenure of Director, whether Director has a problematic history, whether director is the member of a board committee, size of the board of directors, and proportion of outside directors on the board. t-statistics are provided in the parenthesis. The statistical significance at the 1, 5, and 10 percent levels are represented by \*\*\*, \*\* and \*, respectively.

	Founders			Non-founders			Non-founders in Firms with Founders		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post ISS Shock	2.17 (1.04)	1.52 (0.75)	1.81 (0.89)	-0.42*** (-3.43)	-0.77*** (-8.16)	-0.35*** (-3.28)	-0.51 (-1.63)	-1.01*** (-3.16)	-0.88** (-2.06)
<i>Ownership of Equity</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Ownership of Options</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm Financials</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Governance Indicators</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Fixed Effects</i>	None	Firm	Insider	None	Firm	Insider	None	Firm	Insider
<i>Cluster</i>	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year
<i>N</i>	1,388	1,388	1,388	84,123	84,123	84,123	10,852	10,852	10,852
Adjusted <i>R</i> <sup>2</sup>	0.135	0.682	0.720	0.039	0.113	0.472	0.027	0.082	0.422

**Table 6: The role of share pledges by insiders in encouraging earnings management: Discretionary Accruals**

The following table illustrates the main finding of the study. The table summarizes the effect of share pledges by insiders on accounting for discretionary accruals by employing ISS shock in 2012 as a quasi-natural experiment. The insiders are separated into founders of the firms and non-founder insiders. The dependent variable represents discretionary accruals estimated using the cross-sectional version of the Modified Jones Model. Discretionary accruals are normalized by the asset size of firms and expressed in percentages. Accruals are estimated following the balance sheet method. The variables “Founder Pledged Shares \* Post ISS Shock” and “Non-founder Pledged Shares \* Post ISS Shock” are the main variables of interest. These are indicator variables that denote whether the non-founder insider or founder pledged their shares after the shock. Control variables have been grouped together in the table for the ease of presentation. Variables comprising equity and options ownership comprise Ownership of equity by executive, Ownership of equity by director, Ownership of options by executive, and Ownership of options by director. Ownership of equity and options is normalized with the total equity of the firm. Firm financials include log of Assets, Leverage (Debt / Assets), Profitability (EBITDA / Assets), Standard Deviation of Profitability, Market To Book Value of Assets, Capital Investments (Capital Expenditure / Net PPE<sub>t-1</sub>), Issuance of net debt, Issuance of net equity and whether firm pays dividend on common stock. Governance Indicators include Tenure of Director, whether Director has a problematic history, size of the board of directors, and proportion of outside directors on the board. Specification 5 uses the strict framework of firm fixed effects in place of industry fixed effects and finds similar results. t-statistics are provided in the parenthesis. The statistical significance at the 1, 5, and 10 percent levels are represented by \*\*\*, \*\* and \*, respectively.

	(1)	(2)	(3)	(4)	(5)
	DA	DA	DA	DA	DA
Non-founder Pledged Shares * Post ISS Shock	-0.81** (-2.25)	-0.83** (-2.30)	-0.80** (-2.23)	-0.82** (-2.28)	-0.72** (-2.03)
Founder Pledged Shares * Post ISS Shock	1.42* (1.68)	1.39 (1.65)	1.36 (1.61)	1.34 (1.58)	0.74 (0.82)
<i>Ownership of Equity</i>	Yes	Yes	Yes	Yes	Yes
<i>Ownership of Options</i>	Yes	Yes	Yes	Yes	Yes
<i>Firm Financials</i>	Yes	Yes	Yes	Yes	Yes
<i>Governance Indicators</i>	Yes	Yes	Yes	Yes	Yes
<i>Fixed Effects</i>	None	Year	Ind	Ind, Year	Firm, Year
<i>Cluster</i>	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year
<i>N</i>	5,522	5,522	5,522	5,522	5,522
<i>Adjusted R<sup>2</sup></i>	0.039	0.038	0.038	0.038	0.140

**Table 7: Further evidence on the role of share pledges by insiders in encouraging earnings management: Total Accruals**

The table provides further evidence on the effects of share pledges by insiders on accounting for total accruals by employing ISS shock in 2012 as a quasi-natural experiment. The table uses total accruals as the dependent variable without separating the discretionary component. Total accruals are estimated as the excess of reported profits over cashflow from operations. The insiders are separated into founders of the firms and the rest of the insiders. The variables “Non-founder Pledged Shares \* Post ISS Shock” and “Founder Pledged Shares \* Post ISS Shock” are the main variables of interest. These are indicator variables that denote whether the non-founder insider or founder pledged their shares after the shock. Control variables have been grouped together in the table for the ease of presentation. Variables comprising equity and options ownership comprise Ownership of equity by executive, Ownership of equity by director, Ownership of options by executive, and Ownership of options by director. Ownership of equity and options is normalized with the total equity of the firm. Firm financials include log of Assets, Leverage (Debt / Assets), Profitability (EBITDA / Assets), Standard Deviation of Profitability, Market To Book Value of Assets, Capital Investments (Capital Expenditure / Net PPE<sub>t-1</sub>), Issuance of net debt, Issuance of net equity and whether firm pays dividend on common stock. Governance Indicators include Tenure of Director, whether Director has a problematic history, size of the board of directors, and proportion of outside directors on the board. t-statistics are provided in the parenthesis. The statistical significance at the 1, 5, and 10 percent levels are represented by \*\*\*, \*\* and \*, respectively.

	(1)	(2)	(3)	(4)
	TA	TA	TA	TA
Non-founder Pledged Shares * Post ISS Shock	-0.75* (-1.87)	-0.80** (-2.01)	-0.80** (-2.18)	-0.85** (-2.34)
Founder Pledged Shares * Post ISS Shock	1.80* (1.73)	1.71* (1.67)	1.37 (1.44)	1.30 (1.39)
<i>Ownership of Equity</i>	Yes	Yes	Yes	Yes
<i>Ownership of Options</i>	Yes	Yes	Yes	Yes
<i>Firm Financials</i>	Yes	Yes	Yes	Yes
<i>Governance Indicators</i>	Yes	Yes	Yes	Yes
<i>Fixed Effects</i>	None	Year	Ind	Ind, Year
<i>Cluster</i>	Ind-Year	Ind-Year	Ind-Year	Ind-Year
<i>N</i>	6,685	6,685	6,685	6,685
<i>Adjusted R<sup>2</sup></i>	0.031	0.031	0.154	0.175

**Table 8: Evidence of underlying channel: Institutional Ownership**

The following table illustrates the role of blockholders in disciplining the firm against inflating reported profits when their insiders pledged shares. The difference in coefficients on the variable “Non-founder Pledged Shares \* Post ISS Shock” in specifications 1 to 3 against specifications 4 to 6 summarizes the importance of blockholder ownership. Specifications 1 to 3 pertain to firm-year observations where blockholders had higher than the median level of ownership. While specifications 4 to 6 correspond to the observations where blockholders had lower than the median ownership. Blockholders are the investors with greater than 5% ownership of the common stock of the firm. The dependent variable represents discretionary accruals estimated using the balance sheet approach of the cross-sectional version of the Modified Jones Model. Discretionary accruals are normalized by the asset size of firms and expressed in percentages. Ownership of equity by executive, Ownership of equity by director, Ownership of options by executive, and Ownership of options by director. Ownership of equity and options is normalized with the total equity of the firm. Firm financials include log of Assets, Leverage (Debt / Assets), Profitability (EBITDA / Assets), Standard Deviation of Profitability, Market To Book Value of Assets, Capital Investments (Capital Expenditure / Net PPE<sub>t-1</sub>), Issuance of net debt, Issuance of net equity and whether firm pays dividend on common stock. Governance Indicators include Tenure of Director, whether Director has a problematic history, size of the board of directors, and proportion of outside directors on the board. t-statistics are provided in the parenthesis. The statistical significance at the 1, 5, and 10 percent levels are represented by \*\*\*, \*\* and \*, respectively.

	High Ownership			Low Ownership		
	(1) DA	(2) DA	(3) DA	(4) DA	(5) DA	(6) DA
Non-founder Pledged Shares * Post ISS Shock	-1.43*** (-2.73)	-1.47*** (-2.80)	-1.48*** (-2.82)	0.05 (0.10)	0.05 (0.10)	0.06 (0.12)
<i>Ownership of Equity</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Ownership of Options</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm Financials</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Governance Indicators</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Fixed Effects</i>	None	Ind	Ind, Year	None	Ind	Ind, Year
<i>Cluster</i>	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year
<i>N</i>	2,749	2,749	2,749	2,709	2,709	2,709
<i>Adjusted R<sup>2</sup></i>	0.035	0.032	0.032	0.050	0.053	0.054

**Table 9: Evidence of underlying channel: Analyst Coverage**

The following table illustrates the role of analyst coverage in disciplining the firm against inflating reported profits when their insiders pledged shares. The difference in coefficients on the variable “Non-founder Pledged Shares \* Post ISS Shock” in specifications 1 to 3 against specifications 4 to 6 summarizes the importance of analyst coverage. Specifications 1 to 3 pertain to firm-year observations where the firm had analyst coverage and specifications 4 to 6 correspond to low analyst coverage. Low analyst coverage implies the lowest quartile of the count of analysts tracking the firm and is derived from the I/B/E/S database. The dependent variable represents discretionary accruals estimated using the balance sheet approach of the cross-sectional version of the Modified Jones Model. Discretionary accruals are normalized by the asset size of firms and expressed in percentages. Ownership of equity by executive, Ownership of equity by director, Ownership of options by executive, and Ownership of options by director. Ownership of equity and options is normalized with the total equity of the firm. Firm financials include log of Assets, Leverage (Debt / Assets), Profitability (EBITDA / Assets), Standard Deviation of Profitability, Market To Book Value of Assets, Capital Investments (Capital Expenditure / Net PPE<sub>t-1</sub>), Issuance of net debt, Issuance of net equity and whether firm pays dividend on common stock. Governance Indicators include Tenure of Director, whether Director has a problematic history, size of the board of directors, and proportion of outside directors on the board. t-statistics are provided in the parenthesis. The statistical significance at the 1, 5, and 10 percent levels are represented by \*\*\*, \*\* and \*, respectively.

	High Coverage			Low Coverage		
	(1) DA	(2) DA	(3) DA	(4) DA	(5) DA	(6) DA
Non-founder Pledged Shares * Post ISS Shock	-0.90** (-2.43)	-0.90** (-2.39)	-0.92** (-2.42)	-0.54 (-0.54)	-0.43 (-0.45)	-0.41 (-0.43)
<i>Ownership of Equity</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Ownership of Options</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm Financials</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Governance Indicators</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Fixed Effects</i>	None	Ind	Ind, Year	None	Ind	Ind, Year
<i>Cluster</i>	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year
<i>N</i>	4,286	4,286	4,286	1,099	1,099	1,099
<i>Adjusted R<sup>2</sup></i>	0.041	0.041	0.041	0.045	0.042	0.039



**Table 10: Evidence of underlying channel: Industry Competitiveness**

The following table illustrates the role of competition in the industry in disciplining the firm against inflating reported profits when their insiders pledge shares. The difference in coefficients on the variable “Non-founder Pledged Shares \* Post ISS Shock” in specifications 1 to 3 against specifications 4 to 6 summarizes the importance of industry competitiveness. Specifications 1 to 3 pertain to firm-year observations where firms belong to industries with high levels of competitiveness and specifications 4 to 6 correspond to industries with low levels of competitiveness. Industries with high competition correspond to four-digit SIC with higher than the median value of Herfindahl-Hirschman Index (HHI). The dependent variable represents discretionary accruals estimated using the balance sheet approach of the cross-sectional version of the Modified Jones Model. Discretionary accruals are normalized by the asset size of firms and expressed in percentages. Ownership of equity by executive, Ownership of equity by director, Ownership of options by executive, and Ownership of options by director. Ownership of equity and options is normalized with the total equity of the firm. Firm financials include log of Assets, Leverage (Debt / Assets), Profitability (EBITDA / Assets), Standard Deviation of Profitability, Market To Book Value of Assets, Capital Investments (Capital Expenditure / Net PPE<sub>t-1</sub>), Issuance of net debt, Issuance of net equity and whether firm pays dividend on common stock. Governance Indicators include Tenure of Director, whether Director has a problematic history, size of the board of directors, and proportion of outside directors on the board. t-statistics are provided in the parenthesis. The statistical significance at the 1, 5, and 10 percent levels are represented by \*\*\*, \*\* and \*, respectively.

	Highly Competitive			Less Competitive		
	(1) DA	(2) DA	(3) DA	(4) DA	(5) DA	(6) DA
Non-founder Pledged Shares * Post ISS Shock	-0.83** (-2.19)	-0.82** (-2.12)	-0.86** (-2.22)	-0.44 (-0.51)	-0.09 (-0.11)	-0.01 (-0.02)
<i>Ownership of Equity</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Ownership of Options</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm Financials</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Governance Indicators</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Fixed Effects</i>	None	Ind	Ind, Year	None	Ind	Ind, Year
<i>Cluster</i>	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year	Ind-Year
<i>N</i>	4,454	4,454	4,454	1,068	1,068	1,068
<i>Adjusted R<sup>2</sup></i>	0.039	0.039	0.038	0.056	0.078	0.079