Will controlling shareholder stock pledge aggravate the expropriation? Evidence from value-destroying acquisitions

Siyuan Yan, Xiaoxu Ling, and Louis T.W. Cheng [*]

[*] Yan, siyuan.yan@connect.polyu.hk, School of Accounting and Finance, Hong Kong Polytechnic University; Ling, xiao-xu.ling@polyu.edu.hk, School of Accounting and Finance, Hong Kong Polytechnic University; Cheng(corresponding author), louis.cheng@polyu.edu.hk. Mailing address: M715, Li Ka Shing Tower, The Hong Kong Polytechnic University, Hung Hom, Kowloon.

Work phone number: (+852) 6765-3194. We would like to thank seminar participants at the Hong Kong Polytechnic University for valuable comments. The datasets generated during and/or analysed during the current study are publicly available and available from the corresponding author on reasonable request. All errors and omissions are our own.

Will controlling shareholder stock pledge aggravate the expropriation? Evidence from value-destroying acquisitions

Abstract

This study examines the effect of controlling shareholder's stock pledge behaviour on corporate acquisition decisions and associated performance. While the margin call pressure hypothesis suggests that the stock pledge would reduce the level of acquisitions due to increased risk-aversion, the aggravated expropriation hypothesis contends that more agency-driven takeovers can be observed after the stock pledge. Using the sample of listed firms in China, we find that pledging firms, consistent with the aggravated expropriation hypothesis, initiate more M&A activities. We further document that deals conducted by pledging firms obtain lower announcement returns. We address the endogenous concerns by using the instrumental variable as well as difference in differences approaches. Moreover, our channel tests suggest that pledging firms overpay in the deals and are associated with more related party transactions. Cross-sectionally, we find that the relationship between share pledge and returns is stronger for non-SOEs and firms with more free cash flow. Lastly, we find that pledging acquires underperform in the long-run in terms of lower ROA and a greater likelihood of goodwill impairment. Overall, our findings indicate that controlling shareholders increasingly expropriate minority shareholders' interest through value-destroying corporate takeovers after the stock pledge.

Keywords: Stock pledge; Agency Problem; Mergers and acquisitions; Corporate governance
EFM Classification Codes: 110; 150; 160; 620

1. Introduction

Stock pledge by the corporate controlling shareholder in exchange for personal loans is an international phenomenon which can be observed in worldwide developed financial markets such as the U.S., the U.K, Australia, Honk Kong, and Singapore as well as emerging economies such as China, Taiwan, and India (e.g., Chen et al., 2018; Ouyang et al., 2019; Dou et al., 2019). Nevertheless, there exist concerns and debates among regulators, academic researchers, media and investors on the growing prevalence of the insider's stock pledge given the mixed results exhibited in the extant literature. On the one hand, some studies show that the stock pledge by the controlling shareholder would have negative impacts on corporate decisions and shareholder's wealth (e.g., Chen et al., 2018; Dou et al., 2019). More specifically, they document that the stock pledge is associated with more equity risk exposure and agency problems, subsequently leading to more price-supporting share repurchase activities (Chan et al., 2018), decreased executive pay-for-performance sensitivity (Ouyang et al., 2019), less cash dividend payout (Li, Zhou. Yan, and Zhang, 2019) and reduced innovation productivity (Pang and Wang, 2020). On the other hand, other research documents that the stock pledge is not harmful to shareholder's wealth and even positively associated with firm value by arguing that the pledging can signal the corporate insider's confidence on firm's future performance (e.g., Chen and Hu, 2018; Li, Liu, and Scott, 2019). To shed light on this debate, we empirically examine, for the first time in the literature to the best of our knowledge, how the controlling shareholder's stock pledge would affect corporate merger and acquisition (M&A)[2] decision and associated performance. We focus on corporate acquisitions in this paper because those activities are among the biggest investment decisions that a company

[2] In this paper, we use the merger and acquisition, M&A, acquisition and takeovers interchangeably.

would ever make and have large impacts on its growth and total value (Betton, Eckbo, and Thorburn, 2008).

There are two competing hypotheses on the potential effects of the stock pledge to corporate acquisitions which we refer to as the margin call monitoring hypothesis and the aggravated expropriation hypothesis respectively. The margin call monitoring hypothesis suggests that after the share pledge, the controlling shareholder is under the margin call pressure which provides external monitoring on the stock market price fluctuation. Since the pledged shares would undergo forced sale by the loan provider when the market value of shares drops substantially, the controlling shareholder would face a significant risk of losing control of the firm (Chan et al., 2018; Pang and Wang, 2020). Subsequently, those corporate insiders would have incentives to avoid any corporate policies or investment decisions which may bring negative impacts on the stock price, even though some of the projects are of positive net present values (NPVs) and can contribute to the firm value in the long run. Equally as important as its positive impacts on the firm's growth and operation, the corporate M&A activity is well recognized, in the literature, to be associated with high uncertainty and a substantial amount of completion risks (e.g., Arouri et al., 2019). In this regard, the margin call monitoring hypothesis predicts that the stock pledge would be negatively associated with corporate acquisition activities in the future.

The aggravated expropriation hypothesis, alternatively, proposes that the controlling shareholder's stock pledge would exacerbate the agency problem, leading to bad corporate takeovers and worse acquisition performance. The controlling shareholders are often the ultimate owners of the firms through the utilization of ownership pyramids and participation in top management (e.g., Shleifer and Vishny, 1997; La Porta et al., 1999). In other words, the controlling shareholders are able to take advantage of their decisive voting power and make favorable

corporate decisions for their own benefits which could potentially jeopardize the interests of other minority shareholders. More importantly, when the controlling shareholder pledge shares, they temporarily transfer their cash flow rights on the pledged stocks to loan providers[3] while still retain the voting power of those pledged shares as long as the stock price does not trigger the margin calls (Li, Zhou, Yan and Zhang, 2019). This would result in a further divergence between the cash flow rights and control rights of the corporate insiders. Consequently, the agency problem of the firm and the potential expropriation by the controlling shareholders could be aggravated either due to the weakened the positive incentive effect on their reduced cash-flow rights (e.g., Morck et al., 1988; Claessens et al., 2002) or to the exacerbated negative entrenchment effect brought by the increased the control rights (e.g., Stulz, 1988; Claessens et al., 2002). The prior literature suggests that firms with severe agency problem are more likely to make investment decisions, especially bad acquisitions, which are detrimental to the corporate valuation (e.g., Jensen, 1986; Morck et al., 1990; Stulz, 1990; Harford, 1999; Bebchuk, Kraakman, and Triantis, 2000; Bae et al., 2002). Thus, the aggravated expropriation hypothesis predicts that firms with the stock pledge by their controlling shareholders are more likely to make bad acquisition decisions.

We conduct comprehensive analyses to empirically test the competing hypotheses above. To facilitate the empirical investigation, we rely on the data of Chinese listed firms in this study for the following reasons. First, compared to other economies in the world, there is an increasing tendency for the stock pledge by the controlling shareholder among Chinese listed firms over the last decade (e.g., Chan et al., 2018; Li, Liu and Scott, 2019). As back to the early days of the establishment of the Chinese financial market, serial related regulations and laws were developed

[3] According to *The Guarantee Law of the People's Republic of China of 1995*, "A pledgee has the right to collect the derivatives of the hypothecated assets". See the article 68 of the law (http://www.npc.gov.cn/wxzl/gongbao/1995-06/30/content_1480123.htm).

to provide legislative endorsement for the use of stock pledging as collateral (the PRC Security Law, 1995; the PRC Guarantee Law, 1995). Unfortunately, although this regulatory framework originally aimed to facilitate shareholder's personal financing and improve the market mechanism and efficiency, it could be taken advantage of and even abused by the large shareholders and corporate insiders. Recently, the publication of "The Guidance on Stock Pledge Repurchase Transactions, Registration, and Settlement" in 2013 which permits security companies to participate in pledge activities as pledgee further expand the supply of credit and encourage shareholders to pledge their shares as collaterals for personal financing reason. Second, the regulation in the Chinese financial market also requires full disclosure of Chinese listed firms on the details of their shareholder's pledge of shares which provides excellent data availability for our empirical investigation. Third, as the biggest emerging market in the world, the Chinese stock market suffers from several impediments including severe agency problems, weak minority shareholder protection as well as the inefficient mechanism on corporate governance (e.g., Claessens et al., 2000). Therefore, the Chinese stock market is an ideal setting for us to conduct thorough empirical research.

We find that the aggravated expropriation hypothesis dominates in the empirical observations. Firstly, we find that firm increases the acquisition activities after their controlling shareholders' stock pledging. However, acquisition deals initiated by pledging firms[4] obtain lower announcement returns. This result is consistent with the prediction that stock pledge by the controlling shareholder would induce agency problems and lead to value-destroying acquisitions. To mitigate the concerns with endogenous issues, we conduct two additional analyses using the instrumental variable approach as well as the difference in differences tests and confirm that our

[4] In this paper, we also use pledging firms to refer firms with controlling shareholder's stock pledge

baseline result is robust. Exploring the mechanism of the market reaction to such acquisitions, we further find that the controlling shareholders' stock pledge is positively related to the takeover premiums indicating that the corporate decision-makers are systematically overpaying in those deals. Moreover, we also document that those acquisitions are more likely to associate with related party transactions. The result shows that controlling shareholders tend to select the projects (i.e., agency-driven takeovers) that provide private benefits at the expense of minority shareholders. Cross-sectionally, we document that the relationship between share pledge and returns is stronger for non-SOEs and when the firm has more free cash flow. Lastly, we find that firms with controlling shareholders stock pledging underperform in the long run in terms of worse ROA and a greater likelihood of goodwill impairment after the acquisitions. Overall, we find that stock pledge increases the propensity of corporate takeovers but such acquisitions are detrimental to the firm value.

The contributions of this paper are three-fold for extending the current literature. Firstly, we extend the existing research on the share pledge. The unique characteristic of the share pledge has attracted extensive attention from academia. Prior studies mainly focus on the effect of stock pledge on equity risk (e.g., Chen et al., 2018; Dou et al., 2019), firm valuation (Dou et al., 2019; Li et al., 2019), corporate innovation (Pang and Wang, 2020), dividend policy (Li et al, 2019), share repurchase (Chan et al., 2018) and executive compensation (Ouyang et al., 2019). However, only limited studies have been conducted to investigate the effects of controlling shareholder's stock pledge on corporate real investment decisions and associated economic consequences. By documenting a causal effect of share pledge on bad M&A decisions, our finding has significant policy implications regarding the minority share protection and the debate on the property of stock pledge.

Secondly, we also contribute to the literature on the merger and acquisition. While the M&A literature has investigated the antecedents of acquisition behavior in some aspects of the corporate insider including CEO compensation (e.g., Agrawal and Walkling, 1994; Sanders, 2001; Deutsch, Keil, and Laamanen, 2007), managerial hubris (e.g., Hayward and Hambrick, 1997; Malmendier and Tate, 2008), executive networks (e.g., Haunschild, 1993; Haunschild and Beckman, 1998; Westphal, Seidel, and Stewart, 2001), acquisition experience (e.g., Haleblian, Kim, and Rajagopalan, 2006), the effect of controlling shareholder's stock pledge on corporate acquisition decision and performance is still unexplored. This paper provides a different angle to explain the incentive of corporate takeovers and find that stock pledge by the controlling shareholder is one of the important antecedents for corporate acquisition which is still uncovered in the prior literature.

Last but not at least, we make contributions to the vast literature exploring the economic consequences of agency problems. In many developed financial markets, agency problems mainly exhibit in the form of the conflict of interests between shareholders and the corporate manager. Therefore, most of the research examines the agent-principal problem as well as managerial self-interest as determinants of motivation for M&A activity. However, the agency conflict between controlling and minority shareholders dominants in the emerging economy including China (e.g., La Porta et al., 1999; Claessens et al., 2000). Due to such agency problems, the corporate acquisition is unlikely to be purely driven by the economic incentive in China (Yang et al., 2019). We provide new evidence that even controlling shareholder's personal behavior, i.e. share pledge, would also affect important corporate decisions such as merger and acquisition. Our findings deepen the understanding that controlling shareholders could expropriate the interests of minority shareholders through the mechanism of bad acquisitions.

The rest of the paper proceeds as follows. Section 2 discusses the related literature and presents the development of two competing hypotheses. Section 3 introduces the data and presents descriptive statistics. The empirical results are shown in Section 4. In Section 5, we conclude the paper.

2. Literature review and hypotheses

2.1.1 Stock pledge, corporate policies, and firm value

This paper is firstly related to studies examining the effect of stock pledge on equity risk, corporate policies, and firm value. There is a growing body of research providing evidence that insiders' stock pledge is associated with equity risk. Using manually collected pledging data from US firms and an exogenous shock to the credit market lending capability (2008 financial crisis), Anderson and Puleo (2015) find a significant causal effect of insider pledge on firm-specific risk. There are also antecedent studies using stock pledge data in Taiwan and attract the following attention in the literature. For instance, based on a sample of Taiwanese banks, Chen and Kao (2011) find that the stock price volatility is positively related to bank insider's stock pledge. They further document such pledge activity is negatively associated with the frim value. Chan et al. (2018) find that firms with their controlling shareholder's stock pledge are more likely to engage stock repurchase especially when they face the margin call pressure. Wang and Chou (2018) find that stock pledging firms exhibit higher stock returns than those of non-pledged firms after a legal improvement to protect minority shareholders in Taiwan. They conclude that such a regulatory amendment can mitigate the agency problem induced by the stock pledge. Dou et al. (2019) find that the negative causal impact of stock pledge on shareholder wealth is due to the increased crash

risk of firms with the stock pledge and reduced corporate risk-taking. Besides, several studies have examined the effect of insider's stock pledge on corporate investment decisions, executive compensation and payout policy relying on the data of Chinese listed firms that make considerable contributions. For example, Pang and Wang (2020) find that both the existence and the quantitative level of the stock pledged by the firm's controlling shareholder are significantly negatively associated with corporate innovation outputs including the number of patents and patent citation. They further argue that, after the stock pledge, the fear of losing control discourage the firm's controlling shareholder to make corporate decision prone to the R&D investment to avoid innovation failure. Ouyang et al. (2019) contend that the stock pledge by the corporate insider exacerbate the agency problems and find that insider's stock pledge is negatively associated with executive pay-for-performance sensitivity. Li, Zhou, Yan, and Zhang (2019) find that firms with shares pledged by controlling shareholders have less cash dividend payments compared to firms without such a stock pledge. They also find that firms tend to pay less cash dividend after their controlling shareholders pledge the shares. They further conclude that such a decrease in the tendency of dividend payout reflects controlling shareholders' strong incentives to transfer cash and assets to expropriate minority shareholders. However, the extant literature exhibit mixed results regard to the fundamental effect of stock pledge on the value of the firm.

While some of the above studies show that stock pledge is negatively associated with firm value, a few research provide opposite evidence to this assertion. Using the data from listed firms in the US, Chen, and Hu (2018) show that the announcement of insider pledging has no significant impact on shareholders' wealth and one-year abnormal stock returns after the disclosure is even positive. Li, Liu, and Scott (2019) use a sample of Chinese listed firms and document a positive association between share pledges by the largest shareholder and firm value. They provide some

additional evidence that such a positive correlation reflects controlling shareholder's confidence about firms' operation, profitability, and sustainability of the stock price in the future. In short, the extant literature exhibits the mixed results on the properties of the stock pledge by the controlling shareholder.

2.1.2 Agency problems, the divergence of ownership and control, and M&A activities

Second, this paper is related to a batch of studies focuses on the effect of agency problems on corporate investments, especially, the merger and acquisition. Agency problems arise typically due to the conflicts of interest among the parties involved in corporate ownership, operation and financing. While the classical agent-principal problem (type I agency problem) focuses on the conflict of interests between the manager) and the shareholders (e.g., Jensen and Meckling, 1976; Fama and Jensen, 1983a&b;), the principal-principal (type II agency problem) contend that the conflicts between controlling shareholders and outside minority investors is more prevailing and severe among firms with high concentration of and in countries with poor investor protection (e.g., Shleifer and Vishny, 1997; La Porta et al., 1999; Claessens et al., 2000). The prior literature suggests that such a wedge between control and ownership would induce severe agency problems and expropriation by the controlling shareholder over the minority shareholders. Shleifer and Vishny (1997) suggest that large shareholders, when having superior control over the firm, would prefer to make corporate decisions to generate private benefits of control that are not shared by other minority shareholders. Zingales (1994) find that there is a large pricing premium in the shares associated with voting rights and argues that such premium could attribute to the private benefits

of control brought by the concentrated ownership. Bebchuk, Kraakman, and Triantis (2000) also propose that dispersion between controlling shareholders' voting rights and cash flow rights could create a substantial magnitude of agency costs. Stulz (1988) argues that concentrated ownership also gives corporate insiders more discretion to misallocate resources. Similarly, Morck, Wolfenzon, and Yeung (2005) suggest that such divergence can result in inefficient investments when controlling shareholders seek their own private benefits generated by the related investment. Moreover, La Porta et al. (2000b) argue that controlling shareholders can determine the selection of the managers effectively due to their excessive voting power. Therefore, one could conjuncture that it could even exist explicit collusion between manager and large shareholders to over the minority shareholders.

Further, we discuss one particular corporate activity, the merger and acquisition, to serve our main interest in this study. A large body of empirical studies documents that bad corporate acquisition decisions can be driven by the self-interests of the firm's insider (e.g., manager, controlling shareholder) and eventually such agency-related takeovers turn out to destroy the shareholder value for outside minority investors. Amihud and Lev (1981) find that firms engage in the conglomerate merger because managers tend to utilize the diversification strategy to increase the survival potential of the corporation and reduce their own risks of losing the current job. They suggest that such managerial behavior is consistent with the agency cost model. Jensen (1986) suggests that the excessive free cash flow due to the industrial boom would exacerbate the agency costs and result in empire-building overinvestment and failed diversification programs due to the lack of relevant knowledge and experience. Consistent with Jensen (1986)'s prediction of free cash flow hypothesis, Lang et al. (1991) and Harford (1999) show that acquisitions initiated by firms with more cash reserves are more likely to be value-decreasing. Using a sample of US acquisitions

between 1975 and 1987, Morck, Shleifer and Vishny (1990) also suggest that the manager would prefer the acquisition opportunities which bring substantial personal benefits but to sacrifice the market value of the firm. Moreover, Bae et al. (2002) provide evidence that controlling shareholders would make acquisitions on affiliated firms to increase their own wealth while leave the minority shareholders to lose. In sum, there is adequate empirical evidence showing that the agency problem affects corporate acquisition decisions and outcomes.

2.2 Hypotheses development

In this section, we present two competing hypotheses that predict opposite directions on the relationship between the controlling shareholder's stock pledge, corporate acquisition activity, and associated performance.

The margin call monitoring hypothesis

Previous studies suggest that such a margin call pressure would increase the crash risk for the firm (e.g., Dou et al., 2019) and create the fear of losing control faced by the corporate insiders after their stock pledges (e.g., Chan et al., 2018). In other words, if the market value of shares drops substantially and the maintenance requirement is not met timely, the pledged shares would undergo forced sale by the loan provider to settle the default transaction. As a result, this incidence

would lead to an unexpected ownership dilution or even loss of control for controlling shareholders who pledge their stocks[5].

Therefore, the nature of the stock pledge mechanism makes the controlling shareholder who pledges shares under the external monitoring on the stock market price fluctuation. Subsequently, those corporate insiders would have incentives to avoid corporate policies or investment decisions which may bring negative impacts on the stock price, even though the firm would pass up projects with positive net present values that could contribute to the corporate operation or performance in the long run. Previous studies suggest that stock pledges could alter corporate risk-taking behaviour such as capital expenditure (Dou et al., 2019) and innovation investment (Pang and Wang, 2020) which eventually result in corporate underinvestment and decreased firm values. The corporate M&A activity is well recognized to have high uncertainty and various types of risks (e.g., Arouri et al., 2019). Therefore, the preference that controlling shareholders tend to avoid risk-taking activities would result in a further reduction in the level of M&A activity.

Moreover, the monitoring brought by the margin call pressure could also make positive impacts on the selection of the target firm when pledging firms tend to initiate any takeovers. To be more specific, the corporate insider would be more cautious to choose the target firm and conduct the acquisition deal to prevent the potential negative impacts of the announcement on the market price for the pledged shares. Besides, the stock pledge would introduce additional third-

[5] A recent example is embattled Chinese entrepreneur Jia Yueting, the formal founder and controlling shareholder of LeTV, who pledged over 90% of his shares by the end of 2017 in exchange for a huge amount of loans. However, due to the failure of several projects such as the mobile phone (LePhone) and new energy vehicles (Faraday Future), the stock price of LeTV dropped 83.76% in 2018. Without adequate capital on maintenance requirement, all of his pledged shares were frozen and under judicial sale to repay the loans. Subsequently, Mr. Jia lost his ownership on LeTV and filed for chapter 11 bankruptcy in the U.S. (See also WSJ: https://www.wsj.com/articles/chinese-tech-mogul-jia-yueting-files-for-bankruptcy-in-u-s-11571080535)

party monitoring from the banks and security companies (e.g., Chen and Kao, 2011). In this regard, as the external monitoring increases, the agency costs are reduced and the probability of controlling shareholder's action on pursuing private benefits is subsequently decreased. Eventually, the quality of the merger and acquisition could be better under such a monitoring mechanism due to the stock pledge.

In sum, the margin call monitoring hypothesis proposes that the pledging firms would avoid risk-taking activities in the form of corporate acquisitions to minimize the likelihood of any decrease in stock market price under the margin call pressure but meanwhile, the quality of the deals could be improved.

The margin call monitoring hypothesis: Stock pledge is negatively related to the level of corporate acquisition activity but positively related to the announcement returns of these acquisitions.

The aggravated expropriation hypothesis

This hypothesis suggests that the controlling shareholder's stock pledge would increase the expropriation of the controlling shareholder. Subsequently, the corporate insider's objective function of pursing their own private benefits would drive agency-related acquisitions while sacrificing the interests of minority shareholders.

The stock pledge activity can induce type II agency problems mainly because the controlling shareholders' stock pledge would cause a further divergence between their cash flow rights and voting rights. In fact, if the controlling shareholders pledge their shares, they temporarily transfer cash flow rights on the pledged stocks to the pledgee while still retain the voting power of

those pledged shares as long as the pledge does not default (e.g., Li, Zhou, Yan and Zhang, 2019). In other words, the controlling shareholders who pledge their shares maintain their decisive voting power on firms' daily operation and control on the management appointment at the original level but they meanwhile, have less risk to bear on the residual claims generated by the stochastic operating cash flows from the firm. Therefore, on the one hand, the relatively increased weight of their voting power can exacerbate entrenchment problems. On the other hand, the reduced cash flow rights could weaken the positive incentive effect on the controlling shareholder (e.g., Claessens et al., 2002). Subject to the agency problems induced by the dispersion between cash flow rights and control rights, expropriation by the corporate controlling shareholders could occur in the form of corporate acquisitions at the expense of minority shareholders. Moreover, previous studies state that such agency-driven M&As are more like to happen in emerging markets with weaker investor protection and with highly concentrated ownership among firms (e.g., Bhaumik and Selarka, 2012; Yang et al., 2019).

Corporate acquisitions could serve as a tool of expropriation to pursue private benefits in many ways. First, the controlling shareholder holder could use M&A transactions to tunnel the cash flows among the subsidiaries within the firm or transfer the wealth out of the current corporation (e.g., Johnson et al., 2000; Bae et al., 2002). Secondly, given the fact that controlling shareholders actively participate in the top management (e.g., Shleifer and Vishny, 1997; La Porta et al., 1999), they could conduct diversifying takeovers for job secure (e.g., Amihud and Lev, 1981) or empire-building to increase the firm size for more excessive compensations (e.g., Jensen, 1986). Thirdly, when the related party transaction is involved in the acquisition, the bidder could take advantage of transfer prices to facilitate their affiliated entities. Fourthly, controlling shareholders would also utilize the acquisitions to exercise their discretion on the firm's cash rather than directly

payout to outside investors (Harford, 1999). Last but not at least, corporate acquisitions in China could also provide potential opportunities for controlling shareholders to gain political benefits from the local government (Yang et al., 2019).

In short, agency problems resulted from the divergence between controlling shareholders' cash flow rights and voting rights would drive expropriation over minority shareholders in the form of self-interested acquisitions to pursue their own benefits. Thus, the aggravated expropriation hypothesis firstly predicts that firms with the stock pledge by their controlling shareholders are more likely to conduct merger and acquisitions.

The aggravated expropriation hypothesis also contends that the market reacts negatively when pledging firms announce their decision of acquisition. If investors could perceive substantial agency problems on the pledging firms, they cannot precisely detect the real incentive of the corporate acquisition. In addition, it is possible that the corporate decision-maker tends to overpay in the deal at the expense of other stakeholders. Therefore, outside investors should be uncertain about the quality and the fairness of the deal. In this regard, the information asymmetry between the corporate insider and outside investors increases and adverse selection (Myers and Majluf, 1984) may also arise. The previous studies also provide evidence that the market reacts less favorably and acquirer typically experiences negatively announcement returns when the acquisitions are suspected as agency-driven takeovers, For example, Berkovitch and Narayanan (1993) find that compared to synergy or hubris motive acquisitions, agency-motivated takeovers are more dominant and associated with negative abnormal returns. Lewellen, Loderer, and Rosenfeld (1985) find that acquirers with the management have a small equity stake which representing serious agency problems experience the most pronounced negative announcement returns. Lang, Stulz, and Walkling (1991) find that acquirer with more cash, therefore, higher costs

of free cash flow undergo stronger negative announcement effects. Morck, Shleifer and Vishny (1990) document acquirers engaging in unrelated diversification tend to suffer more negative announcement effects. In short, the expropriation hypothesis also posits that acquisitions driven by the controlling shareholder's own interests tend to have bad quality and unfair payment in the deal with the negative market reaction.

The aggravated expropriation hypothesis: Stock pledge is positively related to the level of corporate acquisition activity but negatively related to the announcement returns of these acquisitions.

Collectively, based on the discussion of two competing hypotheses above, we conjecture that the nature of the relationships between stock pledge by the controlling shareholder of the firm and corporate acquisition tendency as well as associated performance are questions that need to be empirically examined.

3. Data and descriptive statistics

3.1 Sample construction

Our initial sample includes all firm year observations of A-share Chinese listed companies from 2003-2017. All the financial information is taken from the China Stock Market and Accounting Research (CSMAR) database. Our sample begins in 2003 because CSMAR starts to report the pledge information of the top 10 shareholders from 2003. Following the prior literature, we exclude the financial sector. All the continuous variables are winsorized at 1% and 99% levels to mitigate the concern of the extreme values. We obtain M&A data from CSMAR Chinese Listed Firms' M&A and Asset Restructuring Research Database. It worth noting that our M&A sample is from 2004-2018, one year ahead of pledge and other controls.

We use the following criteria to filter our M&A sample: (1) acquirers would be A-share publicly listed companies; (2) transaction type only includes mergers, tender offers, and acquisitions of assets; (3) we exclude the observations with more than one deals announced during one year to mitigate the concern of contamination issue (e.g., Zhou et al., 2015; Bi and Wang, 2018); (4) the acquirers must have necessary data in our first M&A tendency regression. Our final M&A sample includes 6553 deals. Because in the CAR (cumulative abnormal return) analysis, we need deal level information as well as data on the preannouncement stock return to estimate the market model, our sample further drops to 5532. We include both complete and failed deals in the sample following Yang et al. (2019). However, in the long-term tests, i.e., post-M&A accounting performance and goodwill impairment, we only include complete deals.

3.2 Summary statistics

Table 1 presents the summary statistics for the key variables of the full sample and subsamples for acquirers and non-acquirers. The detailed definition of variables is provided in Appendix A. On average, 37.1% controlling shareholders from the acquires pledge the shares during the sample period. While only 30.5% of the non-acquirers do so. The difference is significant at 1% level, indicating that pledging firms are more likely to conduct M&A transactions.

Size is comparable between acquirers and non-acquirers, with both mean (median) of 21.8 (21.6). Acquirers show better performance than non-acquirers in terms of both stock return and ROA. The mean (median) annual return is 39.6% (10.4%) for acquirers and 29.3% (2.6%) for non-acquirers. The mean (median) ROA is 3.9% (3.8%) for acquirers and 3.2% (3.4%) for non-acquirers. With regards to liquidity, acquirers hold more cash and have lower leverage compared to non-acquirers, which is consistent with the literature that more liquid firms have a stronger

propensity to conduct M&A (e.g., Yang et al.,2019). Acquirers and non-acquirers have a similar percentage of intangible assets and capital expenditure. Acquirers have slightly higher Tobin's Q with the mean (median) of 2.74 (2.10) than non-acquirers (mean: 2.61; median:1.93). The controlling shareholders hold, on average, 35.7 % shares in acquiring companies and 36.5% in non-acquiring companies. In both acquiring and non-acquiring firms, there are about 9 directors on board with 37% of them are independent board members. 41.6% acquirers are state-owned enterprises while 49.9% percent of the non-acquirers are SOEs. The percentage of CEO duality is higher for acquirers (23.2%) than non-acquirers (20.5%).

In terms of deal characteristics, 83.9% deals are paid by pure cash while 8.39% deals are paid by cash-related payment methods. Takeover premium has a mean of 48.9% and a median of 0.00%. The mean (median) of 7 day and 11 day cumulative abnormal returns are 2.0% (0.2%) and 2.2% (0.2%) respectively. 37.9% of M&A deals are related party transactions. 11.5% deals belong to significant deals. On average, the deal value accounts for 23.9% percent of the acquirer's total assets. The mean (median) stock runup 200 trading days ending 61 days before the deal announcement is 23% (4.0%). Most of the firms (93.5 %) finally complete the deal.

4. Stock pledge and M&A tendency

We firstly study how controlling shareholder stock pledge affects the M&A tendency. To investigate the relationship, we estimate the following model:

$$Prob\,(M\&A_{i,t+1}=1) = a + b_1 Pledge\_Dummy_{i,t} + b_2 Size_{i,t} + b_3 Annual\ Return_{i,t} + b_4 Cash_{i,t} + b_5 ROA_{i,t} + b_6 Intangible_{i,t} + b_7 Leverage_{i,t} + b_8 Capital\ Expenditure_{i,t} + b_9 Tobin's\ Q_{i,t} + b_{10} Blockholders_{i,t} + b_{11} Board\ Size_{i,t} + b_{12} Board\ Independent_{i,t} + b_{13} SOE_{i,t} + b_{14} CEO\ Duality_{i,t} + Industry\ FEs + Year\ FEs + Province\ FEs + \varepsilon_{i,t} \quad (1)$$

where i represents the firm, and t represents the year. The dependent variable, $M\&A_{i,t+1}$, is a dummy that equals 1 if firm i announces a merger and acquisition in year t+1, and 0 otherwise. The variable of interest, $Pledge\_Dummy_{i,t}$, is a dummy that indicates the existence of controlling shareholder pledge at the end of the year. The margin call monitoring hypothesis predicts b_1 to be negative while the aggravated expropriation hypothesis predicts b_1 to be positive.

We include a set of control variables in the regression following the prior literature. Size is the natural logarithm of total assets. Annual Return is the annual stock return for the acquirer before the acquisition. Cash is the ratio of cash and cash equivalent to total assets. ROA is the net income divided by total assets. Intangible equals to intangible assets divided by total assets. Leverage equals total debts divided by total assets. Capital Expenditure is the capital expenditure scaled by total assets. Tobin's Q equals the sum of the market value of equity and total liabilities divided by total assets. Blockholders is the percentage of shares owned by the controlling shareholder. Board Size equals to the total number of members on the board of directors. Board Independent is the ratio of the independent board members to the board size. SOE is a dummy variable that equals one if the firm is state-owned in a given year and zero otherwise. CEO Duality is a dummy that equals one if the CEO is also the chair of the board and zero otherwise.

We add industry fixed effects to control for industry-specific characteristics that affect M&A tendency. We use the CSRC 2012 Classification to define the industry. CSRC Classification includes one letter and two digits. We also include year fixed effect to control for time-invariant differences. Since there is a huge variation of economic conditions and financial developments across provinces in China. It is plausible that the unique characteristics of the province could affect both share pledge and M&A decisions. Therefore, we also add province fixed effects. The standard errors are clustered at the firm level. We estimate equation (1) using the probit model.

Table 2 shows the regression results. The coefficient on our variable of interest - stock pledge dummy is positive and significant at 1 % level, showing that firms with the controlling shareholder pledge their shares are more likely to announce an M&A in the following year, which is consistent with the aggravated expropriation hypothesis. Controlling shareholders have a greater incentive to utilize M&A as the expropriation tool after they pledge the shares.

5. Stock pledge and announcement return

5.1 Baseline regressions

To investigate whether stock pledge by the controlling shareholders affects the value of the acquiring company, we use the event study method and estimate the following OLS model:

$$CAR[-3,+3]_{i,t+1} / CAR[-5,+5]_{i,t+1} = a + b_1 Pledge\_Dummy_{i,t} / Pledge\_Percent_{i,t} + b_2 Size_{i,t} + b_3 Annual\ Return_{i,t} + b_4 Cash_{i,t} + b_5 ROA_{i,t} + b_6 Intangible_{i,t} + b_7 Leverage_{i,t} + b_8 Capital\ Expenditure_{i,t} + b_9 Tobin's\ Q_{i,t} + b_{10} Blockholders_{i,t} + b_{11} Board\ Size_{i,t} + b_{12} Board\ Independent_{i,t} + b_{13} SOE_{i,t} + b_{14} CEO\ Duality_{i,t} + b_{15} Related_{i,t+1} + b_{16} Significant_{i,t+1} + b_{14} Relative\ Size_{i,t+1} + b_{18} Cash\ Payment_{i,t+1} + b_{19} Cash\ Mixed_{i,t+1} + Industry\ FEs + Year\ FEs + Province\ FEs + \varepsilon_{i,t} \quad (2)$$

CAR [-3, +3] (CAR [-5, +5]) is the cumulative abnormal stock return over the 7-day (11-day) event window centered on the acquisition announcement date. We estimate the parameters of the market model 200 trading days ending 61 trading days prior to the deal announcement date. CARs are calculated using the estimated parameter for different event windows.

Compered to equation (1), we further control for deal characteristics. Cash Payment is a dummy that equals one if the payment is pure cash, and zero otherwise. Cash Mixed is a dummy that equals one if the payment involves cash and other types of payment, and zero otherwise. Runup_stock is the buy and hold daily Shanghai and Shenzhen value-weighted stock returns over the period beginning 260 days and ending 61 days prior to the announcement date. Related is a

dummy that equals 1 if the deal is a related party transaction, and 0 otherwise. Significant is a dummy that equals 1 if the deal is a significant transaction[6], and 0 otherwise. Relative Size is the ratio of deal value to the acquirer's total assets.

Table 3 presents the OLS regression results for CAR. As shown in column (1) and (2), after controlling for the various acquirer and deal-specific factors, the coefficients on pledge dummy are still negative and significant. The coefficient of -0.008 (-0.009) suggests that the pledging firms experience 0.8% more negative M&A announced returns during the 7-day (11-day) window compared to non-pledging firms. In addition to the pledge dummy, we also use the ratio of the number of shares pledged to the total number of shares held by the controlling shareholder (Pledge_Percent) as the independent variable. Pledge_Percent measures the degree of further separation of cash-flow rights and control rights by the controlling shareholder arising from share pledge. Pledge_Percent has a mean of 0.198 and a standard deviation of 0.3298. As shown in column (3) ((4)), one standard deviation increase in the percentage of share pledged decreases the 7-day (11-day) announcement return by 0.5% (0.6%).

The coefficients on other controls are generally consistent with the literature. Similar to Moeller et al. (2004), we find a negative relationship between CAR and Size. As Masulis et al. (2007), our results also show that acquirers with more positive price runup before announcements are associated with lower announcement returns. While the positive coefficients on Significant and Relative Size and the negative coefficient on Cash payment and Cash Mixed are opposite to the U.S. research, it is consistent with Chinese literature (e.g., Liu et al., 2016; Yang et al., 2019). This result shows that Chinese investors have a higher expectation on M&A deals with larger size and

[6] See the appendix of Zhang et al. (2019) for detailed discussion.

noncash payments. Overall, our results support the aggravated expropriation hypothesis: pledging companies conduct more M&A activities but the market reacts negatively to those deals.

5.2 Endogeneity tests

Our primary tests show that share pledge is negatively correlated with the M&A announcement return. We notice that endogenous issues might exist in our study: (1) unobserved omitted variables could drive both share pledge and negative market reaction (2) firms with worse M&A performance could be more likely to pledge the shares. To further mitigate the endogenous concern, we perform two sets of tests: instrumental variable approach and difference in differences approach following the prior literature (e.g., Pang and Wang, 2020).

5.2.1 Instrumental variable approach

Our first endogeneity test adopts the instrumental variable approach. Following Pang and Wang (2020), we construct the instrument, Pledge_Percent (peer), as the average percent of shares pledged by the controlling shareholders from the peer companies operating in the same industry and located in the same province. Firms from the same industry have similar operation environment and financing demand. Besides, we require the peers to locate in the same province because economic conditions and local policy varies across provinces. We predict the amount of the firm's peer pledging can represent the general level of pledging activity within the firm's industry and location[7]. On the other hand, the M&A announcement return should be unrelated to the peer pledge.

[7] It is possible that firms from the same industry and geographic clustering have similar operation outcomes, e.g., M&A decisions. Pang and Wang (2020) solve this problem by only include the non-event firms to construct the instrument. However, this method is not suitable for our research. Since non-M&A firms only account for about 10% of the full sample.

The first column in table 4 shows the first stage regression. The dependent variable, Pledge_Percent, is the percentage of shares pledged by the controlling shareholders. All other controls are the same as equation (1). We also include industry, year and province fixed effects. The second stage regression results are consistent with the baseline.

5.2.2 Difference in Differences Approach

In this section, we conduct the difference in differences (DID) tests by utilizing a regulatory change in 2013, i.e., the publication of "The Guidance on Stock Pledge Repurchase Transactions, Registration, and Settlement". Before 2013, shareholders can only pledge shares to banks and trust firms. The 2013 rule further permits security companies to participate in pledge activities. Therefore, shareholders have broader ways to pledge their shares as collaterals after 2013. Besides, security firms tend to have lower interest rates and fewer restrictions on the loan usage (Meng et al., 2016). Therefore, the regulation change encourages the share pledge especially to shareholders who have difficulties in personal financing previously. On the other hand, this rule should be unrelated to the firm acquisition decisions as the primary objective of this rule is to regulate share pledge.

We firstly identify the firms that are affected mostly by this rule as the treatment sample. Our primary treatment group includes all firms whose controlling shareholders do not pledge the shares during the pre-regulation period (2011 and 2012) but pledge the shares during the post-regulation period (2014 and 2015). We use the 4-year window around the regulation (2-year pre and post period) to mitigate the concern that the shareholders coincidently alter their pledging

decision after this regulatory change. The primary control group includes all firms whose controlling shareholders do not pledge during the whole 2011-2015 period. We regard those firms as unaffected by the rule. We further conduct a propensity score matching to make sure that the treatment and control are comparable. To be more specific, we firstly run a probit regression of treatment dummy on all the controls in the M&A tendency regression, including the industry, year and province dummies. Then we use the predicted propensity score to select one control firm for each treatment firm with the nearest score from the same industry, year and province. Finally, we get 119 pairs. Since not all firms engage in M&A activities during the window, our final sample drops to 132 firms (71 treatment firms and 61 control firms) in the CAR regressions.

We conduct our DID tests using the period from 2011 to 2015. We exclude observations in 2013, which is the event year. Post is a dummy that equals 1 if the observation belongs to the post-regulation period, and 0 otherwise. Treatment is a dummy that equals 1 if the firm is from the treatment group, and 0 otherwise. We report the results in table 5. The coefficient on Treat*Post is negative and significant, indicating that the regulation which encourages the stock pledge activities would further induce agency problem reflected in more negative CARs experienced by the acquirer.

5.3 Robustness tests

In order to make sure that the relationship between CAR and pledge is robust, we conduct a series of additional tests using alternative fixed effects and sample selections. Table 6 reports the results. We firstly conduct the analysis with firm and year fixed effects to further control for omitted characteristics of acquirers that could affect both pledge and M&A announcement return. Specifically, we are comparing the deal announcement return of the acquirer when its controlling

shareholder does not pledge the share and the announcement return from the same acquirer when the controlling shareholder pledges the share. The results in column (1) and (2) are similar to the baseline regressions, which suggests that controlling shareholder expropriation is exaggerated within the firm after their controlling shareholder pledge the shares.

Our second and third analyses test whether the results hold in different samples. In column (3) and (4), we drop the special treatment (ST) stocks, i.e., firms report losses for two consecutive years. As shown in table 6, the results remain quantitatively unchanged after dropping those firms. Lastly, we exclude the small transactions with the deal value of less than 1% of the acquirer's total assets. This requirement decreases the sample to 3822. Column (5) and (6) suggest that the negative relationship between pledge and CAR is still robust.

5.4 Channel tests

Our previous analyses suggest that share pledge by the controlling shareholder leads to more M&A activities but worse market reaction. As the aggravated expropriation hypothesis we discussed in section 2.2, there are several mechanisms driving the impediment effect of share pledge on announcement return. In this section, we use multivariate regressions to test those channels including overpayment in the deals and related party transactions.

The exacerbated agency problem caused by share pledge increases the likelihood of expropriation by the controlling shareholder. They tend to overpay in the M&A deals to pursue their own private benefits at the expense of minority shareholders. Besides, the controlling shareholders have fewer positive incentives to maximize the firm value due to the further divergence of voting rights and cash-flow rights. Thus, pledging firms are more likely to pay more

premiums. To test this conjecture, we examine the relationship between takeover premium and stock pledge. Premium equals to trading value of the target divided by the estimated value minus one. Column (1) in table 7 shows that the coefficient of the stock pledge is positive and significant at 5% level. Regarding economic significance, on average, pledging firms pay 23.4 % more premium than non-pledging firms.

Related party transaction is widely recognized as a way of controlling shareholders' expropriation (e.g., Bae et al., 2002). We expect that pledging firms have a greater tendency to engage in related party acquisitions. We regress the related party transaction dummy on share pledge using the M&A sample with the probit model using the same controls as equation (1). As shown in table 7 column (2), the coefficient on Pledge_Dummy is negative and significant at the 10% level, which is consistent with our expropriation hypothesis.

5.5 Cross-sectional tests

In this section, we further conduct a series of cross-sectional tests to deepen the understanding of the relationship between share pledge and M&A announcement return.

Our first cross-sectional test focuses on differences between the SOE firms and non-SOE firms. As indicated in some previous studies (e.g., Li et al., 2019), the government imposes stricter restrictions on the stock pledge activities in ultimately government-controlled firms. Any stock pledge conducted by the controlling shareholders in those SOEs should be under special supervision and monitoring from the local government or state-owned asset management department. Therefore, the controlling shareholder has fewer expropriation incentives in those SOE firms with share pledging. We argue that the share pledging induces more serious agency

problems for non-SOEs than SOEs. Table 8 provides the regression results. The coefficient on the interaction term between SOE and Pledge_Dummy are positive and significant in both column (1) and (2), indicating a mitigating effect of SOE on the negative relationship between share pledge and announcement return.

Our second cross-sectional test examines whether the relationship between the stock pledge and CAR differs between firms with a high and low level of free cash flow. Prior research suggests that controlling shareholders are more likely to expropriate corporate resources through M&A when firms have more free cash flow (e.g., Jensen, 1986; Lang et al., 1991; Harford, 1999). Therefore, we expect that the negative effect of share pledge on M&A announcement return is more pronounced when the firm has a higher level of free cash flow. We rank firms by industry years using the ratio of free cash flow to total assets. FCF_High is a dummy that equals 1 if the firm is among the top 20%, and 0 otherwise. As shown in column (4) of table 8, high-level free cash flow pledging firms experience 2.2% more negative return during the [-5, +5] event window. Although the coefficient on the interaction term in column (3) is not significant, it is negative with the t-value of -1.46.

6. The long-run performance for the pledging acquirers

The negative association between CAR and pledge indicates that investors predict worse future performance for the pledging firms. In this section, we provide evidence on long-term performance in terms of post-acquisition ROA and goodwill impairment.

6.1 ROA

We firstly test the industry adjusted ROA 1/2/3 year(s) after the M&A announcement. It is ideal to use the deal completion date. However, the missing value problem is severe. In order not to lose too many observations, we follow Yang et al. (2019) and use the announcement date.

Industry adjusted ROA is defined as the difference between the firm ROA and industry median. To control for pre-M&A performance, we add adjusted ROA 1, 2, and 3 year(s) before the announcement in the regression.

As shown in table 9, acquirers with their controlling shareholders stock pledge exbibit significantly worse accounting performance up to three years after the acquisition. This finding is in line with our previous results of lower announcement return indicating that such takeovers are agency-driven and value-destroying. In addition, those results are robust if we use the change in ROA as an alternative dependent variable.

6.2 Post M&A goodwill impairment

Our aggravated expropriation hypothesis predicts that pledging firms are more likely to engage in bad acquisition due to the agency problem induced by the divergence of voting rights and cash-flow rights. In addition to the evidence on announcement returns and post-M&A ROA, we further test our prediction with goodwill impairment to identify the quality of the acquisition in the long run. Goodwill impairment signals a disappointing outcome from the M&A deal. We expect the pledging acquirers to be more likely to undergo goodwill impairment. We define Impairment_Dummy as a dummy variable that equals one if the firm confirms the goodwill impairment during three years after their M&A announcements, and 0 otherwise. Since goodwill impairment data in CSMAR begins in 2007 and we require firms with enough data during 3 years of post-M&A period, our sample only covers M&A deals during 2006-2015 in this test. Column (1) in table 10 uses the probit model, the coefficient on Impairment_Dummy is positive and significant at 5% level, indicating that the acquirers fail to benefit from those takeovers as expected. As a result, the minority shareholders suffer from such agency-related acquisitions. Since the

sample using the probit model drops significantly, we also conduct OLS regression in column (2). The results are consistent with column (1).

7. Conclusion

In this paper, we examine the effect of the controlling shareholder stock pledge on corporate M&A decisions. While the margin call pressure hypothesis suggests that the stock pledge would reduce the propensity of corporate risk-taking activities such as diversifying merger and acquisitions, the aggravated expropriation hypothesis argues that pledging firms would conduct more agency-driven M&As after the stock pledge due to the further divergence of voting and cash-flow rights. We find that firms are more likely to conduct corporate acquisitions after the share pledge by their controlling shareholders which supports the aggravated expropriation hypothesis. Moreover, M&A deals initiated by pledging firms obtain lower announcement returns. The negative relationship between the stock pledge and return is robust to the alternative variable definition, fixed effects and sample selections. To mitigate the endogeneity concern, we conduct the instrumental variable approach as well as the difference in differences tests utilizing a regulation change in 2013. We further examine the mechanisms driving the impediment effect from share pledge. We find that acquires with the controlling shareholder pledging their shares tend to overpay in the deals and are more likely to involve in related party transactions. Besides, the relationship between share pledge and returns is stronger for non-SOEs and when the firm has more free cash flow. Moreover, pledging firms have worse post-M&A performance in terms of lower ROA and greater likelihood of goodwill impairment.

Overall, our findings suggest that, subject to the agency problem induced by the stock pledge, controlling shareholders increasingly utilize corporate takeover to seek private benefits.

We shed light on the understanding of agency issues caused by share pledge due to the further deviation of voting and cash-flow rights. By documenting the causal effect of share pledge on bad M&A decisions, our finding has significant policy implications regarding the minority share protection and the debate on the property of stock pledge.

References

Agrawal, A. and Walkling, R.A., 1994. Executive careers and compensation surrounding takeover bids. *The Journal of Finance*, 49(3), pp.985-1014.

Amihud, Y. and Lev, B., 1981. Risk reduction as a managerial motive for conglomerate mergers. *The Bell Journal of Economics*, pp.605-617.

Anderson, Ronald, and Michael Puleo. "Insider share-pledging and firm risk." Southwestern Finance Association 2015 Conference. 2015.

Arouri, M., Gomes, M. and Pukthuanthong, K., 2019. Corporate social responsibility and M&A uncertainty. *Journal of Corporate Finance*, *56*, pp.176-198.

Bae, K.H., Kang, J.K. and Kim, J.M., 2002. Tunneling or value added? Evidence from mergers by Korean business groups. *Journal of Finance*, *57*(6), pp.2695-2740.

Bebchuk, L.A., Kraakman, R. and Triantis, G., 2000. Stock pyramids, cross-ownership, and dual class equity: the mechanisms and agency costs of separating control from cash-flow rights. In *Concentrated corporate ownership* (pp. 295-318). University of Chicago Press.

Becht, M., Bolton, P. and Röell, A., 2003. Corporate governance and control. In *Handbook of the Economics of Finance* (Vol. 1, pp. 1-109). Elsevier.

Berkovitch, E. and Narayanan, M.P., 1993. Motives for takeovers: An empirical investigation. *Journal of Financial and Quantitative Analysis*, 28(3), pp.347-362.

Betton, S., Eckbo, B.E. and Thorburn, K.S., 2008. Corporate takeovers. *In Handbook of Empirical Corporate Finance* (pp. 291-429). Elsevier.

Bhaumik, S.K. and Selarka, E., 2012. Does ownership concentration improve M&A outcomes in emerging markets?: Evidence from India. *Journal of Corporate Finance*, *18*(4), pp.717-726.

Bi, X. and Wang, D., 2018. External sources of political connections: Financial advisors and Chinese acquisitions. *International Journal of Finance & Economics*, 23(4), pp.705-722.

Burkart, M. and Panunzi, F., 2006. Agency conflicts, ownership concentration, and legal shareholder protection. *Journal of Financial Intermediation*, *15*(1), pp.1-31.

Chan, K., Chen, H.K., Hu, S.Y. and Liu, Y.J., 2018. Share pledges and margin call pressure. *Journal of Corporate Finance*, 52, pp.96-117.

Chen, A. and Kao, L., 2011. Effect of collateral characteristics on bank performance: Evidence from collateralized stocks in Taiwan. *Journal of Banking & Finance*, 35(2), pp.300-309.

Chen, A., Kao, L. and Chen, Y.K., 2007. Agency costs of controlling shareholders' share collateral with Taiwan evidence. *Review of Pacific Basin Financial Markets and Policies*, 10(02), pp.173-191.

Chen, H.K. and Hu, S.Y., 2018. Insider Pledging: Its Information Content and Forced Sale. In: *2018 Financial Management Association Annual Meeting.*

Claessens, S., Djankov, S. and Lang, L.H., 2000. The separation of ownership and control in East Asian corporations. *Journal of financial Economics*, *58*(1-2), pp.81-112.

Claessens, S., Djankov, S., Fan, J.P. and Lang, L.H., 2002. Disentangling the incentive and entrenchment effects of large shareholdings. *Journal of Finance*, *57*(6), pp.2741-2771.

Deutsch, Y., Keil, T. and Laamanen, T., 2007. Decision making in acquisitions: The effect of outside directors' compensation on acquisition patterns. *Journal of Management*, 33(1), pp.30-56.

Dou, Y., Masulis, R.W. and Zein, J., 2019. Shareholder wealth consequences of insider pledging of company stock as collateral for personal loans. *Forthcoming, Review of Financial Studies*.

Fama, E.F. and Jensen, M.C., 1983. Agency problems and residual claims. *Journal of Law and Economics*, *26*(2), pp.327-349.

Fama, E.F. and Jensen, M.C., 1983. Separation of ownership and control. *Journal of Law and Economics*, *26*(2), pp.301-325.

Grossman, S.J. and Hart, O.D., 1988. One share-one vote and the market for corporate control. *Journal of Financial Economics*, 20, pp.175-202.

Haleblian, J., Kim, J.Y. and Rajagopalan, N., 2006. The influence of acquisition experience and performance on acquisition behavior: Evidence from the US commercial banking industry. *Academy of Management Journal*, 49(2), pp.357-370.

Harford, J., 1999. Corporate cash reserves and acquisitions. *Journal of Finance*, *54*(6), pp.1969-1997.

Harris, M. and Raviv, A., 1988. Corporate governance: Voting rights and majority rules. *Journal of Financial Economics*, 20, pp.203-235.

Haunschild, P.R. and Beckman, C.M., 1998. When do interlocks matter?: Alternate sources of information and interlock influence. *Administrative Science Quarterly*, pp.815-844.

Haunschild, P.R., 1993. Interorganizational imitation: The impact of interlocks on corporate acquisition activity. *Administrative Science Quarterly*, pp.564-592.

Hayward, M.L. and Hambrick, D.C., 1997. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly*, pp.103-127.

Jensen, M.C. and Meckling, W.H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), pp.305-360.

Jensen, M.C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, *76*(2), pp.323-329.

Johnson, S., La Porta, R., Lopez-de-Silanes, F. and Shleifer, A., 2000. Tunneling. *American Economic Review*, 90(2), pp.22-27.

La Porta, R., Lopez-de-Silanes, F. and Shleifer, A., 1999. Corporate ownership around the world. *The Journal of Finance*, *54*(2), pp.471-517.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R., 2000. Investor protection and corporate governance. *Journal of Financial Economics*, *58*(1-2), pp.3-27.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R., 2002. Investor protection and corporate valuation. *Journal of Finance*, *57*(3), pp.1147-1170.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W., 2000. Agency problems and dividend policies around the world. *Journal of Finance*, *55*(1), pp.1-33.

Lang, L.H., Stulz, R. and Walkling, R.A., 1991. A test of the free cash flow hypothesis: The case of bidder returns. *Journal of Financial Economics*, *29*(2), pp.315-335.

Lewellen, W., Loderer, C. and Rosenfeld, A., 1985. Merger decisions and executive stock ownership in acquiring firms. *Journal of Accounting and Economics*, 7(1-3), pp.209-231.

Li, M., Liu, C. and Scott, T., 2019. Share pledges and firm value. *Pacific-Basin Finance Journal*, 55, pp.192-205.

Li, W., Zhou, J., Yan, Z. and Zhang, H., 2019. Controlling shareholder share pledging and firm cash dividends. *Emerging Markets Review*, p.100671.

Liu, Q., Luo, T. and Tian, G., 2016. Political connections with corrupt government bureaucrats and corporate M&A decisions: A natural experiment from the anti-corruption cases in China. *Pacific-Basin Finance Journal*, 37, pp.52-80.

Malmendier, U. and Tate, G., 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89(1), pp.20-43.

Masulis, R.W., Wang, C. and Xie, F., 2007. Corporate governance and acquirer returns. *Journal of Finance*, 62(4), pp.1851-1889.

Meng, Q., Ni, X. and Zhang, J., 2019. Share pledging and corporate risk-taking: Insights from the Chinese stock market. Available at SSRN 3237881.

Moeller, S.B., Schlingemann, F.P. and Stulz, R.M., 2004. Firm size and the gains from acquisitions. *Journal of Financial Economics*, 73(2), pp.201-228.

Morck, R., Shleifer, A. and Vishny, R.W., 1988. Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics*, 20, pp.293-315.

Morck, R., Shleifer, A. and Vishny, R.W., 1990. Do managerial objectives drive bad acquisitions?. *Journal of Finance*, *45*(1), pp.31-48.

Morck, Randall, Daniel Wolfenzon, and Bernard Yeung. "Corporate governance, economic entrenchment, and growth." *Journal of Economic Literature* 43, no. 3 (2005): 655-720.

Myers, S.C. and Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), pp.187-221.

Ouyang, C., Xiong, J. and Fan, L., 2019. Do insiders share pledging affect executive pay-for-performance sensitivity?. *International Review of Economics & Finance*, 63, pp.226-239.

Pang, C. and Wang, Y., 2020. Stock pledge, risk of losing control and corporate innovation. *Journal of Corporate Finance*, 60, p.101534.

Pang, C. and Wang, Y., 2020. Stock pledge, risk of losing control and corporate innovation. *Journal of Corporate Finance*, 60, p.101534.

Sanders, W.G., 2001. Behavioral responses of CEOs to stock ownership and stock option pay. *Academy of Management Journal*, 44(3), pp.477-492.

Shleifer, A. and Vishny, R.W., 1991. Takeovers in the'60s and the'80s: Evidence and Implications. *Strategic Management Journal*, *12*(S2), pp.51-59.

Shleifer, A. and Vishny, R.W., 1997. A survey of corporate governance. *Journal of Finance*, *52*(2), pp.737-783.

Stulz, R., 1988. Managerial control of voting rights: Financing policies and the market for corporate control. *Journal of Financial Economics*, 20, pp.25-54.

Stulz, R., 1990. Managerial discretion and optimal financing policies. *Journal of Financial Economics*, 26(1), pp.3-27.

Tirole, J., 1986. Hierarchies and bureaucracies: On the role of collusion in organizations. *JL Econ. & Org.*, *2*, p.181.

Wang, Y.C. and Chou, R.K., 2018. The impact of share pledging regulations on stock trading and firm valuation. *Journal of Banking & Finance*, 89, pp.1-13.

Westphal, J.D., Seidel, M.D.L. and Stewart, K.J., 2001. Second-order imitation: Uncovering latent effects of board network ties. *Administrative Science Quarterly*, 46(4), pp.717-747.

Yang, J., Guariglia, A. and Guo, J.M., 2019. To what extent does corporate liquidity affect M&A decisions, method of payment and performance? Evidence from China. *Journal of Corporate Finance*, 54, pp.128-152.

Zhang, Junzi and Bilinski, Pawel and Raonic, Ivana, Does Regulatory Monitoring Improve M&A Outcomes? Evidence from Chinese Comment Letters (November 4, 2019). Available at SSRN: https://ssrn.com/abstract=3352597 or http://dx.doi.org/10.2139/ssrn.3352597

Zhou, B., Guo, J., Hua, J. and Doukas, A.J., 2015. Does state ownership drive M&A performance? Evidence from China. *European Financial Management*, 21(1), pp.79-105.

Zingales, L., 1994. The value of the voting right: A study of the Milan stock exchange experience. *The Review of Financial Studies*, *7*(1), pp.125-148.

Table 1 Descriptive statistics

This table reports the descriptive statistics for the full sample as well as the subsample of acquires and non-acquires from 2003-2017. All the variables are winsorized at 1% and 99% levels. Detailed definition of all the variables are listed in Appendix A

	Acquirer (6553)			Non-Aquirer (19207)			All (25760)		
Variable	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median
M&A	1.000	0.000	1.000	0.000	0.000	0.000	0.254	0.435	0.000
Pledge_Dummy	0.371	0.483	0.000	0.305	0.460	0.000	0.322	0.467	0.000
Size	21.788	1.237	21.648	21.763	1.279	21.608	21.770	1.268	21.620
Annual Return	0.396	0.926	0.104	0.293	0.864	0.026	0.319	0.881	0.043
Cash	0.195	0.150	0.152	0.184	0.145	0.142	0.186	0.146	0.145
ROA	0.039	0.058	0.038	0.032	0.065	0.034	0.034	0.063	0.035
Intangible	0.044	0.051	0.030	0.045	0.053	0.031	0.045	0.053	0.030
Leverage	0.441	0.218	0.439	0.457	0.223	0.453	0.453	0.222	0.449
Capital Expenditure	0.054	0.052	0.039	0.055	0.054	0.038	0.055	0.054	0.038
Tobin's Q	2.744	2.067	2.075	2.605	2.017	1.932	2.640	2.030	1.969
Blockholders	0.357	0.151	0.338	0.365	0.156	0.342	0.363	0.155	0.341
Board Size	8.829	1.808	9.000	8.975	1.853	9.000	8.938	1.843	9.000
Board Independent	0.368	0.053	0.333	0.365	0.052	0.333	0.366	0.053	0.333
SOE	0.416	0.493	0.000	0.499	0.500	0.000	0.478	0.499	0.000
CEO Duality	0.232	0.422	0.000	0.205	0.404	0.000	0.212	0.409	0.000
Cash Payment	0.839	0.368	1.000						
Cash Mixed	0.082	0.275	0.000						
Premium	0.489	2.682	0.000						
CAR[-3,+3]	0.020	0.128	0.002						
CAR[-5,+5]	0.022	0.152	0.002						
Related	0.379	0.485	0.000						
Significant	0.115	0.319	0.000						
Relative Size	0.239	0.770	0.028						
Runup_stock	0.230	0.672	0.040						
Complete	0.935	0.247	1.000						

Table 2 Stock pledge and M&A tendency

This table reports the regression results of M&A tendency on stock pledge based on the Probit model. M&A is a dummy that equals one if the firm announces a merger and acquisition, and zero otherwise. Pledge_Dummy is a dummy that equals one if the controlling shareholder of the firm has shares pledged at the end of the year, and zero otherwise. The definition of other controls are listed in Appendix A. The regression includes industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	Prob(M&A)
Pledge_Dummy	0.132***
	(5.81)
Size	0.028**
	(2.40)
Annual Return	0.034**
	(2.49)
Cash	0.172**
	(2.31)
ROA	0.796***
	(4.54)
Intangible	-0.265
	(-1.34)
Leverage	-0.055
	(-0.97)
Capital Expenditure	-0.096
	(-0.53)
Tobin's Q	-0.009
	(-1.35)
Blockholders	-0.084
	(-1.22)
Board Size	-0.012*
	(-1.84)
Board Independent	-0.030
	(-0.15)
SOE	-0.128***
	(-5.05)
CEO Duality	0.008
	(0.34)
Industry FEs	Y
Year FEs	Y
Province FEs	Y
Observations	25,757
Pseudo R-squared	0.0219

Table 3 Stock pledge and M&A announcement return

This table reports the OLS regression results of M&A announcement return. CAR [-3, +3] (CAR [-5, +5]) is the cumulative abnormal returns in the 7-day [−3, +3] (11-day [−5, +5]) event window using the market model with parameters estimated over the 200 trading days ending 61 days prior to the deal announcement date. Pledge_Dummy is a dummy that equals one if the controlling shareholder of the firm has shares pledged at the end of the year, and zero otherwise. Pledge_percent is the ratio of the number of shares pledged to the total number of shares held by the controlling shareholder. The definition of other controls are listed in Appendix A. The regressions include industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	CAR [-3, +3]	CAR [-5, +5]	CAR [-3, +3]	CAR [-5, +5]
	(1)	(2)	(3)	(4)
Pledge_Dummy	-0.008**	-0.009**		
	(-2.02)	(-1.99)		
Pledge_Percent			-0.015***	-0.017**
			(-2.63)	(-2.37)
Size	-0.013***	-0.014***	-0.013***	-0.014***
	(-6.17)	(-5.62)	(-6.17)	(-5.62)
Annual Return	0.005*	0.005	0.005*	0.005
	(1.80)	(1.34)	(1.76)	(1.31)
Cash	0.009	0.016	0.009	0.016
	(0.64)	(0.95)	(0.62)	(0.95)
ROA	0.077*	0.105**	0.073*	0.101**
	(1.87)	(2.06)	(1.77)	(1.97)
Intangible	0.012	0.002	0.013	0.003
	(0.32)	(0.05)	(0.33)	(0.07)
Leverage	0.016	0.027*	0.018	0.029**
	(1.38)	(1.89)	(1.51)	(2.00)
Capital Expenditure	0.035	0.016	0.033	0.014
	(1.05)	(0.40)	(1.00)	(0.36)
Tobin's Q	-0.011***	-0.012***	-0.011***	-0.012***
	(-6.86)	(-6.42)	(-6.90)	(-6.46)
Blockholders	0.021*	0.016	0.019*	0.014
	(1.87)	(1.28)	(1.72)	(1.13)
Board Size	0.002	0.002	0.001	0.002
	(1.50)	(1.56)	(1.46)	(1.51)
Board Independent	0.047	0.044	0.047	0.043
	(1.49)	(1.16)	(1.49)	(1.15)
SOE	-0.007	-0.012**	-0.008*	-0.013**
	(-1.55)	(-2.31)	(-1.88)	(-2.57)
CEO Duality	0.004	0.004	0.004	0.003
	(1.00)	(0.70)	(0.97)	(0.67)
Related	-0.003	-0.003	-0.003	-0.003
	(-0.92)	(-0.80)	(-0.88)	(-0.77)
Significant	0.038***	0.042***	0.039***	0.042***
	(3.31)	(3.12)	(3.36)	(3.16)
Relative Size	0.028***	0.040***	0.028***	0.040***
	(6.49)	(7.41)	(6.50)	(7.42)
Runup_stock	-0.022***	-0.033***	-0.022***	-0.033***
	(-6.10)	(-7.91)	(-6.05)	(-7.87)
Cash Payment	-0.061***	-0.069***	-0.060***	-0.068***
	(-5.54)	(-5.34)	(-5.51)	(-5.31)
Cash Mixed	-0.027**	-0.039**	-0.027**	-0.038**
	(-2.08)	(-2.49)	(-2.06)	(-2.47)
Industry FEs		Y		
Year FEs		Y		
Province FEs		Y		
Observations	5,532	5,532	5,532	5,532
Adjusted R-squared	0.173	0.181	0.173	0.182

Table 4 Instrumental variable approach

This table reports the results using the instrumental variable approach. CAR [-3, +3] (CAR [-5, +5]) is the cumulative abnormal returns in the 7-day [−3, +3] (11-day [−5, +5]) event window using the market model with parameters estimated over the 200 trading days ending 61 days prior to the deal announcement date. Pledge_Percent equals the percentage of shares pledged by the controlling shareholders at the year-end. Pledge_Percent (Peer) is the instrumental variable, defined as the average percent of shares pledged by the controlling shareholders from the peer companies operating in the same industry and located in the same province. Pledge_Percent (Predicted) is the fitted value of Pledge_Percent. Column (1) reports the first stage regression. Column (2) and (3) report the second stage. The definition of other controls are listed in Appendix A. The regressions include industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	First-stage regression	Second-stage regressions	
	Pledge (Percent)	CAR [-3, +3]	CAR [-5, +5]
	(1)	(2)	(3)
Pledge _Percent (Predicted)		-0.030**	-0.035**
		(-2.06)	(-2.02)
Pledge _Percent (Peer)	0.902***		
	(36.40)		
Size	0.002	-0.013***	-0.015***
	(0.38)	(-5.44)	(-5.22)
Annual Return	-0.025***	0.006	0.006
	(-8.20)	(1.61)	(1.44)
Cash	-0.175***	-0.006	-0.002
	(-7.62)	(-0.36)	(-0.11)
ROA	-0.333***	0.069	0.108*
	(-5.97)	(1.41)	(1.77)
Intangible	-0.009	0.022	0.018
	(-0.12)	(0.47)	(0.32)
Leverage	0.142***	0.019	0.033*
	(6.59)	(1.34)	(1.92)
Capital Expenditure	-0.216***	0.045	0.025
	(-3.97)	(1.12)	(0.52)
Tobin's Q	-0.002	-0.012***	-0.014***
	(-1.00)	(-6.76)	(-6.63)
Blockholders	-0.130***	0.027**	0.017
	(-5.36)	(2.06)	(1.17)
Board Size	-0.007***	0.001	0.001
	(-3.20)	(0.96)	(1.06)
Board Independent	-0.060	0.037	0.037
	(-0.94)	(1.06)	(0.88)
SOE	-0.192***	-0.012**	-0.020***
	(-20.18)	(-2.15)	(-3.07)
CEO Duality	-0.001	0.003	0.001
	(-0.11)	(0.64)	(0.24)
Related		-0.004	-0.005
		(-1.09)	(-1.07)
Significant		0.035***	0.041***
		(2.65)	(2.63)
Relative Size		0.034***	0.047***
		(7.00)	(7.65)
Runup_stock		-0.020***	-0.030***
		(-4.62)	(-6.24)
Cash Payment		-0.050***	-0.057***
		(-3.88)	(-3.76)
Cash Mixed		-0.018	-0.030*
		(-1.21)	(-1.71)
Industry FEs		Y	
Year FEs		Y	
Province FEs		Y	
Observations	19,782	4,336	4,336
Adjusted R-squared	0.381	0.169	0.175

Table 5 Difference in differences approach

This table reports results using the difference in differences approach. The sample covers the year 2011-2012 and 2014-2015. 2013 is the event year. The treatment group includes firms whose controlling shareholders do not pledge shares in 2011 and 2012, but pledge shares in 2014 and 2015. The control group includes firms whose controlling shareholders do not pledge shares during 2011-2015 and have the closed propensity score with the treatment firms. CAR [-3, +3] (CAR [-5, +5]) is the cumulative abnormal returns in the 7-day [−3, +3] (11-day [−5, +5]) event window using the market model with parameters estimated over the 200 trading days ending 61 days prior to the deal announcement date. Treat is a dummy variable that equals 1 if the firm belongs to the treatment group, and 0 otherwise. Post is a dummy variable that equals 1 if the observation is after 2013, and 0 otherwise. The definition of other controls are listed in Appendix A. The regressions include industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	CAR [-3, +3]	CAR [-5, +5]
	(1)	(2)
Post*Treat	-0.112**	-0.126**
	(-2.26)	(-2.21)
Treat	0.051	0.054
	(1.59)	(1.40)
Size	0.000	-0.008
	(0.02)	(-0.38)
Annual Return	0.011	0.032
	(0.32)	(0.78)
Cash	-0.008	-0.073
	(-0.11)	(-0.81)
ROA	0.150	0.334
	(0.69)	(1.04)
Intangible	-0.945*	-1.266**
	(-1.85)	(-2.05)
Leverage	0.052	0.005
	(0.60)	(0.04)
Capital Expenditure	-0.349	-0.640
	(-0.64)	(-1.00)
Tobin's Q	-0.029**	-0.042***
	(-2.48)	(-3.08)
Blockholders	-0.060	-0.031
	(-0.52)	(-0.23)
Board Size	-0.005	-0.009
	(-0.50)	(-0.76)
Board independent	0.112	0.138
	(0.49)	(0.58)
SOE	0.147***	0.171***
	(3.41)	(3.18)
CEO Duality	0.040	0.041
	(1.27)	(1.07)
Related	0.011	-0.005
	(0.37)	(-0.14)
Significant	0.051	0.075
	(0.61)	(0.76)
Relative Size	0.030	0.044
	(1.23)	(1.36)
Runup_stock	-0.035	-0.058*
	(-1.24)	(-1.85)
Cash Payment	-0.043	0.003
	(-0.80)	(0.04)
Cash Mixed	0.140**	0.204***
	(2.52)	(2.91)
Industry FEs	Y	
Year FEs	Y	
Province FEs	Y	
Observations	182	182
Adjusted R-squared	0.345	0.377

Table 6 Robustness tests

This table reports the robustness tests on the relationship between stock pledge and CAR. CAR [-3, +3] (CAR [-5, +5]) is the cumulative abnormal returns in the 7-day [−3, +3] (11-day [−5, +5]) event window using the market model with parameters estimated over the 200 trading days ending 61 days prior to the deal announcement date. Pledge_Dummy is a dummy that equals one if the controlling shareholder of the firm has shares pledged at the end of the year, and zero otherwise. Column (1) and (2) use firm and year fixed effects. Column (3) and (4) drop ST stocks. Column (5) and (6) drop small transactions with the deal value that less than 1% of the acquirer's total assets. The definition of other controls are listed in Appendix A. The regressions (except for column (1) and (2)) include industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	Firm and Year FEs		Drop ST stocks		Drop small deals	
	CAR [-3, +3]	CAR [-5, +5]	CAR [-3, +3]	CAR [-5, +5]	CAR [-3, +3]	CAR [-5, +5]
	(1)	(2)	(3)	(4)	(5)	(6)
Pledge_Dummy	-0.013**	-0.014*	-0.009**	-0.010**	-0.010*	-0.012**
	(-2.24)	(-1.91)	(-2.31)	(-2.24)	(-1.92)	(-1.98)
Size	-0.029***	-0.034***	-0.012***	-0.012***	-0.017***	-0.019***
	(-5.56)	(-5.35)	(-5.61)	(-5.18)	(-5.71)	(-5.46)
Annual Return	-0.001	-0.003	0.008**	0.008**	0.006	0.006
	(-0.11)	(-0.49)	(2.47)	(2.10)	(1.64)	(1.29)
Cash	0.027	0.039	0.008	0.016	0.008	0.014
	(1.15)	(1.44)	(0.55)	(0.89)	(0.41)	(0.64)
ROA	0.099*	0.143**	0.062	0.084	0.100**	0.140**
	(1.74)	(1.98)	(1.39)	(1.54)	(1.97)	(2.21)
Intangible	0.080	0.142*	-0.003	-0.015	0.002	-0.019
	(1.23)	(1.76)	(-0.09)	(-0.33)	(0.03)	(-0.31)
Leverage	0.053***	0.064**	0.006	0.013	0.019	0.037**
	(2.59)	(2.51)	(0.46)	(0.91)	(1.27)	(2.04)
Capital Expenditure	0.020	0.015	0.034	0.013	0.047	0.033
	(0.40)	(0.24)	(1.03)	(0.35)	(1.08)	(0.65)
Tobin's Q	-0.015***	-0.015***	-0.012***	-0.013***	-0.012***	-0.014***
	(-6.21)	(-5.18)	(-6.88)	(-6.42)	(-6.91)	(-6.56)
Blockholders	0.024	0.054	0.019*	0.014	0.023	0.021
	(0.77)	(1.42)	(1.70)	(1.09)	(1.56)	(1.26)
Board Size	0.002	0.002	0.002*	0.002	0.002*	0.003**
	(0.71)	(0.82)	(1.68)	(1.61)	(1.74)	(2.15)
Board Independent	0.066	0.058	0.055*	0.058	0.067	0.067
	(1.15)	(0.85)	(1.73)	(1.52)	(1.55)	(1.32)
SOE	-0.025**	-0.030**	-0.005	-0.008*	-0.010*	-0.018**
	(-2.09)	(-2.03)	(-1.18)	(-1.70)	(-1.70)	(-2.52)
CEO Duality	0.019**	0.022**	0.005	0.005	0.005	0.004
	(2.41)	(2.21)	(1.10)	(0.87)	(0.94)	(0.64)
Related	-0.002	-0.001	-0.002	-0.002	-0.004	-0.004
	(-0.51)	(-0.15)	(-0.62)	(-0.59)	(-0.72)	(-0.75)
Significant	0.066***	0.076***	0.033***	0.037***	0.038***	0.042***
	(4.69)	(4.58)	(2.72)	(2.68)	(3.27)	(3.09)
Relative Size	0.025***	0.035***	0.041***	0.053***	0.027***	0.038***
	(4.62)	(5.32)	(6.61)	(6.94)	(6.14)	(7.09)
Runup_stock	-0.018***	-0.029***	-0.022***	-0.033***	-0.028***	-0.040***
	(-3.91)	(-5.39)	(-6.25)	(-8.02)	(-6.04)	(-7.42)
Cash Payment	-0.058***	-0.066***	-0.050***	-0.055***	-0.065***	-0.073***
	(-4.32)	(-4.11)	(-4.44)	(-4.21)	(-5.71)	(-5.47)
Cash Mixed	-0.037**	-0.052***	-0.018	-0.027*	-0.032**	-0.043***
	(-2.42)	(-2.81)	(-1.32)	(-1.69)	(-2.44)	(-2.71)
Industry FEs				Y		
Year FEs		Y		Y		
Province FEs				Y		
Firm FEs		Y				
Observations	4,655	4,655	5,273	5,273	3,822	3,822
Adjusted R-squared	0.213	0.218	0.170	0.172	0.197	0.209

Table 7 Takeover premium and related party transaction

This table reports the effect of stock pledge on M&A characteristics. Premium is the ratio of the trading value of the target on the estimated value minus one. Related is a dummy that equals 1 if the deal is a related party transaction, and 0 otherwise. Pledge_Dummy is a dummy that equals one if the controlling shareholder of the firm has shares pledged at the end of the year, and zero otherwise. The definition of other controls are listed in Appendix A. The regressions include industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	Premium	Related
	(1)	(2)
Pledge_Dummy	0.234**	0.074*
	(2.01)	(1.80)
Size	0.073	0.033
	(1.13)	(1.52)
Annual Return	0.124	-0.045*
	(0.83)	(-1.69)
Cash	0.122	-0.531***
	(0.32)	(-3.64)
ROA	0.809	-1.168***
	(0.90)	(-3.46)
Intangible	-0.317	0.227
	(-0.26)	(0.59)
Leverage	-0.04	0.153
	(-0.14)	(1.36)
Capital Expenditure	-0.95	-0.226
	(-0.97)	(-0.63)
Tobin's Q	-0.022	0.026**
	(-0.51)	(2.22)
Blockholders	0.627*	0.528***
	(1.68)	(4.23)
Board Size	0.034	-0.020*
	(0.94)	(-1.71)
Board Independent	1.690*	(0.193)
	(1.70)	(-0.51)
SOE	-0.180	0.354***
	(-1.62)	(7.50)
CEO Duality	0.214	-0.203***
	(1.54)	(-4.66)
Related	-0.326***	
	(-3.47)	
Significant	-0.327**	
	(-2.41)	
Relative Size	0.174	
	(1.45)	
Runup_stock	0.139	
	(0.93)	
Cash Payment	0.263	
	(1.48)	
Cash Mixed	-0.316**	
	(-2.22)	
Industry FEs	Y	
Year FEs	Y	
Province FEs	Y	
Observations	3,311	6,540
Pseudo /Adjusted R-squared	0.030	0.079

Table 8 Cross-sectional tests

This table reports the cross-sectional tests on SOE and free cash flow. CAR [-3, +3] (CAR [-5, +5]) is defined as the same as in Table 3. Pledge_Dummy is a dummy that equals one if the controlling shareholder of the firm has shares pledged at the end of the year, and zero otherwise. SOE is a dummy variable that equals one if the firm is state-owned in a given year, and zero otherwise. FCF_High is a dummy that equals 1 if the free cash flow to total assets ratio of the firm ranks top 20% in the industry of a given year, and 0 otherwise. The definition of other controls are listed in Appendix A. The regressions include industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	SOE		Free Cash Flow	
	CAR [-3, +3]	CAR [-5, +5]	CAR [-3, +3]	CAR [-5, +5]
	(1)	(2)	(3)	(4)
SOE * Pledge_Dummy	0.015**	0.016*		
	(2.00)	(1.78)		
FCF_High * Pledge_Dummy			-0.013	-0.022**
			(-1.46)	(-2.16)
FCF_High			0.005	0.009*
			(1.08)	(1.69)
Pledge_Dummy	-0.012***	-0.014**	-0.005	-0.004
	(-2.59)	(-2.42)	(-1.23)	(-0.80)
Size	-0.013***	-0.014***	-0.013***	-0.014***
	(-6.09)	(-5.55)	(-6.08)	(-5.55)
Annual Return	0.005*	0.005	0.002	0.001
	(1.75)	(1.30)	(0.69)	(0.17)
Cash	0.008	0.015	0.018	0.024
	(0.56)	(0.88)	(1.13)	(1.29)
ROA	0.076*	0.105**	0.057	0.086*
	(1.85)	(2.05)	(1.39)	(1.67)
Intangible	0.011	0.001	0.025	0.016
	(0.28)	(0.02)	(0.66)	(0.33)
Leverage	0.016	0.027*	0.019	0.030**
	(1.37)	(1.88)	(1.56)	(2.02)
Capital Expenditure	0.037	0.017	0.040	0.020
	(1.10)	(0.45)	(1.12)	(0.48)
Tobin's Q	-0.011***	-0.012***	-0.010***	-0.011***
	(-6.81)	(-6.38)	(-6.63)	(-6.30)
Blockholders	0.021*	0.017	0.023**	0.019
	(1.90)	(1.30)	(2.01)	(1.43)
Board Size	0.001	0.002	0.002	0.002
	(1.42)	(1.48)	(1.45)	(1.40)
Board Independent	0.046	0.043	0.046	0.048
	(1.47)	(1.14)	(1.42)	(1.23)
SOE	-0.011**	-0.016***	-0.007	-0.011**
	(-2.27)	(-2.83)	(-1.56)	(-2.23)
CEO Duality	0.004	0.004	0.005	0.004
	(0.99)	(0.70)	(1.13)	(0.77)
Related	-0.003	-0.003	-0.003	-0.003
	(-0.90)	(-0.78)	(-0.78)	(-0.77)
Significant	0.038***	0.042***	0.036***	0.040***
	(3.32)	(3.13)	(3.05)	(2.95)
Relative Size	0.028***	0.040***	0.028***	0.040***
	(6.49)	(7.41)	(6.29)	(7.22)
Runup_stock	-0.022***	-0.033***	-0.021***	-0.032***
	(-6.07)	(-7.89)	(-5.59)	(-7.29)
Cash Payment	-0.061***	-0.069***	-0.059***	-0.066***
	(-5.52)	(-5.32)	(-5.27)	(-5.06)
Cash Mixed	-0.027**	-0.038**	-0.024*	-0.035**
	(-2.07)	(-2.48)	(-1.80)	(-2.20)
Industry FEs		Y		
Year FEs		Y		
Province FEs		Y		
Observations	5,532	5,532	5,243	5,243
Adjusted R-squared	0.173	0.182	0.172	0.181

Table 9 Stock pledge and Post-M&A accounting performance

This table reports the effect of stock pledge on the post-M&A accounting performance. ROA +1y/2y/3y is the industry adjusted return on assets 1/2/3 year(s) after M&A announcement year. Pledge_Dummy is a dummy that equals one if the controlling shareholder of the firm has shares pledged at the end of the year, and zero otherwise. The definition of other controls are listed in Appendix A. The regressions include industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	ROA +1y	ROA +2y	ROA +3y
	(1)	(2)	(3)
Pledge_Dummy	-0.004**	-0.008***	-0.008***
	(-1.99)	(-3.21)	(-2.64)
Size	0.003***	0.004***	0.004***
	(2.64)	(2.69)	(2.62)
Annual Return	0.001	-0.000	-0.000
	(0.28)	(-0.06)	(-0.16)
Cash	0.038***	0.024**	0.011
	(4.88)	(2.51)	(0.93)
Intangible	0.032*	0.037*	-0.024
	(1.66)	(1.68)	(-0.77)
Leverage	-0.006	-0.008	-0.011
	(-0.84)	(-1.04)	(-1.27)
Capital Expenditure	-0.009	-0.022	-0.009
	(-0.49)	(-1.11)	(-0.35)
Tobin's Q	0.003***	0.001	0.003**
	(3.88)	(1.24)	(2.34)
Blockholders	0.026***	0.010	0.016*
	(4.15)	(1.55)	(1.91)
Board Size	-0.000	-0.001*	-0.000
	(-0.62)	(-1.71)	(-0.59)
Board Independent	-0.064***	-0.035*	-0.033
	(-3.29)	(-1.77)	(-1.40)
SOE	0.000	-0.001	-0.003
	(0.09)	(-0.44)	(-0.89)
CEO Duality	-0.004*	0.000	0.003
	(-1.69)	(0.06)	(0.75)
Related	0.001	0.002	-0.001
	(0.78)	(0.78)	(-0.32)
Significant	0.008*	0.006	-0.014**
	(1.82)	(1.24)	(-1.99)
Relative Size	0.004**	0.006***	0.003
	(2.03)	(3.16)	(1.37)
Runup_stock	0.001	-0.001	-0.001
	(0.56)	(-0.63)	(-0.58)
Cash Payment	-0.012***	-0.008	-0.018***
	(-3.09)	(-1.56)	(-2.98)
Cash Mixed	-0.015***	-0.016***	-0.026***
	(-3.65)	(-2.65)	(-3.21)
ROA -1y	0.287***	0.254***	0.140***
	(11.74)	(9.04)	(3.82)
ROA -2y	0.096***	0.068**	0.096**
	(3.30)	(2.27)	(2.43)
ROA -3y	0.037	0.095***	0.041
	(1.58)	(3.56)	(1.32)
Industry FEs		Y	
Year FEs		Y	
Province FEs		Y	
Observations	4,182	3,707	3,207
Adjusted R-squared	0.176	0.138	0.100

Table 10 Stock pledge and Post-M&A goodwill impairment

This table reports the effect of stock pledge on the post-M&A goodwill impairment. Impairment_Dummy is a dummy that equals 1 if the firm reports goodwill impairment during three years after the M&A announcement, and 0 otherwise. Pledge_Dummy is a dummy that equals one if the controlling shareholder of the firm has shares pledged at the end of the year, and zero otherwise. Column (1) uses the probit model and column (2) uses OLS model. The sample covers the M&A deals from 2006 to 2015. The definition of other controls are listed in Appendix A. The regressions include industry, year and province fixed effects. The standard errors are clustered at firm level. ***, **, * represent statistical significance at the 1%, 5% and 10% levels, respectively.

	Impairment_Dummy	
	Probit	OLS
	(1)	(2)
Pledge_Dummy	0.369**	0.013*
	(2.53)	(1.76)
Size	0.050	-0.000
	(0.50)	(-0.12)
Annual Return	-0.145	-0.004
	(-0.82)	(-0.78)
Cash	0.462	0.027
	(0.91)	(1.27)
ROA	1.175	0.015
	(0.73)	(0.35)
Intangible	0.754	0.023
	(0.59)	(0.59)
Leverage	-1.004**	-0.017
	(-2.29)	(-1.22)
Capital Expenditure	-1.934	-0.039
	(-1.54)	(-1.04)
Tobin's Q	-0.067	-0.002
	(-1.10)	(-1.08)
Blockholders	-1.437**	-0.041*
	(-2.29)	(-1.94)
Board Size	-0.019	0.000
	(-0.38)	(0.12)
Board independent	-2.086	-0.050
	(-1.23)	(-0.81)
SOE	0.183	0.004
	(0.86)	(0.55)
CEO Duality	-0.087	-0.003
	(-0.51)	(-0.30)
Related	0.055	0.002
	(0.36)	(0.41)
Significant	-0.028	-0.010
	(-0.13)	(-0.66)
Relative Size	-0.287**	-0.005*
	(-2.09)	(-1.67)
Runup_stock	0.220*	0.006
	(1.73)	(1.47)
Cash Payment	-0.056	-0.007
	(-0.17)	(-0.69)
Cash Mixed	0.407	0.018
	(1.27)	(0.93)
Industry FEs	Y	
Year FEs	Y	
Province FEs	Y	
Observations	1,075	3,215
Pseudo R-squared	0.220	0.031

Appendix A: Variable definitions

Variable	Definition
Annual Return	Annual stock returns.
Blockholders	Percentage of shares owned by the controlling shareholder.
Board Independent	The ratio of the number of independent board members to the total number of board members.
Board Size	The total number of directors on board.
Capital Expenditure	The capital expenditure scaled by the total assets.
CAR[-3,+3]	Cumulative abnormal returns in the 7-day [−3, +3] event window using the market model with parameters estimated over the 200 trading days ending 61 days prior to the deal announcement date.
CAR[-5,+5]	Cumulative abnormal returns in the 11-day [−5, +5] event window using the market model with parameters estimated over the 200 trading days ending 61 days prior to the deal announcement date.
Cash	Cash and cash equivalent to total assets.
Cash Mixed	A dummy variable that equals one if the payment involves cash and other types of payment, and zero otherwise.
Cash Payment	A dummy variable that equals one if the payment is pure cash, and zero otherwise.
CEO Duality	A dummy variable that equals one if the CEO is also the chair of the board, and zero otherwise.
Intangible	Intangible assets divided by total assets.
Leverage	Total debt divided by total assets.
M&A	A dummy that equals one if the firm announces a merger and acquisition, and zero otherwise.
Significant	A dummy that equals one if the deal is a significant deal, and 0 otherwise.
Pledge_Dummy	A dummy that equals one if the controlling shareholder of the firm has shares pledged at the end of the year, and zero otherwise.
Premium	The ratio of trading value of the target on the estimated value minus one.
Related	A dummy that equals one if the deal is a related party transaction, and 0 otherwise.
Relative Size	Deal value divided by the acquirer's total assets.
ROA	Return on assets.
ROA +1y/2y/3y	Industry adjusted ROA 1/2/3 year(s) after M&A announcement year.
ROA -1y/2y/3y	Industry adjusted ROA 1/2/3 year(s) before M&A announcement year.
Runup_stock	Buy and hold daily Shanghai and Shenzhen value-weighted stock returns over the 200 trading days ending 61 days prior to the deal announcement date.
Size	Natural logarithm of total assets.
SOE	A dummy variable that equals one if the firm is state-owned in a given year, and zero otherwise.
Tobin's Q	The sum of the market value of equity and total liabilities divided by total assets